Economic and Social Development

76th International Scientific Conference on Economic and Social Development –
"Building Resilient Society"

Book of Proceedings

Editors:
Petar Misevic, Ljiljana Kontic, Tomislav Galovic

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CONTENTS

BUSINESS ECOSYSTEMS THAT STIMULATE ENTREPRENEURIAL EMPLOYEE ACTIVITY

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ABSTRACT
The measured above average rate of the Entrepreneurial Employee Activity (EEA) is a hidden and unused component of the entrepreneurial potential of Croatia. Since EEA refers to innovative activity aimed at development of new products/services or establishing new business units, it can be used to stimulate the necessary development of new products in corporate structures. EEA stimulates growth and profitability of companies and allows for positive macroeconomic outcomes. It has proven to be particularly favourable for the economic growth and development of countries in transition. The aim of this paper is to research impacts of macro and micro business ecosystems on EEA in order to stimulate it and in such a way contribute to innovation and sustainable competitiveness of Croatian economy. The interconnection of micro and macro business ecosystems and EEA was analysed in a qualitative research (interviews and focus groups) using a sample of sixteen businesses, eight of which from IT industry and eight from processing industry. It was established that business ecosystems differ depending on the type of industry and that they shape organisational factors which influence the EEA. Based on the research results it is assumed that businesses can stimulate entrepreneurial activity of employees by creating a suitable organisational structure and culture and implementing a business policy adapted to the macro ecosystem. Based on this assumption, micro level proposals for stimulating EEA are presented.
Keywords: Entrepreneurial Employee Activity, business ecosystem, industry, innovation, competitiveness

1. INTRODUCTION
Entrepreneurial business systems which generate innovative and proactive behaviour of their stakeholders which implies taking risks to create new and added value (Miller and Friesen, 1982:222; Miller, 1983:770-789; Covin and Slevin, 1991:7-8; Amo, 2006:287; Miller, 2011:874-875; de Jong, Parker, Wenekers and Wu, 2011:5-6) are important for an entrepreneurial structure of economy (Bosma et al., 2005:217). Taking into consideration the noted contribution of entrepreneurial business systems, as of 2011 a particular attention in Global Entrepreneurship Monitor (GEM) projects is given to the Entrepreneurial Employee Activity (EEA). According to the GEM methodology, the EEA is defined as an innovative activity conducted with the aim of developing or launching new goods or services, or setting up a new business unit for the employer (Bosma et al., 2013:7). It is proven that EEA has an impact on the entire economy by increasing productivity and competitiveness (Antoncic and Hisrich, 2001:496; Antoncic and Hisrich, 2004:519). It is a crucial survival technique and brings sustainable growth to existing companies (Shepherd and Katz, 2004:1). For years Croatia's EEA rating has been above average in comparison to the EU Member States which were included in the survey, and economies of its developmental level (Singer et al., 2019:44). More attention should be dedicated in terms of research to this perceived significant component of the entrepreneurial potential of Croatia in order to stimulate it and put it to use with the aim of strengthening innovation and consequential competitiveness on macro and micro economic level. Entrepreneurial activity interacts with its ecosystem (Singer et al., 2019: 75; Barringer and Ireland, 2010:146-147; Bosma, 2012:25-35).

Numerous studies, which employed various methods and models, have proven that micro and macro dimensions of an ecosystem have a decisive impact on the occurrencce and effectiveness of EEA (Miller, 1983:771-772; Khandwalla, 1987:44-45; Guth and Ginsberg, 1990:7; Covin and Slevin, 1991:9; Shane, Locke and Collins, 2003:19-20; de Jong and Wennekers, 2008:11-17; de Jong, Parker, Wennekers and Wu, 2011:7-8).

2. ENTREPRENEURIAL ECOSYSTEM
The term "ecosystem" was used in this paper to stress the dynamic interaction of the components of entrepreneurial environment during observation. It is a more recent term the use of which emphasises a holistic approach to the environment surrounding entrepreneurial action (Isenberg, 2010:2-4; Stam and Spigel, 2016:1-3), but at the same time its direct and subjective dimension (Sternberg, von Bloh and Coduras, 2019). Observing the ecosystem of entrepreneurial activity from the aspect of the driver, practitioner and manager of entrepreneurial activity presumes a context that the entrepreneur is familiar with, their subjective experience and immediate impact (Zahra, 1993:321-322). Global Innovation Index (GII) and Global Competitiveness Index (GCI), as well as theoretical models of the 'national innovative capacity' by Porter and Stern (2000; 2002) and Nelson's (1992) 'national innovation system' emphasise the importance of interconnection of macro determinants of an ecosystem and their link with micro factors (Porter, 1990:75-78; Nelson, 1992:370; Furman, Porter and Stern, 2000:2-4; Porter and Stern, 2002:9-15; Atkinson, 2013:2-6; Schwab, 2017:319-320; Dutta, Lanvin and Wunsch-Vincent, 2017:29). By studying the links between micro and macro entrepreneurial incentives and impacts, a great responsibility of companies for innovative potential, competitiveness and economic growth of national economies was noted. The implementation of innovative processes and the form of innovative activity are mainly dependent on resources and strategic guidelines of business enterprises (Nelson, 1992:357-358). While striving to standardize innovative processes, conceptually extensive models of entrepreneurship in business systems were developed, which are not only directed to organisational factors and management function in their observation of micro factors, but also to the wider context of the industry (Shepherd and Katz, 2004:3). Earlier studies confirmed that an ecosystem differs depending on industry the company is part of (Porter, 1990:78-88; Porter and Stern, 2002:6; Antoncic and Hisrich, 2004:529). The integrative model by Antoncic and Hisrich is one of the models of interconnectedness of an ecosystem observed on a macro and micro economic level with entrepreneurial activity within business systems. The methodological and theoretical framework of the mentioned model is the basis for the research represented in this paper.

Figure following on the next page
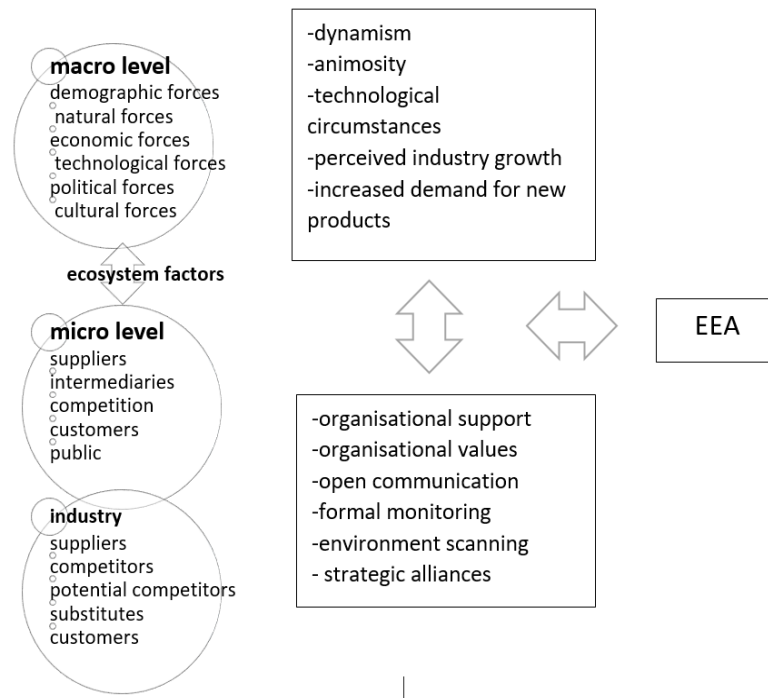
Figure 1: EEA ecosystem factors
(Source: Kotler et al. (2006:26-60); Kotler, Keller and Martinović (2014:74-84); Thompson, Strickland and Gamble (2008:45-48); Porter (1983:175-177); Hisrich, Peters and Shepherd (2011:205-206; 234-235); Antoncic and Hisrich (2001, 2004))

3. INTEGRATIVE MODEL

The research conducted by Antoncic and Hisrich is governed by the concept of organic structure and tests the interaction between ecosystems, organisational factors and entrepreneurial activity of employees. Their model is based on an assumption that there is an indirect and interactive impact of organisational factors and elements of ecosystem on the entrepreneurial employee activity (Antoncic and Hisrich, 2004:523; Antoncic and Hisrich, 2001:497). The organisational factors of the model by Antoncic and Hisrich rely on earlier research-based notions about the importance of organisational framework as a decisive prerequisite of entrepreneurial employee activity. Such studies were mainly directed towards entrepreneurial employees and their immediate entrepreneurial context, the business system in which entrepreneurial activity takes place. They were based on the assumption that organisational factors influence perception, attitudes and behaviour of entrepreneurial employees (Zahra, Randerson and Fayolle, 2013:369). There are tangible and intangible organizational factors and their formal and informal impact on entrepreneurial activity (Zahra, 1991:265-267). The model by Antoncic and Hisrich contains the following elements as the basic organisational prerequisites of entrepreneurial activity within business systems: open communication, formal control, intensity of environment scanning, strategic alliances, organisational support and management support and organisational values. Freedom of decision-making, time management, rewards and weak structural barriers are considered the main determinants of organisational support (Antoncic and Hisrich, 2001:501-502).

4. RESEARCH

The primary aim of this paper is to test the interaction between macro and micro elements of the company ecosystem and its connection with the organisational factors of stimulating EEA. Variables of companies' ecosystem and of organisational factors were operationalised by using the integrative model by Antoncic and Hisrich (2001, 2004), while taking into account the

categories of innovation and competitiveness at the microeconomic and macroeconomic level. The microeconomic level of observation presupposes a perception of entrepreneurial processes within business systems, while the macroeconomic level entails a perception of entrepreneurial activity of the wider framework of entrepreneurial activity. Entrepreneurial activity of employees was analysed by using the approach developed within GEM researches (Bosma et al., 2013). The indicators of an ecosystem were determined based on perception of respondents while personal involvement and interaction of respondents determined organisational factors. Due to their subjective nature, qualitative research was conducted in order to test the meaning that respondents ascribe to the researched determinants of the variables as well as particular circumstances that determine them (Milas, 2005:573-574). The qualitative aspect of the research revolved around a case study which consisted of interviews and focus groups as data collection methods. Within every selected company, data on ecosystem, organisational factors and EEA were gathered in a semi-structured questionnaire which acted as a manual to conduct interviews with company managers. The intention was to verify the assumption about the connection between observed variables of macro and micro ecosystem and entrepreneurial activity of employees (Milas, 2005:586). The aim of the use of focus groups as a data collection method within the case study was to achieve further insight into personal experience linked to organisational factors of stimulating EEA. Focus group participants were members of innovative teams, entrepreneurial employees, who were selected on spot during the interview with the manager, using snowball sampling (Milas, 2005:590-597). The sample of observed companies was intentional, and based on the researcher's assessment. The company selection criteria were the following: industry, ownership, size, age and the level of innovation. The sample consisted of sixteen companies from the private sector, eight out of which were part of processing industry and eight of IT industry. The companies have existed longer than three years, their size ranged from 10 to 249 employees and in the last three years they have developed a new product or set up a new business unit, subsidiary or branch.
The research was conducted in 2019 and 2020.

5. RESEARCH RESULTS
The interviewed managers of IT sector perceived outstanding technological circumstances and dynamism of the ecosystem as well as industry growth and increased demand for new products. The only dimension that did not receive a lot of attention was the animosity of the system. The IT managers emphasised a collaborative relationship with competitors as an important strategic determinant which allows them to overcome the lack of resources, primarily of human capital. They characterised their industry as one undergoing maturation period due to the trend of developing new business models which indicate the creation of new and slowing down of the existing industry sectors. The perception of ecosystem indicators was reflected in the organisational factors of stimulating EEA. In line with the perception of the ecosystem as challenging, the IT managers noted the need to intensely scan it both formally and informally which is a procedure conducted by all employees in line with the level of their expertise and responsibility. While assessing ecosystem various internal and external sources of information were used. Various ways of gathering information have the potential for increasing their credibility and usefulness in terms of competition. Equal amount of attention was given to micro and macro determinants of the ecosystem. All respondents from IT companies were aware of the turbulent changes in their industry and of the need for rapid organisational adjustment. A continuous technological advance was used every day to improve operative processes. By implementing innovative technological solutions, knowledge exchange and everyday interaction necessary for solving obstacles in work were facilitated. In the process mainly social networking applications were used to connect various stakeholders in an informal conversation, and various types of software were used for the necessary formalisation and harmonisation of

business activities. With the help of stated technological solutions, a network of organisational structures was set up and all stakeholders were enabled to participate in the all phases of new activity implementation. The implemented technology allowed for a wide range of control techniques within organisation structures of the observed IT companies. Internal software facilitated networking, coordination and monitoring of all activities. This ensured a greater flexibility in work and autonomy of employees. The technological formalisation of business processes at the same time allowed for control and freedom of employees. By emphasizing the importance of individual innovative contribution which is strengthened by team work, a need to harmonize personal values of employees and values of their organisation was identified. Organisational values and strategic guidelines were communicated openly via formal and informal channels with a request for harmonised behaviour of all stakeholders of observed business systems in the IT sector. In line with the described perception of the ecosystem and the described organisational factors of innovative incentive, a higher intensity of EEA was noted than the one in the observed processing companies. The recorded number of employees who had a leading role in the development of the most significant new activity was higher (seven in comparison to four employees in the processing companies) and the number of the newly introduced activities in the last three years was higher as well as the number of employees who had a leading role in the development of these activities. The answers reflected a harmonised attitude of employees about the necessity of offer diversification, individualisation and differentiation with innovative activities (the development of new products and setting up new business units). Despite the awareness of increased demand for new offers, turbulent environment and technical refinement of all industry sectors causing constant changes, the attitude of the surveyed managers of processing companies was mainly neutral towards technological circumstances, dynamism and animosity of the ecosystem due to perceived lack of resources. Even though they defined their industry as a maturing one due to involvement in economic integration organisations which allow spreading to new markets, they did not give sufficient attention to potential opportunities. The intensity of ecosystem scanning was generally graded with a high mark. In this process, the most attention was given to customers, suppliers and competition almost disregarding the trends in the wider industrial context and macro determinants of the ecosystem. The analysis of the ecosystem components was conducted informally, with the help of external sources who were contacted in spoken form. By using external sources of information, the human capital of the processing companies, that is, employees who are in everyday contact with the observed micro factors of the ecosystem and can gather a more updated and useful information in terms of competitiveness, was underestimated. Communication within business systems in processing industry was mainly informal, and relationships were close, with pronounced respect towards the owner. The formalisation process did not involve technology; written reports on planned and conducted operative activities were used which were available exclusively to the management. Strategic plans and related processes were perceived as a responsibility of the owner and were not openly communicated to the other stakeholders in the business systems. Employees of the observed processing companies were unfamiliar with organisational values and specific strategic determinants of business. Therefore, owners were stressed as key factors of organisational support and entrepreneurial activity. Even though during the conversation, employees cited the need for and the occurrence of cooperation due to the nature of the production process, owners were perceived as the main link of the organisational structure. In a direct communication with employees, they coordinated and controlled the work of various organisational units, stifling a free exchange of ideas and spontaneous creative cooperation along the way. The problem of insufficient resources was mainly solved via contracts with strategic partners who were granted resources to implement entrepreneurial activities.

However, those strategic relationships did not necessarily involve interaction of their stakeholders nor innovative cooperation; they were used exclusively for more productive and economical business operations. The advantages of technological development were also predominantly used to achieve higher productivity and quality in production. Mainly external experts were hired to implement I&R activities and for the most part they did not cooperate with stakeholders from the company. The importance of the role of technology while networking within the organisational structure and establishing a managed interaction, but also controlling the implementation of new activities was also disregarded. Organisation irregularities were detected which were in line with the observed systematic disregard of technological circumstances and the related dynamism and animosity of the ecosystem. In the observed processing companies, there was a prevailing perception of the importance of attracting consumers' attention with new offer and keeping the competitive position by diversifying business activities. Even though the development of new products was perceived as the most significant new activity, it was mainly considered a secondary activity of the organisation. In line with the perceived trends, the EEA was of lower intensity which was measured with the number of employees who had a leading role in the development of the most significant new activity (development of new products), during the last three years of business (four employees in comparison to seven in the observed IT companies) and a smaller number of new activities undertaken in the last three years (five in comparison to nine new activities in the observed IT companies) as well as fewer employees with a leading role in the development of these activities (four in comparison to eight employees in the observed IT companies).

6. RECOMMENDATIONS

In all companies of processing industry and IT sector that were observed, there was an ecosystem analysis with emphasis on micro factors of the ecosystem. However, it was noted that possible competition and substitutes were not the object of observation of managers in the processing industry. In maturing industries, which was the characteristics of the industries of the observed IT and processing companies, there are many competitors competing for market space which does not have a large potential of further growth. In such competitive conditions, companies take aggressive competitive attitude (Thompsonu, Stricklandu & Gambleu, 2008:203-212). The stakeholders who are ready to meet the wishes of their increasingly demanding customers with a diversified offer are those which survive in the struggle for market dominance. Therefore, it is necessary to observe substitutes which can form a disruptive threat, as well as implement innovative activities along the value chain. By innovating value chain there is also a possibility of business expansion to international markets and entering the stage of industry growth (Porter, 2008:49-53). In order to ensure innovation in various segments of business operation it is necessary to involve as many different stakeholders of business systems in the opportunities and threats analysis, in line with their area of expertise and responsibility. For this very reason, it is necessary to use various sources and channels of gathering information, both personal and non-personal, internal and external. In order for analytical and related innovative activities of employees to be harmonised with the needs of the market, competencies and strategic determinants of an enterprise, it is necessary to communicate organisational values clearly. However, strategic determinants which are not in line with personal values of employees cannot start creative and innovative processes on the individual level. The sense of purpose is an important driver of innovative activity of employees. Therefore, it is necessary to check if the tendencies of potential employees are compatible with organisational values during the process of employment. Open communication is an important prerequisite of transparency and consistency in implementing strategic guidelines. In addition to formality, which is a necessary prerequisite of efficient strategic planning and organising operational activities, informal communication is also necessary.

Informal communication increases the possibility of a real insight into business processes and timely detection of weaknesses of business systems as well as threats of the ecosystem. People are social beings. Informal communication allows them to meet their need for socialisation and self-actualisation. Provided that this form of communication is monitored and steered by the management, it can be strategically useful. By managing influential members of informal groups in business systems, mangers can lead the communication process and use the innovative potential of informal environment. In this process, new technological solutions can be of great assistance. Social network applications can be used to achieve manageable informality in communicating. A sense of belonging and mutual regard can be achieved by connecting members of business systems via social networks. In such a way, a safe and informal atmosphere is created which stimulates cooperation, free exchange of information, experimenting and open communicating of ideas. Organisational fluidity is a driving force of innovation. It stimulates creativity and ensures the availability of resources. Networking withing the organisational structure can be achieved by appointing persons responsible for smooth communication between organisation units, most frequently the units' managers, and by setting up project teams consisting of members of various organisational units. With the aim of achieving interactive cooperation, a structural synthesis of organisational units is recommended which relies upon team work, but also a wide range of control tools. Structural divisions ensure the necessary clarity in delegating responsibilities and task completion. However, entrepreneurship requires a wider approach to observing and the freedom of creative action which does not bring the obligation to strictly define limits, procedures and rules. A narrower and flatter organisational structure which presumes delegating responsibilities to a number or responsible persons, the freedom of decision-making but also standardisation and formal control, is a prerequisite in an organisation aiming to achieve success in entrepreneurship. In the conducted research it was noted that despite limiting freedom during the development stage and implementing new activities, formal control contributes to their successful implementation.

7. CONCLUSION

The conducted research confirmed the interconnection between ecosystem, organisational factors and EEA. In the case study whose sample involved sixteen companies it was noted that a company's ecosystem differs depending on the industry and shapes organisational factors of stimulating EEA which determine the perception of the ecosystem and EEA. Based on the research results, it is assumed that business systems can stimulate and steer employee entrepreneurial activity by establishing a suitable organisational structure and culture and by adopting a business policy suitable to the ecosystem. Macro determinants of the ecosystem are threats or opportunities which can prompt entrepreneurial activity of employees, depending on the ability of business systems, but the limitations of micro determinants of the system lead to the limiting perception of macro determinants. Typical organisational structures of traditional industries in which there is a prevailing traditional managing style hinder seizing perceived opportunities and adjusting to the market changes in which a new experience is the basis of customer striving. Macro trends are marked by a constant change guided by technological progress which governs all social and economic flows. This change requires an adjustment to constant novelty as a prerequisite to entrepreneurial activity. New activities can be prompted by suitable organisational factors which need to be standardised, in line with the described recommendations, in accordance with the macro trends which were recognised by the respondents who participated in the study. In this way, regarding macro trends and correlated demand of consumers, it is possible to create organisational structure and culture which stimulate and steer employee entrepreneurial activity.

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PERFORMANCE INDICATORS AS AN ELEMENT OF IMPROVING THE FINANCIAL PERFORMANCE OF GENERAL HOSPITALS IN THE REPUBLIC OF CROATIA

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ABSTRACT

The purpose of a healthcare system is to improve people's health by providing health services to the population. In order to fulfill this purpose, apart from healthcare workers, it is necessary to have a solid financial basis, i.e. a financial model. In the Republic of Croatia, the healthcare system functions as a combination of the so-called Bismarck and Beveridge financial models. The Bismarck Model is based on compulsory, universal social security and is characteristic of most countries of continental Europe. It was first introduced in 1883 in Prussia (present-day Germany). This model works on the principles of solidarity and reciprocity and health insurance contributions are paid on income basis. There is a health insurance fund that is an independent, non-profit, public or private organization whose activity is strictly regulated by state. In addition to the Bismarck Model, health care in the Republic of Croatia is also financed from budget revenues, which is the basis of the Beveridge Model. Given the continuing problem of insufficient funding of healthcare, additional sources of funding are needed. In that context, the subject of this paper is the performance indicators of general hospitals and the problem being studied is how performance indicators can influence the better performance of general hospitals. The hypothesis that is being confirmed is that better financial performance of a hospital contributes to meeting a number of performance indicators of general hospitals. The goal is to show that the hospital has a better financial result if a larger number of indicators are met. The goal will be achieved through research and analysis of performance indicators of hospitals in the period 2015-2021 and quantitative analysis will be applied. At the beginning of the paper, performance indicators of general hospitals will be defined, followed by methods how they are measured, i.e. how it is determined whether they are met or not. The research will show, for each individual indicator, how it moved in the period 2015-2021. Finally, through a discussion related to the research results, certain conclusions will be drawn regarding performance indicators as an element of improving the financial performance of general hospitals in the Republic of Croatia.
Keywords: financial operations, general hospitals, performance indicators

1. INTRODUCTION

The purpose of the health system is to improve human health with the help of health services provided to the population of a particular area. In order to fulfill the described purpose, in addition to health workers, a solid financial base, i.e. a financial model, is necessary. Every country in the world has its own solution, i.e. there is no standardized model. The experience of financing health care in the world shows a large increase in costs. This fact requires finding an appropriate model of financing that would ensure the maintenance of the achieved level of health care or its improvement. Health financing should ensure the efficiency, cost-effectiveness and profitability of health care. In this sense, the models of health care in the world are briefly presented below. In the United States, the health care financing model is individualistic. In Europe, it is a combination of so-called Beveridge model and Bismarck model. The Beveridge model implies the financing of the health care system from the budget, while the Bismarck model is based on the principle of solidarity, where each employee allocates a part of the income for health care.

There is a health fund that is an independent, non-profit public or private organization whose activity is strictly regulated by state regulations. Basic models of health care financing (Marković, B., Vukić, S., 2014; Stašević, I., Derk, D. et al. 2009; Rabar, D. 2010):

- **Bismarck model**
  Health care is primarily funded by salary contributions. Workers set aside from their salaries for health care that everyone uses. It is introduced in Germany in 1883. The main feature of this model is financing through mandatory contributions of employers or employees. The funds go to non-governmental health insurance funds. Funds contract funding with hospitals and doctors (budget or service payment).

- **Beveridge model**
  Health care is based on transfers from the budget. Everyone finances health by paying taxes. The model was introduced in the UK in 1946. Apart from the UK, it is now dominant in the Scandinavian countries and in southern Europe. It is financed through general taxation, controlled by the government. In this model, health financing is planned through the state budget. The private sector is insignificant. Healthcare is available to everyone. Doctors are paid through a salary or a head tax. Patient participation is negligible.

- **Market model**
  "The more you pay — the more you get," in this model, social sensitivity is almost completely omitted.

Below, some of the countries and the model of health financing in them are presented (Vehovec, M., 2016). It can be seen that in the Republic of Croatia, health care is financed by a combination of the Bismarck and Beveridge models.

Private financing		State budget		Social security fund		Combined			
							Private	Budget	Social
USA	52	Denmark	85	Czech Republic	76	Bulgaria	44	18	38
		Great Britain	83	France	73	Greece	38	30	32
		Sweden	81	Netherland	71	Switzerland	35	19	46
		Italy	77	Japan	70	Austria	24	34	42
		Norway	74	Estonia	68				
		Canada	70	Germany	68				
		Spain	70	Slovenia	68				
		Irleand	69	Belgium	65				
		Australia	69	Romania	64				
		Portugal	65	Croatia	63				
		Latvia	61	Poland	62				
		Finland	60	Lithuania	61				
				Slovakia	58				
				Hungary	54				

Table 1: Vehovec, M. Healing from an economic perspective. The Institute of Economics, Zagreb. 2016

1.1. Situation in the USA (market model)

Unlike Croatia, the USA finances its health care system with a market model. Although we are still taught in the Fundamentals of Economics that the market is the perfect mechanism, let's look at the costs of health services incurred by the American health system:

- A bottle of insulin in the US costs $ 300, and at the same time in Canada the same bottle from the same manufacturer costs $ 32
- A 3-kilometer ambulance ride can cost up to $ 2,700
- 137 million Americans have in payment for health services

Health insurance in the US is extremely decentralized (not like in our country where the HZZO is a major player for the entire country). Thus, health insurance models differ between federal states. In better paid jobs, health insurance is mostly covered by the employer, and the poorer ones and those who are not covered by the employer have to pay for private health insurance themselves. In the USA, "as much money - as much music" is valid, so each insurance policy carries different levels of coverage. That is why it is possible, for example, to pay $ 100 for kidney dialysis through one insurer and $ 10,000 for another. Compared to Croatia, waiting lists in the United States are significantly shorter, but Americans are generally dissatisfied with their health care system.

Why is the American health care system so expensive?
- About 8% of the total cost falls on the administration
- High salaries of health professionals
- An increase in the share of the elderly and the poor covered by the Medicare and Medicaid programs
- Lack of competition among mega hospitals that, unlike Croatian ones, do not operate on a non-profit basis (hospital in America = money factory)
- A strong pharmaceutical industry independently determines drug prices
- Compared to Europe, there is much less care for the elderly and infirm within the family which is then transferred to the health system

1.2. Situation in the UK (Beveridge model)
The UK has a Beveradge model of health sector organization. At the top of the NHS organization is the UK Department of Health, and its main tasks are to allocate funds and enact legislation. The UK government, through its Ministry of Health, is directly accountable to Parliament. Strategic Health Authorities or special strategic health units of the SHA are the links between actual service providers and health care contractors, and these are most often health care funds. These health authorities cover regions of the UK and there are currently a dozen of them. Primary Care Trusts have a special role in the NHS organization itself. They were introduced in 1997 and represent the basic bodies for contracting with health care providers. Individuals, like their businesses, pay statutory income taxes. In addition, there is a special tax paid by individuals, i.e. employees and their employers, for special health programs, such as Medicare. Companies usually pay the full amounts or most of the health insurance premiums, and employees only the remaining smaller part of the premiums. In the individual insurance market, employees pay the entire amounts of insurance premiums directly. In the UK, in addition to primary provision of treatment availability, funds contract both secondary and tertiary care services. Contracts are most often concluded with hospitals that are in the NHS system (hospital trusts), but part of health care is also provided by private hospitals. In 2005 alone, there were around 150 such funds in the UK. Hospital treatment funds have the opportunity to earn additional funds for patients who pay independently (private insured persons).

1.3. Situation in Croatia (combination Bismarck / Beveridge model)
In Croatia, health care is primarily financed by the Bismarck system (through 16.5% of gross salary contributions). Everyone in Croatia has compulsory health insurance, which is provided by the Croatian Health Insurance Fund (HZZO). However, there is a shortfall in the HZZO budget. Less money comes from contributions than goes to health care. This hole is being filled with additional funds from the State Budget, which is a characteristic of the Beveridge system. Therefore, we can say that in Croatia there is a mixed model of financing health care.

The structure of health care financing in Croatia
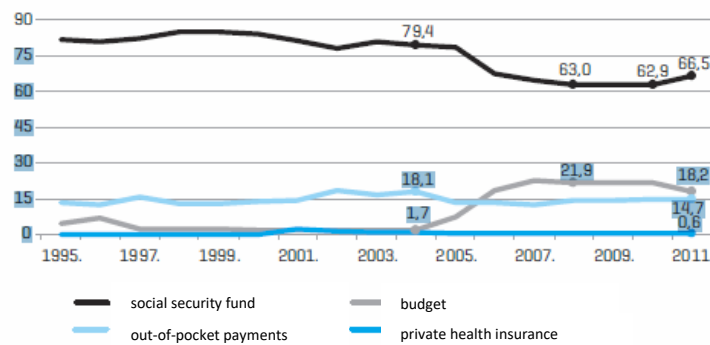
Figure 1: Vehovec, M. Healing from an economic perspective. The Institute of Economics, Zagreb. 2016

There are many problems in the health system of the Republic of Croatia, such as: geographical distance of patients from hospitals, uneven quality of care, high hospital debts, waiting list... Performance indicators help a lot in solving the problem. Performance indicators are health care performance indicators or metrics that are a well-defined performance measure used to observe, analyze, optimize, and transform the health care process to increase the satisfaction of both patients and health care providers. Performance indicators are a tool that enables business processes to progress and improve performance.

2. FINANCING PROBLEMS

Nowadays, the financing of the health care system faces more and more obstacles, both objective and subjective (Kovač, N. 2013). Objective problems, characteristic of health systems all over the world, are the aging of the population, i.e. longer life expectancy.
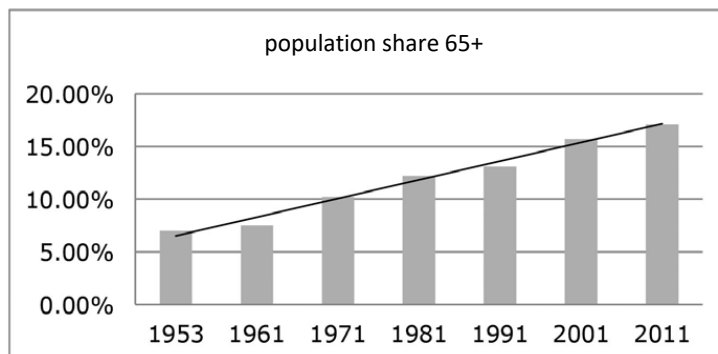
Figure 2: Kovač, N. Health financing – situation in Croatia. XXVI, NO. 2/2013. p. 551-563

In addition, there are increasingly sophisticated diagnostic-therapeutic procedures whose cost is high. Medications are becoming "smart" and therapies are becoming more expensive. In addition, in the Republic of Croatia there is less and less working population, less and less money is paid to the health system. Compared to the world, we invest less in healthcare.

Total health spending (% of GDP)

Switzerland	10,8
USA	15,3
Canada	10

Figure 3: Kovač, N. Health financing – situation in Croatia. XXVI, NO. 2/2013. p. 551-563

STATE	PER POPULATION	SHARE OF GDP (%)
Romania	850	5.0
Latvia	1050	5.8
Bulgaria	1100	8.1
CROATIA	1240	7.4
Netherlands	3900	10.8
Germany	3950	11.2
Luxembourg	5100	6.0
EU	2800	9.9

Table 2: Eurostat, 2018

Health care financing in the Republic of Croatia is based on a combination of the Bismarck and Beveridge models. This means that the largest inflow of money into the health care system comes from the payment of health contributions (solidarity payment of each employee from the gross salary) and from taxes collected by the state. A major problem of health care financing in Croatia is the large share of funds that the state pumps into health care in relation to comparable countries that have a combination of Bismarck and Beveridge model (Vehovec, M., 2016).
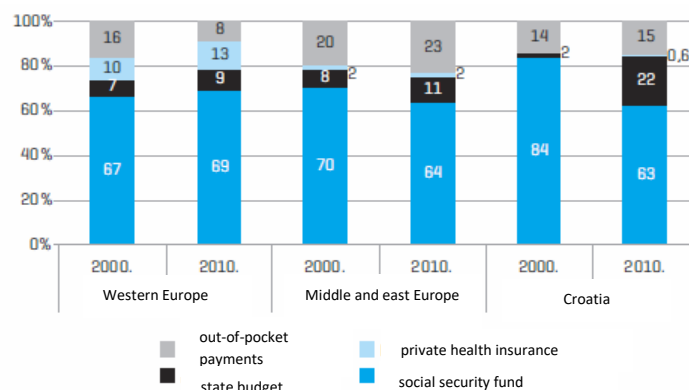
Figure 4: Vehovec, M. Healing from an economic perspective. The Institute of Economics, Zagreb. 2016

The problem in financing health care in the Republic of Croatia is also: inconsistency of prices of certain diagnostic and therapeutic procedures with the distribution of funds from the budget, inappropriate ratio of services provided in primary, secondary and tertiary health care, lack or obsolescence of equipment and materials. When looking at general hospitals there are several sources of funding as follows:
- Monthly payments by the Croatian Health Insurance Institute (HZZO)
- Revenues from expensive drugs
- Revenues due to meeting business indicators
- Income from co-payments and treatment payments by patients.

Insufficient financial resources for health care can be raised in various ways, such as higher employment rate in the Republic of Croatia (higher number of health insurance payers), higher percentage of health care allocations, unified public procurement, functional connection of hospitals, stimulation according to positive business indicators. The question is whether it is possible to optimize revenues and costs in health care while providing quality service to patients? Experiences from around the world show that this is possible with the help of performance indicators.

Daily monitoring of certain indicators enables timely detection of anomalies, action on them and thus optimal definition of business processes. Thus, we indirectly affect the financial result. Performance indicators quickly and accurately show the actual situation of the system functioning, i.e. they indicate trends in business and the achievement of set goals, especially the key ones. Precisely business indicators (Katavić, D., 2018; Korolija-Marinić, D., 2015; Stašević, I., Derk, D. et al., 2009; Uhernik Ivčević, A., Mišić, T., 2019) are the subject research in this paper. What are the business indicators, how do they affect the business, how have they moved over the years, how is it determined whether the business indicators are met or not.

3. RESEARCH

The research is modeled in such a way that in the period from 2015 to 2021, the following performance indicators are observed on the example of one general hospital (a case study was conducted):
1) Number of days of lying down
2) Total number of specialist consultative health care (SCHC) records per healthcare professional
3) General mortality rate
4) Percentage of day hospital treatment
5) Percentage of patients treated with a reserve antibiotic

By applying the data mining method, data were obtained for the first nine months for each year, from 2015 to 2021. Each performance indicator for each month was correlated with the median and with regard to whether it is higher or less than the median, it was determined whether it was met or not (quantitative analysis). For each year, the mean value of each of the performance indicators was calculated, which was later used to determine the fulfillment of the performance indicators in the entire observed period. Why exactly these indicators and how do they affect the financial performance of the hospital? *The number of days* of lying allows an analysis which shows how many patients stay in the hospital per month. In addition, it provides a display of services and medical materials and medications consumed each day the patient lies down. If the patient lies for a smaller number of days, the costs related to him are lower, and on the other hand, more patients are treated in a unit of time, so the income is higher. *The total number of SCHC records per healthcare professional* is an indicator through which the efficiency of a doctor's work is monitored. It allows for a fairer valuation of work and reward accordingly. If there are a larger number of SCHC records, it means that the doctor has performed more specialist consultation procedures, which means a better financial result because each of these procedures is paid for by the HZZO. *The overall mortality rate* is an indicator related to quality assurance. The lower the mortality rate, the better organized the business processes in the hospital. *The percentage of day hospital treatment* is an indicator closely related to the number of days of bed rest. The goal is to treat as many patients as possible in the day hospital so that the number of treatment days is as small as possible. If a larger number of patients are treated in a day hospital, the turnover of patients per unit time is higher, more diagnostic and therapeutic procedures are charged and the financial result is better. *The percentage of patients treated with a reserve antibiotic* is primarily an indicator of the quality of hospital work. If a larger number of patients are treated with a reserve antibiotic, in addition to the health benefits for the patient, savings are made on a medicine, which improves the financial performance of hospitals. The research analyzes how performance indicators move over the years, from January to September. In each year, specific values are compared with the median for a specific year. The median was calculated on the basis of the performance indicators of 33 general hospitals in the Republic of Croatia (source: user portal of the Croatian Health Insurance Institute; *Financial reports.* https://www.cezih.hr/wps/myportal ; 2021).

Given the attitude towards the *median,* it is determined whether the indicator is met or not. The study was conducted in one general hospital. The aim of the research was to show that meeting the performance indicators can affect the financial result of the hospital (in a positive or negative sense, depending on whether the indicator is met or not). The methods used in the research are data mining, quantitative analysis and case study. The results of the research by performance indicators are as follows:

Number of days of lying down

	2015		2016		2017		2018		2019		2020		2021	
1	3,21	2,44	6,08	6,88	7,10	6,88	6,19	6,88	6,09	6,88	6,00	6,88	6,18	6,88
2	3,19	2,44	7,41	6,88	7,30	6,88	6,38	6,88	5,59	6,88	5,80	6,88	6,38	6,88
3	3,26	2,44	5,07	6,88	8,60	6,88	6,49	6,88	5,48	6,88	5,70	6,88	6,60	6,88
4	3,84	2,44	9,74	6,88	7,12	6,88	6,43	6,88	5,76	6,88	5,80	6,88	6,10	6,88
5	3,78	2,44	7,74	6,88	7,20	6,88	6,41	6,88	6,01	6,88	6,20	6,88	6,41	6,88
6	3,51	2,44	7,43	6,88	7,16	6,88	6,66	6,88	6,21	6,88	6,34	6,88	6,22	6,88
7	3,70	2,44	7,11	6,88	7,15	6,88	6,35	6,88	6,33	6,88	6,25	6,88	6,30	6,88
8	3,24	2,44	7,12	6,88	6,68	6,88	6,40	6,88	6,20	6,88	6,30	6,88	6,43	6,88
9	3,53	2,44	6,61	6,88	6,51	6,88	6,82	6,88	6,43	6,88	6,51	6,88	6,61	6,88
mean	3,47	2,44	7,15	6,88	7,20	6,88	6,46	6,88	6,01	6,88	6,10	6,88	6,36	6,88

Table 3: Number of days of lying down. Own research

If we look at the performance indicator Number of days spent, we notice that 2015 differs from the average. The observed indicator is better the fewer the number of days of lying down. This means that hospitals receive additional funding from the Croatian Health Insurance Institute if the number of bed days is less than the median. This is also logical because it encourages the efficiency of treatment, higher "turnover" of patients per unit time, which results in a better financial result. If the number of days of lying down by months is observed, it is noticed that in the summer months (seventh, eighth month) the number of days of lying down is smaller. Over the years, there has been a trend of decreasing the number of days of lying down, although 2021 is an exception.

Total number of SCHC records per healthcare professional

	2015		2016		2017		2018		2019		2020		2021	
1	31,65	30,87	33	30,87	29,37	30,87	33,23	30,87	31,09	30,87	32	30,87	32,09	30,87
2	34,30	30,87	38	30,87	31,93	30,87	31,41	30,87	30,55	30,87	33	30,87	32,7	30,87
3	38,49	30,87	37	30,87	37,74	30,87	35,45	30,87	34,22	30,87	35	30,87	34,67	30,87
4	36,29	30,87	34	30,87	28,68	30,87	31,09	30,87	31	30,87	32,01	30,87	30,7	30,87
5	34,18	30,87	35	30,87	34,13	30,87	32,98	30,87	31,05	30,87	33	30,87	31,5	30,87
6	32,18	30,87	33	30,87	29,36	30,87	27,64	30,87	28,03	30,87	28	30,87	26,98	30,87
7	31,38	30,87	29	30,87	26,53	30,87	28,13	30,87	20,5	30,87	28	30,87	27,77	30,87
8	25,69	30,87	27	30,87	25,95	30,87	23,94	30,87	25,01	30,87	24	30,87	24,7	30,87
9	37,76	30,87	35	30,87	31,15	30,87	31,40	30,87	30,4	30,87	29	30,87	32,9	30,87
mean	33,55	30,87	33,40	30,87	30,54	30,87	30,59	30,87	29,09	30,87	30,45	30,87	30,45	30,87

Table 4: Total number of SCHC records per healthcare professional. Own research

If we look at the indicator of success Number of SCHC cases per doctor, it should be said that the indicator is positive if it is higher than the median. It is noted that the indicator in 2020 and 2021 was below the median, which can be explained by the closure of hospitals and the smaller scope of work due to the COVID-19 pandemic. Generally speaking, in each year, in the summer months (seventh and eighth months) the indicator is not met, which can be explained by vacations.

Table following on the next page

General mortality rate

	2015		2016		2017		2018		2019		2020		2021	
1	47,71	42,73	31,99	42,73	68,11	42,73	39,49	42,73	39,49	42,73	38,49	42,73	37,45	42,73
2	62,21	42,73	27,31	42,73	38,60	42,73	56,80	42,73	56,8	42,73	55,8	42,73	54,76	42,73
3	53,49	42,73	29,82	42,73	46,55	42,73	42,69	42,73	42,69	42,73	41,69	42,73	40,65	42,73
4	35,37	42,73	58,41	42,73	41,46	42,73	44,32	42,73	44,32	42,73	43,32	42,73	42,28	42,73
5	40,11	42,73	41,10	42,73	40,15	42,73	28,36	42,73	28,36	42,73	27,36	42,73	26,32	42,73
6	44,49	42,73	39,81	42,73	43,52	42,73	24,47	42,73	24,47	42,73	23,47	42,73	22,43	42,73
7	58,49	42,73	45,82	42,73	52,47	42,73	28,79	42,73	28,79	42,73	27,79	42,73	26,75	42,73
8	47,83	42,73	56,34	42,73	44,15	42,73	21,93	42,73	21,93	42,73	20,93	42,73	19,89	42,73
9	42,31	42,73	31,65	42,73	40,23	42,73	23,06	42,73	23,06	42,73	22,06	42,73	21,02	42,73
mean	48,00	42,73	40,25	42,73	46,14	42,73	34,43	42,73	34,43	42,73	33,43	42,73	32,39	42,73

Table 5: General mortality rate. Own research

When the indicator General mortality rate is observed, it is concluded that the indicator is met if it is lower than the median. If we observe the trend over the years, we notice a decrease in the overall mortality rate for each observed month. Interestingly, there is a noticeable trend of decreasing overall mortality rates in the years of the 2020 and 2021 pandemics.

Percentage of day hospital treatment

	2015		2016		2017		2018		2019		2020		2021	
1	32,13	29,12	37,01	29,12	45,83	31,97	49,77	31,97	48,73	31,97	47,73	31,97	44,44	31,97
2	35,42	29,12	41,92	29,12	46,31	31,97	47,90	31,97	46,86	31,97	45,86	31,97	42,57	31,97
3	36,49	29,12	46,90	29,12	47,33	31,97	45,71	31,97	44,67	31,97	43,67	31,97	40,38	31,97
4	36,78	29,12	43,99	31,97	47,82	31,97	48,52	31,97	47,48	31,97	46,48	31,97	43,19	31,97
5	34,91	29,12	50,30	31,97	47,44	31,97	49,78	31,97	48,74	31,97	47,74	31,97	44,45	31,97
6	33,98	29,12	47,28	31,97	44,48	31,97	48,44	31,97	47,40	31,97	46,40	31,97	43,11	31,97
7	29,66	29,12	45,56	31,97	43,82	31,97	45,29	31,97	44,25	31,97	43,25	31,97	39,96	31,97
8	28,63	29,12	46,21	31,97	44,54	31,97	46,85	31,97	45,81	31,97	44,81	31,97	41,52	31,97
9	36,55	29,12	49,25	31,97	45,25	31,97	51,42	31,97	50,38	31,97	49,38	31,97	46,09	31,97
mean	33,84	29,12	45,38	31,02	45,87	31,97	48,19	31,97	47,15	31,97	46,15	31,97	42,86	31,97

Table 6: Percentage of day hospital treatment. Own research

The percentage of patients treated in the day hospital is an indicator that is positive if it is higher than the median. This indicator was met during all the observed years and for its fulfillment additional funds are regularly received from the Croatian Health Insurance Institute. Looking at the trend, there has been a steady increase in the number of patients treated in the day hospital, except for 2021. This can be explained by the fact that the day hospital premises have been converted into a COVID ward. This indicator is directly related to the indicator *Number of days of lying down.* The more patients treated in a day hospital, the lower the *number of bedtime* indicators. This relationship is positive, i.e. the *number of treated patients in the day hospital has a* positive effect on the *number of days of bed.*

Percentage of patients treated with a reserve antibiotic

	2015		2016		2017		2018		2019		2020		2021	
1	32,13	9,57	9,07	9,07	10,96	7,91	4,09	7,91	3,49	7,91	2,89	7,91	2,29	7,91
2	35,42	9,57	11,48	11,48	7,95	7,91	5,49	7,91	4,89	7,91	4,29	7,91	3,69	7,91
3	36,49	9,57	7,31	7,31	8,36	7,91	4,53	7,91	3,93	7,91	3,33	7,91	2,73	7,91
4	36,78	9,57	10,34	10,34	7,62	7,91	4,54	7,91	3,94	7,91	3,34	7,91	2,74	7,91
5	34,91	9,57	8,50	8,50	7,68	7,91	3,04	7,91	2,44	7,91	1,84	7,91	1,24	7,91
6	33,98	9,57	9,06	9,06	8,36	7,91	2,90	7,91	2,30	7,91	1,70	7,91	1,10	7,91
7	29,66	9,57	9,36	9,36	5,30	7,91	4,46	7,91	3,86	7,91	3,26	7,91	2,66	7,91
8	28,63	9,57	9,11	9,11	4,31	7,91	3,95	7,91	3,35	7,91	2,75	7,91	2,15	7,91
9	36,55	9,57	8,58	8,58	2,83	7,91	4,12	7,91	3,52	7,91	2,92	7,91	2,32	7,91
mean	33,84	9,57	9,20	9,20	7,04	7,91	4,12	7,91	3,52	7,91	2,92	7,91	2,32	7,91

Table 7: Percentage of patients treated with a reserve antibiotic. Own research

Indicator *the percentage of patients treated with a reserve antibiotic* is positive if it is *less* than the median. Looking at the indicator over the years, it can be seen that the indicator has improved significantly from 2016 onwards. The trend over the years is a significant reduction in the percentage of patients treated with a reserve antibiotic.

If we look at the performance indicators by years, on average in nine months the following results are obtained:

	2015		2016		2017		2018		2019		2020		2021	
Days	3,47	2,44	7,15	6,88	7,20	6,88	6,46	6,88	6,01	6,88	6,10	6,88	6,36	6,88
	33,55	30,87	33,40	30,87	30,54	30,87	30,59	30,87	29,09	30,87	30,45	30,87	30,45	30,87
SKZZ	48,00	42,73	40,25	42,73	46,14	42,73	34,43	42,73	34,43	42,73	33,43	42,73	32,39	42,73
	33,84	29,12	45,38	31,02	45,87	31,97	48,19	31,97	47,15	31,97	46,15	31,97	42,86	31,97
Mortality	33,84	9,57	9,20	9,20	7,04	7,91	4,12	7,91	3,52	7,91	2,92	7,91	2,32	7,91

Table 8: The performance indicators by years, on average in nine months. Own research
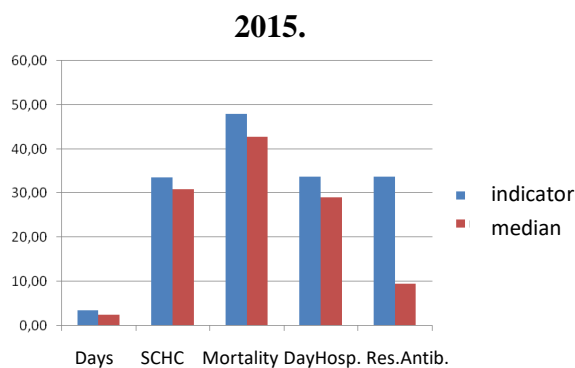
Figure 5: The performance indicators 2015.
(Source: Own research)
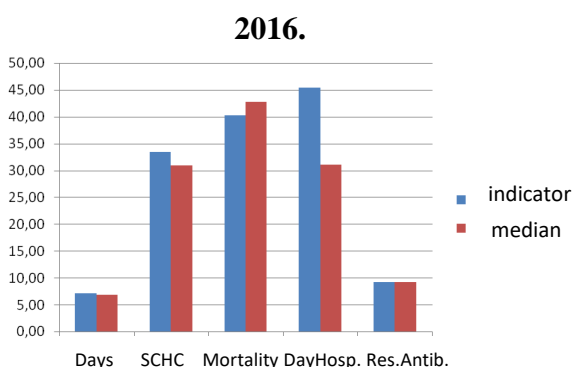
Figure 6: The performance indicators 2016.
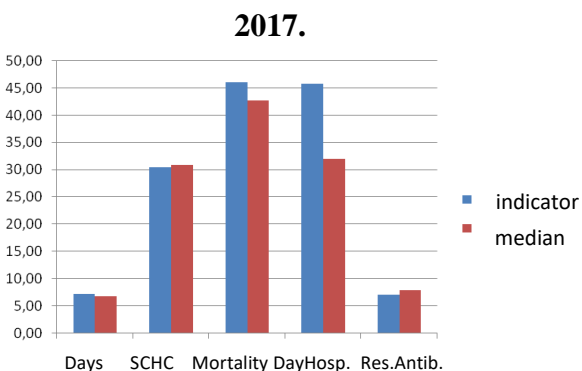
(Source: Own research)

Figure 7: The performance indicators 2017.
(Source: Own research)
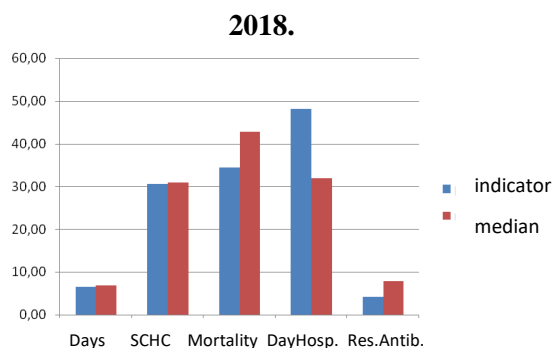
2018.

*Figure 8: The performance indicators 2018.
(Source: Own research)*
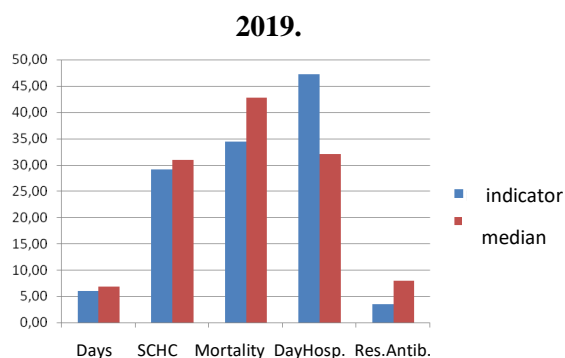
2019.

*Figure 9: The performance indicators 2019.
(Source: Own research)*
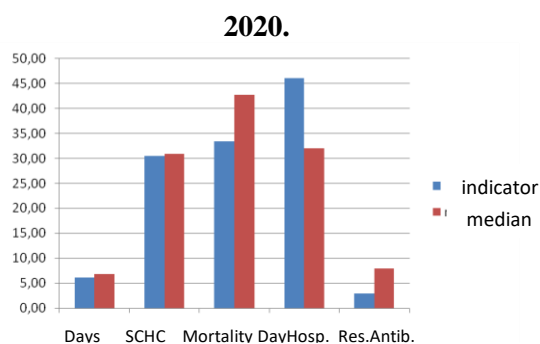
2020.

*Figure 10: The performance indicators 2020.
(Source: Own research)*
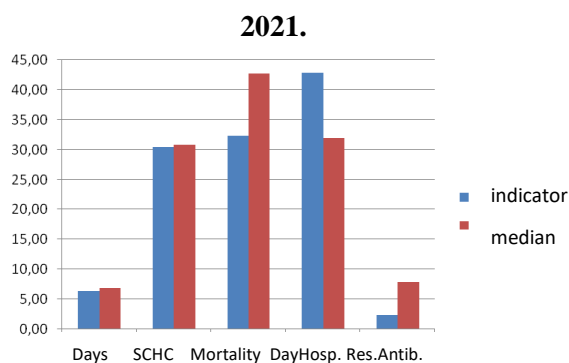
2021.

*Figure 11: The performance indicators 2021.
(Source: Own research)*

If the performance indicators are observed over the years, it can be noticed that the vast majority of indicators are met, i.e. out of a total of 63 observed months; 11 months have worse indicators than the median. This means that in the period from 2015 to 2021, the observed hospital received additional funds from the Croatian Health Insurance Institute in 52 months. Example: a hospital regularly receives *10 units* each month, which means that in the observed period (nine months from 2015 to 2021) it received *630 units.* Let's say for every met performance indicator, the hospital gets 2 units. This means that in the observed period it received 104 additional units.

4. CONCLUSION
We live in a time when the financial operations of the health care system are at stake. Health debts are large and incomes are limited. This fact requires leadership skills especially in the area of finance. Financial discipline on the expenditure side is needed, but it is also necessary to take advantage of every opportunity for additional income. Coordinated public procurement, functional connection of hospitals, greater share of primary health care in diagnostics, better organization of work, education of the population on prevention (healthy life), effective information and communication support to business processes ... Additional revenues can be realized by introducing new services to patients, by fulfilling performance indicators etc. This paper demonstrates one way to increase revenue by meeting performance indicators. In addition to direct financial benefits, the analysis of the fulfillment of performance indicators can identify certain anomalies in the organization and they can be corrected and thus indirectly affect savings or higher revenues. Through the work, the goal has been met, which means that it has been shown that by fulfilling the performance indicators, we increase the financial result of the hospital. By fulfilling the goal, the hypothesis was also confirmed.

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THE IMPACT OF PUBLIC RELATIONS IN EDUCATIONAL INSTITUTIONS

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ABSTRACT

Planning good relations with the public and educational institutions is a significant perquisite for the improvement and mutual establishment of good relations. This process requires a systematic approach and competent peple who will implement the planned activities.It is necessary to identify a target audience and then to plan the activities strategically. These activities would contribute to the development of positive image and reputation of an educational institution (development of corporative identity, production of informative materials, organisation of special events, internal public relations and media relations). In order to gain public confidence, an educational institution needs to conduct a research that would help it meet public expectations. Also, it is necessary to promtly inform the public about the activities and work programmes as well as positive and negative sides of the institution.
Keywords: planning, public relations, educational institutions, communication, media, target audience

1. INTRODUCTION
1.1. History of public relations

Although public relations is often seen as a 20th century innovation, their roots go deep into the past, they are as old as human communication itself. If we look at public relations through one of the first interpretations, as a means of convincing the public with the aim of changing attitudes or actions, it is possible to determine that the use of communication, in order to influence public opinion and human behavior, is as old as civilization. Traces of these relations can be found in ancient peoples - Sumerians, Persians, Egyptians, and especially in ancient Greece and ancient Rome, where the people were influenced by various messages. People are convinced that they accept the authority of government and religion with techniques that are still used today: mutual communication, speeches, art, literature, plays, publicity and other similar means. None of these techniques were called public relations, but their goal was the same as with similar activities today. Greek theorists wrote about the will of the public and its importance, although they did not use the term public opinion. Certain expressions and ideas in the political vocabulary of the ancient Romans, as well as in records from the Middle Ages, are reminiscent of modern concepts of public relations. The ancient Romans used the term vox populi, vox dei (voice of the people, voice of God). Writing a speech in Plato's time meant the same thing as in an agency today: you have to know the category of listeners, you must not humiliate them, you have to tell them information from which they will learn something, which will change their opinion or confirm existing ones, depends on your goal. Aristotle's "Rhetoric" could be considered one of the earliest books on public relations because in it the ancient Greeks defined rhetoric as: "the art of speech", especially persuasion, in which language is used in a way to influence the opinion and actions of listeners. The French Revolution (1789-1799) introduced the term "public opinion", using public relations techniques to shape public opinion. Henry Ford was the first businessman to personally work hard on publicity since 1908 in terms of promoting his own automobile industry. In the period from 1900 to 1910, investigative journalism appeared on one side, and on the other, propaganda of political reform promoted by US Presidents Theodore Roosevelt and Woodrow Wilson, using public relations.

The First World War and the propaganda that followed it deepened the interest in the areas and the manipulation of public opinion. There is also a growing demand for publicists to represent the interests of private companies and government agencies. Organized propaganda is used to spread patriotism, sell war bonds, raise millions of dollars for social housing. It flourished in the 1920s, thanks to the progress made during the First World War, and public relations expanded rapidly. They appear in state institutions, business organizations, churches, social services, workers' and social movements. As the process of urbanization and industrialization progressed during the war, public relations, like many other sections of society, began to develop rapidly. During this period, several public relations agencies were established. The era of world crisis and wars of global proportions had an impact on the improvement of public relations practices. During this period, the dominant figure was Franklin D. Roosevelt, and his advisor, public relations mentor (1912-1936) Louis McHenry Howe, a man who contributed Roosevelt's entry into the White House. Roosevelt's role in the development of public relations at that time was not sufficiently noticed. He was a true master of promotion, who knew how to use the knowledge and skills he had to achieve his set political goals. One of his first presidential moves was an agreement with the media. World War II opened up new possibilities. He showed that public relations can be used to encourage war production, military morale and civilian support, and he developed new techniques and communication channels. During the war, about 75,000 people underwent public relations training. Thanks to the rise of international trade and political conflicts, public relations has spread around the world. The period of expansion of public relations lasted until 1965 and was marked by the following achievements:

- continuous growth of the number of public relations programs in industry, institutions, social protection agencies, government offices and interest organizations;
- a large increase in the number of books, articles and magazines dedicated to public relations practices, their philosophy, problems and techniques;
- a larger number of departments in the field of public relations and students who attend them, a wider breadth of education, public relations experts have more and more academic preparation, and the labor market is increasingly ready to accept young professionals;
- internationalization of public relations and their standards, which led to the creation of the International Public Relations Association in 1955.[1]

Since 1965, the period of global information has been starting, that is. the ever-faster development of information-communication and high technologies, the growing number of communication channels, the transition from a national to a global society characterized by global dependence and global competition. The globalization of business and communications has been accompanied by a parallel increase in public relations activities around the world. Today, the Internet (global world network) has a special influence on the development of public relations, along with radio and television. It developed during the 1990s as a new means of mass communication. Through a global network, thousands of organizations, companies, other media and individuals represent the world, sell their services, produce and present their ideas.

2. PUBLIC RELATIONS STRATEGY IN EDUCATION
2.1. The concept of public relations
There are hundreds of definitions of public relations in the literature today. Some of them read: The Public Relations News Bulletin formulated[2] one of the earliest, widely accepted definitions: "Public relations is a management function that evaluates public attitudes, identifies policies and procedures of individuals or organizations with a public interest, and plans and implements a program of activities to gain public understanding and patience."

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[1] Cutlip, Center&Broom, 2003.page 134
[2] PRNews;v.URL:http://www.prnewsonline.com

According to the British Institute of Public Relations, the term "public relations" represents a deliberate, planned and continuous effort to establish and maintain a common understanding between an organization and its public."[3] The South African Institute of Public Relations defines the term public relations as follows: "Public relations is the management through communication, perceptions and strategic relations between an organization and its internal and external stakeholders." In 1982, the American Public Relations Association, better known by its acronym PRSA, emphasized its definition of public relations: "Public relations helps our complex, diverse society to make decisions and enables it to function more efficiently, in a way that contributes to achieving mutual understanding between the institutions and their environment."[4] James E. Grunig and Todd Hunt (1984) in the book Managing Public Relations define public relations as "the management of communication between an organization and the various publics on which its success or failure depends."[5] Philip Kotler and Gary Armstrong, one of the world's best-known marketing experts, have their own definition: "Public relations involves building good business relationships with different sections of the public by achieving good publicity, building a good corporate image and tackling bad rumors, stories and events." The main means of public relations are: media relations, publicity, corporate communication, lobbying, consulting."[6] In any organization, public relations tasks are strategic actions carried out by a person or the entire organization, including daily activities, as well as long-term planning. A thoroughly and professionally done concept of public relations contributes to achieving results that are useful to the individual, but also to the organization as a whole.

2.2. The importance of public relations for the organization

One aspect of public relations is that they are a skill that creates the image of the organization. Another aspect describes them as organized two-way communication between the company and the public responsible for its success. This type of organized communication is designed to enable understanding and support of organizational goals, policies, and actions. Public relations should be a fundamental element for an organization, acting before the decision-making phase, when policy is defined and opinions are developed on specific issues. This means that public relations is one of the basic responsibilities of management, not some additional option.

2.3. Public relations and organizational image, as an important factor of success

Public relations has finally become valued as an important factor in the success of an organization. First, their advertising aspect began to be appreciated. Today, decision-makers feel that their company's public relations attitude is much more important than mere publicity. Successful organizations take great care of their reputation. Of all the professional managers, the influence of public relations advisors in this area is the greatest. What is most important is that all public relations activities move within an agreed and clearly organized image. If it is not defined, it is necessary to determine it before all other activities. The business image is separate from the individual image although one is reflected on the other. Today, the organizational image much more reflects the image of the management team. Organizational image is shaped under the influence of many factors. It involves the image and the people within the organization, not just those at the top. For example, a survey conducted on behalf of a large European industrial company showed that the employees who had the most influence on consumer attitudes were truck drivers.

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[3] Tomic,2008.page 51
[4] Ibid,2008,page 51
[5] Ibid, page 6
[6] Ibid,page 51

2.4. Modernization of learning methods

New ways of learning, which are characterized by individualization, engagement, use of digital technologies and media, case studies and processes in which students and teachers are creators of learning content, are becoming more and more present. Discussions on the modernization of learning and teaching methods, and the relationship between theoretical and practical knowledge acquired during schooling, are constantly current topics. Today, there is an increasing insistence on the practical use of what has been learned and better preparedness to enter the world of work or science. Accordingly, the new education strategies emphasize the importance of using modern technologies and innovative learning methods to improve the teaching process. Digital learning and the latest trends are enabling fundamental changes in the education system, expanding the educational offer beyond its traditional formats and boundaries. The imperative of modern high school education are innovative and modern learning methods, such as the application of information technology in the teaching process. Educational institutions need to strengthen their capacity (technical infrastructure and human resources) to use innovative learning methods and to continuously improve in this area. It is especially important to strive to harmonize standards with European educational standards, as well as to modernize the teaching process in secondary schools. Educational institutions should provide conditions and respond to the set requirements. It is necessary to train young people and adults, to achieve the required competencies in order to be able to get a job, but also to provide them with the opportunity for further education and acquiring a higher level of education. Here are the key knowledge, skills and competencies that lead to employment:

- intellectual and sensor and motoric abilities;
- social and interpersonal skills and knowledge (communication, teamwork, decision-making process, taking responsibility);
- business and entrepreneurial skills and knowledge (entrepreneurial skills, creativity and innovation);
- multiple technical skills and knowledge and
- awareness of the need to protect the environment and achieve sustainable development.

Gathering and sharing knowledge through the application of innovative learning methods represents the future and must certainly be an integral part of today's strategy for the development of the education system, as well as each educational institution individually. It is necessary that all educational institutions take active learning in the process of modernization of learning. It is necessary to provide additional training and education to the teaching staff, in order to acquire new knowledge that they will apply as a supplement to traditional learning.

2.5. Changes to which educational institutions must adapt

Today's living conditions are characterized by numerous, different and rapid changes in the field of science, technology and technology. "Modern Information Revolution" brings innovations in the development of communication processes and the emergence of communication networks around the world. New media enable people to be quickly informed about all changes in the environment. This phenomenon also affects the development of public relations because different media inform the environment about events at the local and global level. In order to establish good public relations, the persons in charge should monitor the changes in the environment, respect and take into account what significance they have for the organization. Public relations play a significant and active role in promoting the activities of the organization, with the ultimate goal and focus on the quality they offer to service users. it is necessary to have a good knowledge of the interests of the public and individual target groups.

The goal of monitoring changes in the environment is to avoid unpleasant surprises and provide a relatively good and effective defensive position of a particular organization for the events that have occurred. Accordingly, one of the basic tasks responsible for public relations within an organization is to prepare informational and educational programs.

2.6. The impact of social, societal and economic changes on education. Transition, globalization, internationalization and decentralization

As a consequence of social changes and faster transition of society to "knowledge society", demographic changes, and the expressed need for constant updating of existing and acquisition of new knowledge and skills, the concept of lifelong learning has been developed. Lifelong learning implies continuous acquisition of knowledge during the life of an individual. It is realized in the forms of formal, non-formal and informal learning / education. This means that one should always keep in mind the fact that school is not the only place where learning takes place and that it is necessary to support other places or ways of learning. On the other hand, the globalization of the economy means the division of labor at the global level, changes in the structure of occupations and knowledge needs, as well as an increase in competencies. Internationalization is one way to respond to the challenges of globalization. In the world of education, a step towards decentralization is noticeable, not only towards territorial but even more, towards functional decentralization and strengthening of school autonomy. in a decentralized education system, governance is implemented through goals and outcomes, in order to promote equality and reproduce the common value of foundations. This approach requires new forms of school management and administration, as well as the programming of educational work.Based on that, the European Union, in addition to traditional skills, has determined five "new skills" that should be developed in every young person and adult.

Those are:
- natural - scientific literacy;
- foreign languages;
- informatics - communication skills;
- technical culture;
- entrepreneurship and social skills.[7]

2.7. Changes in the labor market

Changing economic policy requires a different structuring and organization of the education system, because the competitiveness of the economy in the global labor market requires a high level of expertise and competence of the workforce that should be promoted and developed by the overall national economic policy. It is necessary to implement measures aimed at increasing the competence of the workforce, creating new jobs and developing entrepreneurship, promoting flexibility in the labor market, ensuring social security and social inclusion of each individual and group. Individuals who have the competencies necessary for successful participation in society and an educated and adaptable workforce, ready to adapt to new technologies in their work, are an adequate response to the challenges of technological development and the global economy. Educational processes and activities should be focused on achieving the goals and outcomes of education, they must be harmonized, well balanced but also diverse to meet the wider social needs, specific needs of the local community, the individual and the labor market.

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[7] European framework of key competences for lifelong learning, page 87

Clearly and unambiguously defined outcomes form the basis for planning, organizing and implementing the educational process and evaluating the achievements and the overall process of education and learning. Outcomes are defined before the start of the education process and are known to all direct and indirect participants in the process.

3. CONCLUDING REMARKS

Public relations in educational institutions have an extremely important and significant role in the development, advancement, building a high reputation and a positive image of any institution that plans them well. It is useful for educational institutions to have a clear picture of how others see them, how they existed and how much public trust there is. Many years of experience and work in the field of education indicate that public relations planning in educational institutions provides new opportunities for affirmation and promotion. By studying the theoretical part, the importance and deep roots of development from the period of ancient civilizations are realized. Public relations have been continuous, and are still represented today in various forms, forms and levels of development. New tasks, requirements and expectations are set before educational institutions. The approach to public relations planning in educational institutions requires thinking, attention, responsibility, competence and consistency. Each phase and activity has its own specificity and significance. Good, clear, realistically set and defined goals will contribute to the successful realization of the planned public relations. The impact of educational institutions on the public will be noticed only if the importance of information is recognized in a timely manner and, accordingly, all segments of public relations are well planned.

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THE IMPACT OF SOCIAL AND GOVERNANCE FACTORS ON GHG EMISSIONS: EVIDENCE FROM THE EUROPEAN ENERGY COMPANIES

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ABSTRACT

Ongoing climate change threatens sustainable development. The main cause of climate change is the greenhouse effect, which is caused by greenhouse gas (GHG) emissions. Companies, as emitters of greenhouse gases, also play an important role in reducing them. This is particularly important for the energy sector, which produces the most emissions worldwide. GHG emissions are part of the environmental, social and governance (ESG) framework. Companies report on ESG to measure their contribution to sustainable business. To determine the relationship and impact of social and governance factors on GHG emissions, this paper presents the results of a study on the relationship between social and governance factors and GHG emissions using a sample of 38 European energy companies. Using a multiple regression analysis and data from the Refinitiv ESG database, a positive correlation is found between social factors and GHG emissions and between governance factors and GHG emissions. More precisely, the study found that workforce and corporate social responsibility (CSR) strategy have a significant impact on GHG emissions reduction. The findings suggest that companies that care about job satisfaction, a healthy and safe workplace, and maintaining diversity and equal opportunities for their workforce have an impact on reducing GHG emissions in their production and operations processes. Companies' practices to communicate sustainability dimensions into daily decision-making processes also have an impact on reducing GHG emissions.
Keywords: sustainability, social factors, governance factors, GHG emissions, energy companies

1. INTRODUCTION

Climate change threatens sustainable development, according to the World Meteorological Organisation (WMO, 2021). This means that climate change and sustainable development are connected and interdependent. The Paris Agreement (UN, 2015a) and the 2030 United Nations Agenda (UN, 2015b) provide a framework for achieving the sustainable development. The 2030 Agenda includes 17 Sustainable Development Goals (SDGs) and 169 targets that are indivisible, and balance the economic, social and environmental dimensions of sustainable development (UN, 2015b). Sustainable Development Goal 13 refers to action to combat climate change. In this sense, disclosure of environmental impacts by companies becomes crucial for managing climate risks.

Furthermore, not only environmental but also social and governance metrics are becoming increasingly important as they have a long-term impact on a company's reputation. Consequently, environmental, social and governance (ESG) disclosure is becoming an indicator of a company's sustainability performance. The energy sector, the largest contributor to greenhouse gas (GHG) emissions, has a duty to mitigate climate change. GHG emissions have increased since 2011, with the annual average for CO_2 emissions at 410 ppm, methane at 1866 ppb and nitrous oxide at 332 ppb in 2019 (IPCC, 2021). These increases are mainly due to human activities. In the United States, for example, the largest source of GHG emissions comes from fossil fuel combustion, primarily for electricity generation, heating and transportation (EPA, 2019). Furthermore, global CO_2 emissions from fossil fuels have increased significantly since 2000, reaching 36.7 billion tonnes in 2019, with the energy sector being the main source of the increase in CO_2 emissions (Statista, 2021a). This is also true for the European Union, where the energy supply sector produced the largest emissions (Statista, 2021b). However, according to the same source, the energy supply sector is also the sector that recorded the largest emission reductions in 2019. This is due to the EU's commitment to reduce GHG emissions by at least 55% by 2030 compared to 1990 levels and to achieve climate neutrality by 2050, as set out in the European Green Deal (EC, 2019). To achieve climate neutrality, all member states must make significant efforts to minimise GHG emissions. This includes a significant reduction in the use of coal, oil and gas as energy sources and phasing out coal- and oil-fired power plants by 2040 (IEA, 2021). This paper examines the relationship between social performance and corporate governance and its impact on GHG emissions using a sample of European energy companies that are among the largest emitters of greenhouse gases. Investigating factors that could contribute to a reduction in GHG emissions is extremely important in the context of achieving sustainable development. The paper is structured as follows. The first section provides a brief overview of the importance of combating climate change and achieving sustainable development, as well as the importance of ESG disclosure. The second section analyses the existing literature on the ESG framework and its individual pillars and their relationships with GHG emissions. The third section describes the methodology, followed by the results, which are presented in the fourth section. The last section contains the conclusions and recommendations for further research.

2. LITERATURE REVIEW
Environmental, social and governance (ESG) factors and disclosure have become increasingly important over the last 30 years. Disclosure of ESG information has also become important for investors, as shown by the number of signatories to the UN Principles for Responsible Investment (UN, 2006). The number of signatories promoting responsible investment which includes environmental, social and governance (ESG) information into investment decisions increased to 4,375 in the last quarter of 2021 (UNEP, 2021). ESG disclosure is associated with numerous benefits. There are studies showing that companies that disclose their ESG performance achieve better financial results (Clark et al., 2015; Velte, 2017; Dalal and Thaker, 2019), and this is also true for energy companies (Zhao et al., 2018; Constantinescua et al., 2020; Monsen and Heggen, 2020). Disclosure of environmental information is particularly positively correlated with corporate financial performance (Aerts et al., 2008; Clarkson et al., 2011). It is not only the relationship between ESG (disclosure) and financial performance that has been studied. There are studies that examined the relationships between individual pillars that constitute ESG, the overall ESG and GHG emissions. Giannarakis et al. (2014) examined the impact of emissions reduction measures on ESG score on a sample of 100 companies listed in the Standard & Poor's 500 Index for the period 2009-2012 and found that emissions reduction initiatives have a positive impact on ESG score and that increased GHG emissions lead to an increase in ESG score.

In addition, they found that increased GHG emissions also lead to better corporate governance and social dislosure, as companies attempt to "cover up" the negative impacts of GHG emissions by focusing on social and governance factors. Monsen and Heggen (2020) came to similar conclusions when they examined ESG performance and its influence on corporate financial performance. They used a sample of 374 companies from 42 countries in the consumer staples industry for the period 2005-2018. They also investigated whether GHG emissions had an impact on ESG score. They found that an increase in GHG emissions has a positive impact on ESG score. The authors see possible reasons for this in the reallocation of resources to other ESG aspects to achieve a better overall rating. It is therefore evident that the environmental pillar has a significant impact on the overall ESG score. Kanashiro (2020) examined environmental governance mechanisms and their relationship with toxic emissions on a sample of companies belonging to the S&P 500 over the period 2006-2011. Her results suggest that environmental compensation and an environmental board reduce total toxic emissions. Grundstrom and Miedel (2021) investigated the relationship between the E (environmental) score and the overall ESG score and CO2 emissions on a sample of all listed companies in the Nordic countries between 2010 and 2020. They performed a regression analysis and the results showed that a high E or ESG score is not associated with lower CO2 emissions. Boffo et al. (2020) assessed the relationship between E and ESG score and CO2 emissions. They also assessed the extent to which high ESG and E scores are consistent with core environmental metrics. Their results showed that higher rated ESG companies emit higher amounts of CO2, with one company not showing this correlation. Further research to reduce bias related to company size found a positive correlation between E score and CO2 emissions for one company and a decreasing relation within two companies. Ronaghi et al. (2020) investigated the relationship between governance and economic performance and its impact on CO2 emissions using data from the Organization of the Petroleum Exporting Countries from 2006 to 2015. Their results showed that good governance has on impact on CO2 emissions reduction. They therefore conclude that it is an important factor for improving environmental quality. Previous studies have focused on individual and overall ESG scores and their relationship with GHG emissions. However, there is an apparent lack of studies in the energy sector, which produces the highest GHG emissions. This paper fills the existing gap and provides insights into the relationship between social and governance factors and GHG emissions on a sample of EU energy companies.

3. METHODOLOGY

Refinitiv provides financial market data related to bonds, funds, interest rates, energy and numerous economic indicators. It also includes the ESG Database, covering more than 70% of global market capitalisation and containing more than 500 different ESG metrics (Refinitiv, 2021). The ESG data is updated weekly, which includes the recalculation of ESG scores. The ESG data includes 10 categorical variables for which the scores were calculated. For each categorical variable, it is indicated how many metrics it contains. The categorical variables are grouped into 3 categories (environmental, social and corporate governance) or 3 factors. For each of these factors there is a score, which is the relative sum of the category weights. The environmental score, the social score and the corporate governance score result in the ESG score (Figure 1).

Figure following on the next page
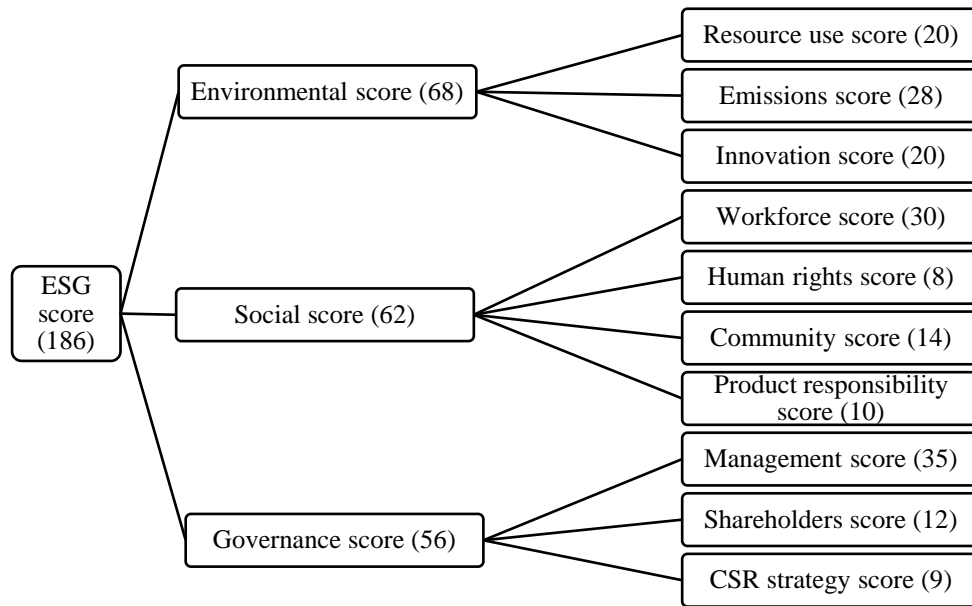
Figure 1: Scores structure
(Source: Authors' according to Refinitiv (2021))

According to Refinitiv (2021), the ESG score measures a company's ESG performance based on verifiable, publicly available data. It consists of 186 metrics. Although social variables contain the most categories (4), environmental metrics account for the largest share (36.56%). The scores of the environmental and social categories vary by industry, unlike the corporate governance score, whose weighting does not vary and is the same for all industries. The latest available data from the Refinitiv ESG database was used for the study (download date 7 October 2021). The scores for each categorical variable (environmental, social, governance) were taken from the ESG database. For this study, only European energy companies for which data on all ESG category variables were available were analysed (N = 38). These are large energy companies covering a significant part of the European energy market. The study investigates whether social and governance factors have an impact on GHG emissions. (Figure 2).

Figure 2: Multiple Regression Analysis Model
(Source: Authors')

The GHG emission variable was adopted from the environmental variables as one of the categorical ESG variables (emission reduction score). All social and governance categorical variables were also included in the analysis.

Each variable is expressed in scores ranging from 0-100. According to Refinitiv, these scores are percentile rank scores based on the formula for rank and percentile score:

$$score = \frac{\text{no. of companies with a worse value} + \frac{\text{no. of companies with the same value included in the current one}}{2}}{\text{no. of companies with a value}}$$

To determine the relationship and impact of social and governance factors on GHG emissions, a multiple regression analysis was applied using the statistical software IBM SPSS 25.0. The following regression equation is proposed:

$$GHG = \alpha + \beta_1 WF + \beta_2 HR + \beta_3 COM + \beta_4 PR + \beta_5 MNG + \beta_6 SH + \beta_7 CSR$$

where

Dependent variable (adopted from Refinitiv (2021)) is:
- *GHG (GHG emissions)* - measures a company's commitment and effectiveness in reducing environmental emissions in its production and operational processes.

Independent variables (adopted from Refinitiv (2021)) are:
- *WF (Workforce)* - measures the effectiveness of a company in terms of job satisfaction, a healthy and safe workplace, maintaining diversity and equal opportunities, and development opportunities for the workforce.
- *HR (Human rights)* - measures the effectiveness of a company in terms of compliance with the fundamental human rights conventions.
- *COM (Community)* - measures the company's commitment to being a good citizen, protecting public health and respecting business ethics.
- *PR (Product responsibility)* - reflects a company's capacity to produce high quality goods and services, while taking into account customer health and safety, integrity and data privacy.
- *MNG (Management)* - measures a company's commitment to and effectiveness in complying with best practice principles of corporate governance.
- *SH (Shareholders)* - measures the effectiveness of a company in terms of equal treatment of shareholders and the use of anti-takeover devices.
- *CSR (CSR strategy)* - reflects a company's practices to communicate that it integrates economic (financial), social and environmental dimensions into its day-to-day decision-making processes.

4. RESULTS
If we look at the headquarters of the energy companies analysed (Figure 3), we see that they are represented in 12 countries. Their presence goes far beyond their headquarters, as they are also present in the markets of other countries. This is especially true for multinational companies that have their branches all over the world.

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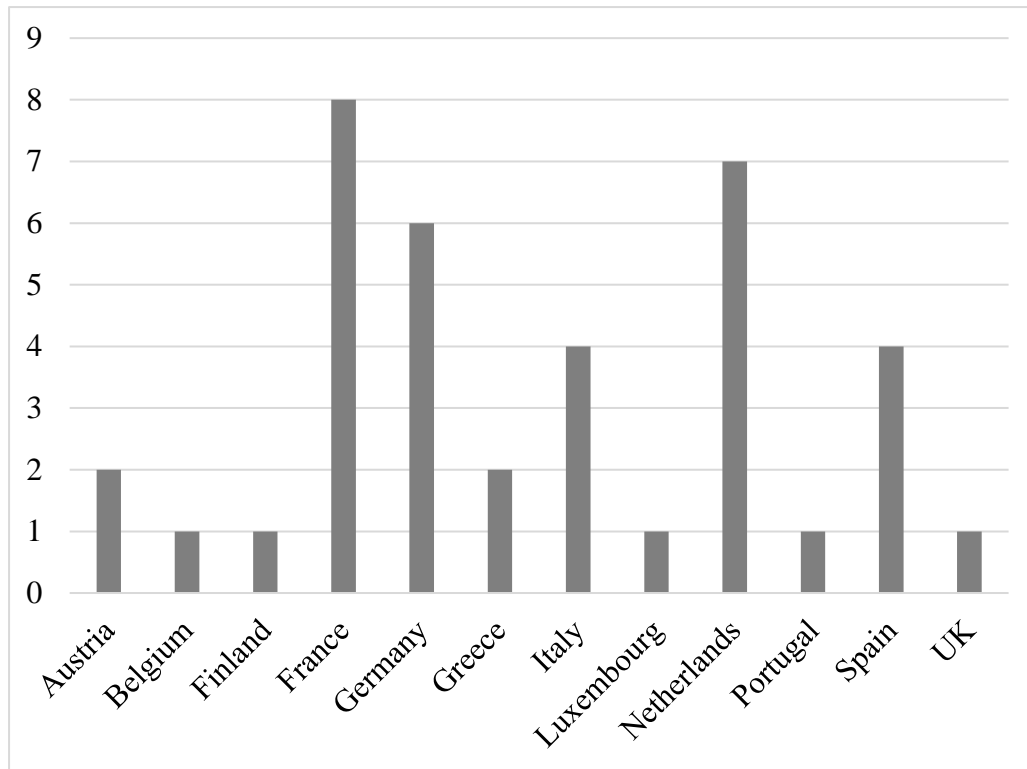
Figure 2: European energy companies by headquaters
(Source: Authors)

Most of the companies analysed are headquartered in France (21.05%), followed by the Netherlands (18.42%) and Germany (15.79%). These companies account for more than half of the European energy companies analysed. Table 1 shows the minimum, maximum, mean and standard deviation for the dependent and all independent variables (N= 38).

	Minimum	Maximum	Mean	SD
GHG	19	100	72.56	24.380
WF	40	100	79.82	19.133
HR	3	96	61.59	28.453
COM	1	100	65.33	29.133
PR	12	100	72.36	21.147
MNG	7	99	54.79	32.737
SH	2	98	54.94	24.495
CSR	5	97	54.71	30.646

Table 1: Descriptive statistics of variables
(Source: Authors)

It is evident that in the European energy companies, the highest score is given to the workforce (79.82) and the lowest score is given to the CSR strategy (54.71). It follows that European energy companies are the most effective in preserving jobs and protecting the workforce, while they pay the least attention to the practise of communicating their sustainable activities. Pearson's correlation matrix for the regression variables is shown in Table 2. GHG emissions have a high positive correlation with workforce (0.71) and CSR strategy (0.71). The correlations between GHG emissions and community (0.53) and between GHG emissions and human rights (0.47) are moderately positive.

	GHG	WS	HR	COM	PR	MNG	SH	CSR
GHG	-	.711*	.471**	.526*	.268	.287**	.125	.707*
WF		-	.629*	.540*	.272	.248	.011	.668*
HR			-	.571*	.265	.486**	.024	.475**
COM				-	.233	.402**	-.147	.531*
PR					-	.159	-.111	.199
MNG						-	.079	.246
SH							-	.183
CSR								-

** $p < .05$; * $p < .01$

Table 2: Correlation coefficience matrix
(Source: Authors)

The positive correlation indicates that companies with higher scores in the areas of workforce, community, human rights, management, and CSR strategy are likely to have higher GHG emissions reductions. In contrast, the correlations between GHG emissions and product responsibility and between GHG emissions and shareholders are not significant ($p > .05$). Table 3 shows the results of the multiple regression analysis.

Variables	β	p-value
WF	.428	.021
HR	-.093	.577
COM	.129	.418
PR	.075	.533
MNG	.070	.601
SH	.080	.513
CSR	.350	.041
R^2		.626
Adj. R^2		.538
$F(df_1, df_2)$		7.163(7, 30)

Table 3: Results of Multiple Regression Analyses
(Source: Authors)

GHG emissions are positively and significantly related to social factor workforce (β=0.428, p=0.021) and governance factor CSR strategy (β=0.350, p=0.041). The results suggest that companies that care about job satisfaction, a healthy and safe workplace, and maintaining diversity and equal opportunities for their workforce have an impact on reducing GHG emissions in their production and operations processes. Companies' practices of incorporating sustainability activities into their daily decision-making processes also have an impact on reducing GHG emissions.

5. CONCLUSION
In recent decades, climate change, which is mainly caused by human activities, and sustainable development have become connected and interdependent. The issue of sustainability and the need to assess corporate sustainability have also come into focus worldwide. In addition, environmental, social and governance (ESG) disclosure has gained importance as an indicator of a company's sustainability performance.

This calls for further examination of ESG performance, particularly in the energy sector, which is the largest contributor to greenhouse gas emissions. Disclosure of ESG information has become increasingly important over the last 30 years and has been the subject of numerous research studies. In these studies, disclosure of ESG information is associated with many benefits, ranging from financial to other benefits, such as environmental benefits. In this sense, the reduction of GHG emissions as part of the environmental pillar of the overall score, is extremely important in the context of achieving sustainable development. Therefore, this paper investigated the relationship between social performance and corporate governance and its impact on GHG emissions on a sample of European energy companies. Using the Refinitv ESG database, a multiple regression analysis was performed to determine the relationship and impact of social and governance factors on GHG emissions. The results showed a positively and significantly relation between GHG emissions and workforce (social factor) and between GHG emissions and CSR strategy (governance factor). This means that European energy companies that want to reduce their GHG emissions should focus their activities on the well-being of their employees and the reporting of their economic, social and environmental impacts, which will subsequently lead to additional efforts to adopt green practises or reduce harmful impacts on the environment. Although the Refinitiv ESG database is extremely useful for ranking companies by ESG score, the shortcoming of this study is that ESG data is only available for 38 European energy companies, with no data available for the remaining energy companies. It is expected that this data will become available over time, so the authors recommend this study to be repeated. It is also recommended that more time series be included in the study to provide insight into companies' progress towards their GHG targets.

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A RESEARCH ON EMIGRATION AS THE FUNDAMENTAL OBSTACLE TO CROATIAN ECONOMIC AND SOCIAL DEVELOPMENT

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ABSTRACT

In the focus of this paper is comprehensive statistical analysis of the public opinion survey on the intention and motives of emigration of young people aged 18 to 40 residing in Croatia and Bosnia and Herzegovina. The emphasis is on the »push« and »pull« emigration factors, dominant directions, contemporary goals of emigration and changes in the demographic structure of emigrants. Two – step stratified random sample was used for hypothesis testing considering the correlations between distributions according to the age of the respondents, their place of residence, level of education, current employment status, satisfaction with the salary of those employed as well as satisfaction with life in domicile state. The paper also intends to shed light on the demographic problem, and in particular the "brain drain" as the fundamental obstacle to Croatian socio-econiomic development. Namely, when highly educated young population emigrates into the more developed EU countries, in accordance with the European free labour market, less developed EU countries have been left with their educational debts. Through their work in more developed EU countries they have unintentionally been contributing to the growing socio-economic development gap. Moreover, after Brexit, the more developed EU countries are in favour of a significant reduction of European cohesion funds which can and should depreciate the growing economic development gap in contemporary EU. All the more so as the Covid-19 pandemic has made that disparity worse many times over.
Keywords: *Public opinion survey, »Push« and »pull« emigration factors, Socio-economic development gap, Statistical analysis*

1. INTRODUCTION

This paper deals with comprehensive statistical analysis of the public opinion survey on the emigration as the fundamental obstacle to Croatian economic and social development. This is because in recent years, mostly young, highly educated people have been emigrating from Croatia, with the whole family. In order for a mobility to be considered migration (Wertheimer-Baletić, 1999) in the narrower sense, it is necessary to meet two conditions: that relocation involves crossing a certain, for migration, significant border of the relevant administrative-territorial unit and second that it is more permanent change of residence place. According to the census 2011 Croatia had 4 284 889 inhabitants.

Moreover, according Eurostat data base for 1 January 2013 year, Croatian population was among the oldest population in the world with the average age over the one in the EU. The oldest average age in the EU had German with 45.3 years, whereas in Croatia it is just 11 month less old (Jurun, Ratković, Ujević 2017). The legislation of the internal EU market includes the free movement not only of capital and goods but also of people and services. The opening of the European labour market to Croats, as a consequence of joining the European Union in July 2013, has led to a massive emigration. This has not been the first emigration wave from Croatia, since around 2.3 million people have emigrated from the present territory of Croatia in the last about a hundred years (Nejašmić, 2014). Nowadays, Croats live in all parts of the world and Croatia is a traditional emigrant country. According to some data, 4 million Croats live outside Croatia. It seems that today (Jurić, 2017) there are two Croatias: one created in the Croatian ethnic area - the Republic of Croatia, and the other, equally large, consisting of Croats abroad - emigrated Croatia. Emigrated Croatia is growing every day, so the demographic problems for the Republic Croatia is unquestionably becoming a key national, security and economic issue. During its history of emigration, Croatia has seven waves of emigration (Akrap, Strmota, 2015) and is currently in the eighth wave that emerged after Croatia's accession to the European Union. Croatia has a very negative population picture that arose from emigration during the century, but mostly from emigration in the 20th century when mass emigrations of Croats took place. This paper is organized as follows: after the introduction, fundamental emigration features of the Croatian population after joining the European Union are dealt with. The topic of the third part is the case study of Croatia. The statistical analysis of public opinion survey results (May 2021) is carried out. The final section contains conclusion remarks on the intention and motives of emigration of young people aged 18 to 40 residing in Croatia and Bosnia and Herzegovina. Consulted literature is listed at the end of the paper.

2. FUNDAMENTAL EMIGRATION FEATURES OF THE CROATIAN POPULATION AFTER JOINING THE EUROPEAN UNION

Emigration from Croatia as a specific and extremely negative factor of the numerical dynamics of the population has occurred already in the second half of the 19th century. After that a couple of strong immigration currents has been happening. The last major emigration wave began during the global economic crisis in 2008, and has intensified with Croatia's joining the European Union in 2013. This has been the most unfavourable emigration wave in Croatian history because it was happening under the circumstances of the accelerated process of population aging, decreased fertility, negative natural change rate, having left some areas totally depopulated (Pokos, 2017). According to the databases of the Croatian Bureau of Statistics, the most popular countries for Croatian migration in the European Union are Germany, Austria and Ireland. According to the same source, the number of emigrants to Sweden has increased eightfold in the last five years. According to the latest databases of the Croatian Bureau of Statistics, the total of 47 352 Croats have moved abroad. This is almost 30% more than during the previous year and six times more than ten years earlier in 2008, the year of the global economic crisis. Moreover, after joining the European Union, the Croatian net migration rate continued its negative trend. While in 2013 it was -4 884, in 2017 it reached the number of -31 802 persons (Jurun, Ratković, Bekavac, 2021).

Picture following on the next page

	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.	2016.	2017.	2018.	2019.	2020.
DRŽAVNI ZAVOD ZA STATISTIKU REPUBLIKE HRVATSKE CROATIAN BUREAU OF STATISTICS	Emigrants	Emigrants	Emigrants	Emigrants	Emigrants	Emigrants	Emigrants	Emigrants	Emigrants	Emigrants	Emigrants	Emigrants	Emigrants
Total	7.488	9.940	9.860	12.699	12.877	15.262	20.858	29.651	36.436	47.352	39.515	40.148	34.046
Europe	6.347	7.228	8.561	10.643	11.858	13.823	18.665	28.019	34.642	45.432	37.755	38.438	32.227
European Union	1.299	982	1.697	2.633	3.877	4.756	12.603	19.752	28.659	39.071	30.715	27.994	17.272
Austria	432	292	410	480	537	770	2.000	3.234	2.164	2.706	2.607	2.916	2.346
Belgium	1	5	3	22	15	70	112	173	175	215	158	170	119
France	10	5	18	104	86	98	118	211	229	245	264	213	139
Italy	33	44	145	310	395	601	896	1.352	923	794	749	940	588
Germany	655	459	775	1.061	1.883	2.193	7.961	12.325	20.432	29.053	21.732	19.290	11.636
Slovenia	122	110	149	237	343	318	325	561	702	717	685	675	602
United Kingdom	4	14	23	51	90	104	210	321	509	639	596	616	419
Other European countries	5.048	6.246	6.864	8.010	7.981	9.067	6.062	8.267	5.983	6.361	7.040	10.444	14.955
Out of which:													
Bosnia and Herzegovina	1.283	1.666	3.549	4.029	3.221	4.087	1.764	2.719	2.922	2.758	3.631	4.415	6.014
North Macedonia	9	11	24	102	69	72	86	129	130	115	127	443	839
Norway	4	5	12	18	46	63	142	148	223	347	267	231	142
Serbia	3.682	4.458	3.044	3.301	3.995	4.004	2.998	3.366	1.675	2.049	1.613	2.842	3.489
Switzerland	18	35	140	153	292	619	831	1.582	697	702	873	1.014	791
Asia	9	4	11	139	153	219	332	405	434	505	319	417	899
Africa	3	1	8	20	30	36	48	65	61	71	39	42	53
North and Central America	36	38	105	222	298	205	393	708	759	757	746	635	354
South America	4	4	5	16	32	20	22	33	18	29	58	52	60
Oceania	27	37	66	86	137	60	128	283	283	260	255	230	87
Unknown	1.062	2.628	1.104	1.573	369	899	1.270	138	239	298	343	334	366

Picture 1: Emigrants from Croatia from 2008. to 2020.
Source: (Author's creation according Croatian Bureau of Statistics)

According to the number of respondents who have emigrated between 2013 and 2018, more than half of them moved out in 2016 and 2017. The most common destinations for their settlement were countries: Germany (29, 6%) followed by Ireland (20,8%), Belgium (10,9%) and Sweden (10,3%). Analysing data on the age structure of emigrants the negative effects of such a large number of Croatian emigrants from their own homeland take on the characteristics of a real demographic disaster. It goes without saying that the emigration of such a large number of young people cases the extremely negative consequences on natural depopulation, demographic trends and an increased share of the older population which changes the entire socio-economic picture of the nation. Almost 20% of emigrants in 2017 are between 0-19 years old, which is slightly more than 1% of the total population of the Republic of Croatia in that age group. As can bee seen at Picture 1, the most popular final destination of Croatian emigrants in 2017 year was Germany in which emigrated 61% of the total number of emigrants from the Croatia that year or 29 053 persons. Germany is followed by Austria and Ireland, both with 6% of the total immigrated Croatian citizens. Namely, 2 706 persons from Croatia found their new home in Austria and 2 676 in Ireland. Figure 4. shows the structure of Croatian citizens who have emigrated in 2017 year according their countries of immigration. Croatian Employers'Association in the mid-2018 published the results of the survey on Croatian emigrants. The survey was carried out from March 15 to May 15 in the same year on a total of 661 respondents using Computer-assisted web interviewing. According to the survey results, men and women are almost equally represented in the emigration. 82% of the respondents moved out with partners and 72% with the whole family. A little less than half of the respondents have a high school education, while even 50% of them have a university degree. It is interesting to note that just little over 40% of the respondents were employed by a fixed-term contract. Total 73.5% of the respondents had been employed before leaving Croatia. However, the wages of 64% of them had been below-average. According to the German Federal Bureau of Statistics since Croatia's joining the European Union about 230 000 Croatian citizens immigrated to Germany, which is over 5% of the total Croatian population.

At the same time, according to the databases of the Croatian Bureau of Statistics the number of immigrated Croatian citizens in Germany in 2016 amounted to 20343 which is the double less than the number of newly Croatian immigrants officially registered in Germany in the same year. Based on data for Germany, Austria and Ireland, as the three countries with the highest percentage of Croatian immigrants, it can be estimated that, on average, there are 70% more emigrated Croatian citizens than official Croatian Bureau of Statistics data show. The question is why so many Croatian emigrants remain unregistered in Croatian official statistics. Two facts give us the answer. The first is that there is an obligation under the law to apply for eviction to the relevant ministry service. However, no one has been punished for the misdemeanour because he did not sign out. Another reason is that the sign out process in Croatia is relatively much more complicated than in other European Union countries. Based on what has been presented, it can be estimated that since Croatia's joining the European Union, more than 8% of the Croatian population have emigrated, mainly to developed European countries. According the results of the survey carried out by Croatian Employers' Association in 2018 among the Croatian emigrants, the reasons for leaving Croatia were: disorganized and poorly governed state, incompetent politicians and political parties without vision, nepotism, corruption and crime, lack of perspectives for the family, lack of change in the country, etc. Moreover, 42% of respondents are not planning to return to live in Croatia, while 20.8% of them plans to return after their retirement. On the other hand the respondents cited as the „pull" factors the following: the country is developing, a better perspective for me and my family, the clear orderliness of the system (legal protection), the job that is offered to me (company and salary), the security of the country and the environment, the recommendation of friends, etc. It can be concluded that the main reason for migration is the failure to meet basic human needs according to Maslow's hierarchy of needs (Jurun, Ratković, Bekavac, 2021).

2.1. "Brain drain" and its consequences

The great problem of Croatian external migration is the departure of young highly educated experts, scientists and intellectuals from the country or so-called „brain drain". According to the Trade unions' databases, only in 2016 as many as 525 doctors left Croatia while in the last five years around 10 000 IT experts did the same. Non-compliance of the Croatian education system and labour market needs and the lack of practical experience lead young people in an extremely unfavourable position at the Croatian labour market. As the consequence, in the last quarter of 2018 in Croatia the unemployment rate in the age group up to 25 years was 22.7% which is at the top of the European countries averages. What it means can be explained in the following quotation: „Highly educated professionals, scientists, intellectuals and artists are the holders of economic and social development of each country, so they are called human capital. Its importance has only been socially recognized in recent times as the most important segment of the intellectual capital conception"(Jambrek, Penić, 2008).Unfortunately, although Croatia has invested and is investing the great efforts and financial resources into the education and professional development of these human resources, it has not been doing anything to retain them in Croatia. Among the "pull" factors for the emigration that forms the so-called "brain drain" dominate professional aspirations and expectations such as finding better conditions for scientific work and creativity, career advancement and various forms of recognition for achievements. Benefits of highly educated professionals, scientists, intellectuals and artists that Croatia should have can be read from the Strategy Europa 2020. Strategy has been launched in 2010 as a strategy for growth, development and creation of the new employment opportunities in the EU. The strategy represents a long-term growth plan based on five main goals that should have been met by 2020. Their purpose is to address the economic, social and environmental weaknesses of Europe.

The EU has therefore made great efforts to create the conditions for a more competitive economy based on knowledge investment, a low-carbon economy, high employment, productivity and social cohesion. The Europe 2020 strategy seeks to foster growth that is smart, sustainable and inclusive (Jurun, Ratković, Bekavac, 2021). The five main objectives of the Europe 2020 Strategy serve as a guide for growth policies at national and EU level. The goals are represented in the areas of employment, innovation, education, poverty, climate and energy (Europska komisija, 2010). At the field of education target requires that prematurely school leaving has to be less than 10%. In addition, at least 40% of people aged 30 to 34 need to complete their higher education. Croatia has fully fulfilled both fundamental goals of the Strategy Europe 2020 in the field of education. So, here we can only briefly list the views of selected theorists on the benefits that Croatia, achieving the goals of the Strategy Europe 2020, should realize. As early as 1966, Nelson and Phelps pointed out a high positive correlation between investment in education and the rate of GDP growth (Nelson, 1966). People with tertiary education should have a better chance of employment (Obadić, Porić, 2008). A higher level of education encourages responsible democratic behaviour of citizens (Čavrak, 2019). The return from education is manifested in the form of salary (Woessmann, 2014). According to OECD research in 2017 on average in all EU countries, wages increased by 7.4% with an additional year of education. Education influences better social care, more active participation in social life, greater life satisfaction of the individual, creation of national identity and integration, and greater criticism of politics (Belfield, 2008). Unfortunately, none of the previously mentioned positives has happened in Croatia (Pokos, 2017).

3. PUBLIC OPINION SURVEY ON THE INTENTION AND MOTIVES OF EMIGRATION OF YOUNG PEOPLE AGED 18 TO 40 RESIDING IN CROATIA AND BOSNIA AND HERZEGOVINA

Data collection for this poll lasted from March to May 2021 through an online survey using Facebook student groups, the group "Let's go to the world - Germany", the group "Survey - share your survey" and through personal connections and acquaintances. The survey has several segments. After collection of sociodemographic and socioeconomic data (some are presented in Table 1 and Table 2), the attitudes of respondents were examined and the most important of them are presented: in Table 3 about the reasons they think are the basis of today's problems in Croatia / BiH, in Table 4 the motives that would lead them to emigrate, in Table 5 the reasons that would keep them in Croatia / BiH and in Table 6 changes that would prevent going abroad.

Current employment status		
Working status	**Frequency**	**Percent**
Unemployed, actively looking for employment	42	11,4
Unemployed, not looking for employment	14	3,8
Employed	159	43,2
Temporarily employed students	49	13,3
Student	104	28,3
Total	368	100,0

Table 1: Distribution of respondents according to current employment status
(Source: Author's creation using the statistical program SPSS)

Table following on the next page

Country of destination		
Country	**Frequency**	**Percent**
Germany	101	27,4
Austria	29	7,9
Switzerland	41	11,1
England	61	16,6
Ireland	16	4,3
USA	32	8,7
Other countries	88	23,9
Total	368	100,0

Table 2: Distribution of respondents according to the country of destination to which they would like to emigrate
(Source: Author's creation using the statistical program SPSS)

	Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
Inefficient judiciary	0,8%	4,3%	12,2%	36,1%	46,5%
Communist legacy in peoples heads	5,7%	9%	28%	30,4%	26,9%
Banking greed	4,3%	9,8%	26,1%	33,2%	26,6%
Criminal in privatization and conversion	1,4%	3%	10,6%	33,4%	51,6%
The laziness of the citizens themselves	4,1%	17,4%	20,7%	32,6%	25,3%
A poorly organized state	2,2%	1,9%	8,2%	29,3%	58,4%
Incompetent entrepreneurial elite	4,6%	10,3%	19,6%	31,8%	33,7%
Incompetent state leadership	1,9%	5,2%	11,1%	24,5%	57,3%
War and the consequrnces of war	10,3%	14,1%	21,7%	32,9%	20,9%

Table 3: Reasons that caused today's problems in Croatia and Bosnia and Herzegovina
(Source: Author's creation using the statistical program SPSS)

Table 2 reveals the stable greatest interest of emigrants for Germany, immediately followed by England and Switzerland (instead of Ireland and Austria in 2017).

Table following on the next page

	Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
Debt/credit	16,3%	17,4%	18,5%	31,3%	16,6%
Individual problems	23,6%	22%	22,3%	22,6%	9,5%
A general feeling of pessimism, hopelessness and insecurity	10,6%	13,9%	16,6%	36,4%	22,6%
The belief that it will be better for children somewhere abroad	10,1%	12%	16%	29,1%	32,9%
Immorality of political elites	4,3%	10,9%	19%	32,6%	33,2%
Legal insecurity	1,4%	8,2%	14,7%	33,2%	42,7%
Impossibility to realize own trade	6,5%	14,7%	26,1%	30,4%	22,3%
Poor working conditions	3,5%	4,6%	14,7%	33,4%	43,8%
Inability to obtain permanent employment or advancement	3,5%	5,4%	10,9%	38,3%	41,8%
Low wages	1,9%	5,2%	9%	35,3%	48,6%
Unemployment	4,6%	7,1%	9,5%	30,7%	48,1%
Reuniting with a family member already living abroad	17,1%	12,5%	20,4%	28,8%	21,2%

*Table 4: Motives that would lead to emigration from Croatia / Bosnia and Herzegovina
(Source: Author's creation using the statistical program SPSS)*

	Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
Family and friends	2,7%	6,3%	6,3%	35,3%	49,5%
Satisfaction with current life in Croatia/Bosnia and Herzegovina	11,1%	13,9%	17,4%	33,7%	23,9%
Settled property status	8,2%	9,8%	13,6%	33,2%	35,3%
Current job	14,9%	14,7%	20,4%	27,2%	22,3%
Educational system	14,9%	19,6%	23,6%	27,2%	14,7%
Fear of change(new language, different mentality etc.)	24,7%	23,1%	16,6%	22,8%	12,8%
Patriotism	23,4%	20,7%	31,3%	17,1%	7,6%
Belief that it will be better	16,6%	19,3%	18,8%	29,6%	15,8%

*Table 5: Reasons for staying in Croatia / Bosnia and Herzegovina
(Source: Author's creation using the statistical program SPSS)*

As can be seen in the Tables 3, 4 5, and 6, 406 respondents used the Likert rating scale.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Change of awareness and mentality of citizens	4,6%	9,8%	16,8%	39,4%	29,3%
Increase of security and stability	3%	6,3%	11,7%	42,9%	36,1%
Everything needs to change	4,3%	12,5%	16,3%	26,9%	39,9%
Greater concern for young people	3,5%	3,8%	9%	43,5%	40,2%
Reducing corruption and crime in all spheres of government	2,7%	1,9%	7,6%	28,3%	59,5%
Implementation of reforms in health, education and judiciary	2,4%	2,7%	8,2%	32,1%	54,6%
Change of government and governing political structures at all levels	3,8%	4,6%	11,4%	26,4%	53,8%
Better economic situation	2,7%	2,2%	7,6%	26,9%	60,9%

*Table 6: Changes that would prevent the departure from Croatia / Bosnia and Herzegovina
(Source: Author's creation using the statistical program SPSS)*

4. CONCLUSION REMARKS

This paper deals with the public opinion survey on the intention and motives of emigration of young people aged 18 to 40 residing in Croatia and Bosnia and Herzegovina. It was conducted in May 2021, with 406 respondents. In their opinion main emigration "push" factors are unemployment, low wages, inability of permanent employment or advancement, debts, legal insecurity, immorality of political elites and a general feeling of pessimism and hopelessness.They also suggest changes that would prevent their departure from their native country: better economic situation, reforms in health, education and judiciary, reducing of corruption amd crime in all government spheres, change of government and political structures at all levels, grater concern for young people and changes of values and mentality of citizens. Namely, Croatia has fully fulfilled both fundamental goals of the Strategy Europe 2020 in the field of education without any benefit that should realize by achieving this goals. Moreover, the main Croatian demographic problem and fundamental obstacle to Croatian economic and social development is „brain drain". Namely, when highly educated young population emigrates into the more developed EU countries, in accordance with the European free labour market, less developed EU countries have been left with their educational debts. Through their work in more developed EU countries they have unintentionally been contributing to the growing socio-economic development gap. Moreover, after Brexit, the more developed EU countries are in favour of a significant reduction of European cohesion funds which can and should depreciate the growing economic development gap in contemporary EU. All the more so as the Covid-19 pandemic has made that disparity worse many times over.

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ARTIFICIAL NEURAL NETWORK ANALYSIS OF DOMESTIC TOURISM IN CROATIA

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ABSTRACT
The purpose of this paper is to investigate which variables have an impact on the arrivals and overnight stays of domestic tourists. The research question is how to effectively model time series that exhibit seasonal patterns. The number of tourist arrivals and overnight stays of domestic tourists from January 2005 to March 2020 is used to model an artificial neural network. A dataset with the following independent variables was attempted as model input: Consumer Price Index (previous month=100), Average Monthly Net Salary at Nominal Prices, Consumer Confidence Index, Consumer Sentiment Index and Consumer Expectation Index. Data were seasonally adjusted using the X-12 ARIMA seasonal adjustment procedure. The best-fitting model is the one that achieved a mean absolute percentage error of 5.32%, which represents a high forecasting accuracy that is essential for further activities in the tourism sector and important for all those involved in the tourism process.
Keywords: *domestic tourists, artificial neural network, forecasting*

1. INTRODUCTION
In Republic of Croatia domestic tourists generated 1.5 million arrivals and 5.4 million overnight stays, representing a 34.2% decrease in arrivals and a 23.7% decrease in overnight stays compared to 2019. In comparison to domestic, foreign tourists generated 5.5 million arrivals and 35.4 million overnight stays, 68.0% fewer tourist arrivals and 58.0% fewer overnight stays than in 2019 (Croatian Bureau of Statistics, 2021). Given the higher proportion of foreign tourists' arrivals and overnight stays, the focus of most discussions is on the analysis of international tourism, but these figures about domestic tourism point to the need for an analysis of tourism in the domestic context. The aim of this paper is to provide empirical evidence for the effectiveness of an artificial neural network in modelling and forecasting domestic tourism in the Republic of Croatia and to find answers to the main questions:
- Which variables from the selected set have been found to be key factors influencing domestic tourist arrivals and overnight stays?
- Are artificial neural networks able to model the original data set of observed variables with the seasonal component and produce an accurate forecast?
- Is pre-processing of the data useful in neural network modelling to produce accurate forecasts?

To address these and other related research questions, several artificial neural network models were created for the purpose of the research, with a certain number of networks using original data and some using seasonally adjusted data. The results of the research are presented below.

2. LITERATURE REVIEW
The analysis conducted was preceded by the desk research, and the most important literature sources on the research topic are presented below. Based on Wang`s research (2010) the authors concluded that the most important factor influencing the growth of Chinese domestic tourism is its own growth inertia in the short run, income in the medium to long run, and transportation in the long run.

Holiday policy is not the main factor influencing the growth of domestic tourism arrivals. When it comes to modelling and forecasting tourism demand, previous research has also shown that most of the research deals with international tourism (Song, Qiu, & Park, 2019). Yap and Allen (Allen, Yap, & Shareef, 2009) investigated leading factors influencing domestic tourism in Australia using a panel three-stage least squares model . Their main conclusions are that the consumer sentiment index has a significant impact on VFR, that the business confidence index has no impact on the demand for business tourism, that an increase in household debt may induce more Australians to travel domestically, suggesting that Australians may consider taking on more debt if their confidence in spending increases, and that working hours have a statistically significant impact on holiday tourism data. There is another study on modelling Australian domestic tourism (Athanasopoulos & Hyndman, 2008). Three approaches were used: Regression analysis, exponential smoothing via innovation state space models and innovation state space models with exogenous variables. All three statistical models have been shown to exceed the forecasts published by the TFC's published forecasts of short-term demand for Australian domestic Australian domestic tourism. The long-term forecasts produced by the models suggest that the TFC's long-term forecasts may be optimistic. Author Baldigara (2018) analysed the monthly number of domestic tourist arrivals (2005-2017) using different time series extrapolative models. All presented models showed high forecasting performance.

3. DATA AND METHODOLOGY

The following variables were used in the study (source in parentheses):
- As dependent variables:
    - Domestic tourist arrivals (Croatian Bureau of Statistics)
    - Domestic tourist nights (Croatian Bureau of Statistics)

- As independent variables:
    - Consumer price index – CPI, previous month=100 (The Croatian National Bank)
    - Average monthly net salary, nominal prices (The Croatian National Bank)
    - Consumer confidence index – CCI (The Croatian National Bank)
    - Consumer sentiment index – CSI (The Croatian National Bank)
    - Consumer expectations index – CEI (The Croatian National Bank)

Data were collected on a monthly basis, for the period from January 2005 to March 2020 (183 observations in total). Monthly data were used for the analysis, as they show the movement of the analysed phenomenon most realistically compared to annual data. The lagged independent variables denoting the previous months' data were used as explanatory variables. The Croatian Bureau of Statistics (Croatian Bureau of Statistics, 2021) defines a domestic tourist as a person with permanent residence in the Republic of Croatia who spends at least one night in a hotel or other accommodation establishment outside his/her permanent residence. Tourist arrivals are the number of persons (tourists) who have arrived at an accommodation establishment and registered their stay there. If tourists change the tourist accommodation establishment where they stay, they are re-registered, which leads to ambiguities in the data. The statistics therefore record the number of tourist arrivals and not the number of tourists, whereas overnight stays of tourists refer to each registered overnight stay of a person (a tourist) in an accommodation establishment. In accordance to definition of The Croatian National Bank the average monthly net salary includes the income of an employed person for work performed during regular working hours, as well as annual leave, paid holidays, statutory holidays and days off, sick leave of up to 42 days, absence for professional training, during dismissal and termination of employment without fault, and net remuneration based on compensation, allowances and rewards in amounts subject to contributions, taxes and levies.

Three indexes used in this research (CCI, CSI, CEI) are calculated from the responses to the questions from the Consumer Confidence Survey. Their value ranges [-100, 100]. Higher index values than the values recorded over the previous period point to an increase in expectations (optimism) as regards the specific segment covered by the particular question. The analysed data are presented in the figures below.

| a) original data | b) seasonally adjusted data |
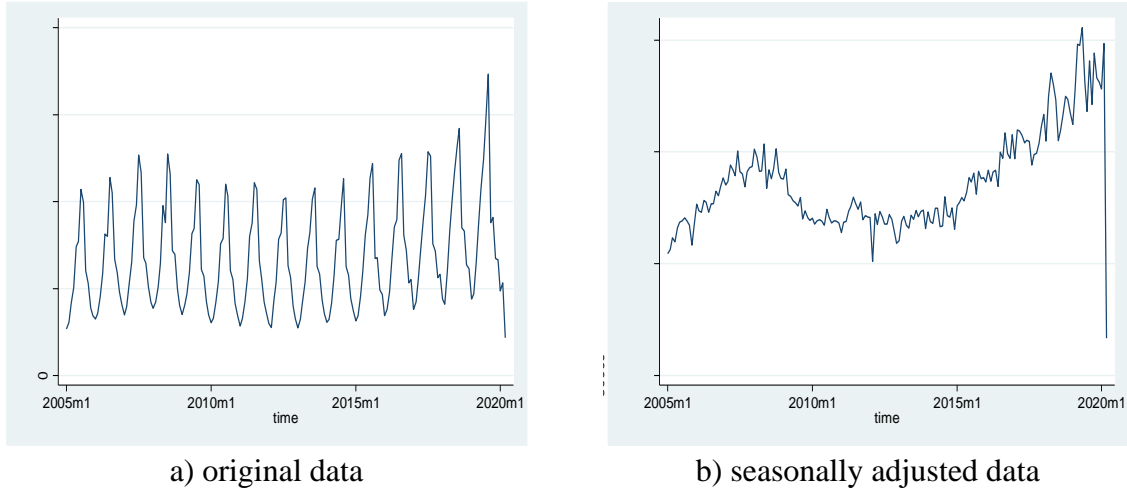
Figure 1: Domestic tourist arrivals
(Source: Croatian Bureau of Statistics)

| a) original data | b) seasonally adjusted data |
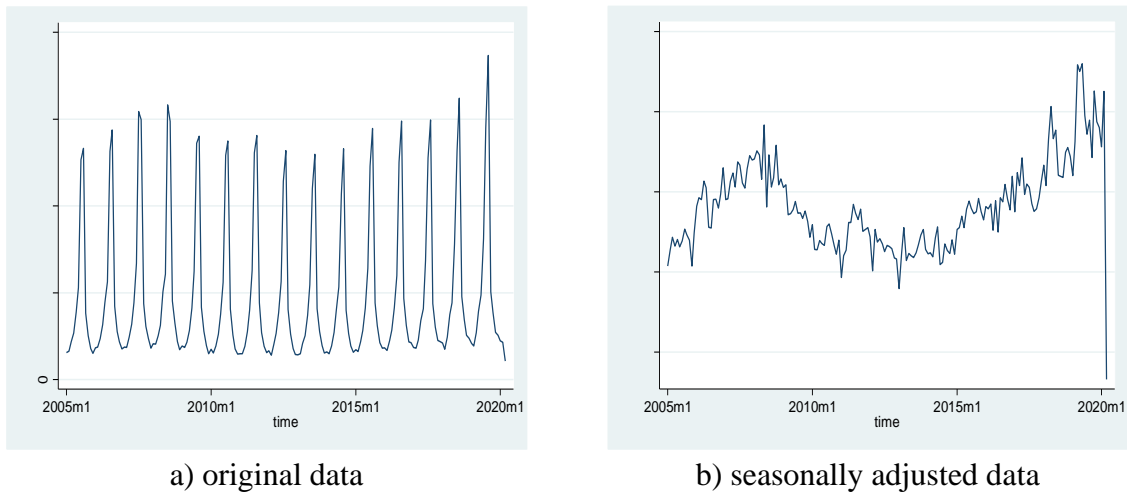
Figure 2: Domestic tourist overnight stays
(Source: Croatian Bureau of Statistics)

Fig. 1 (a) and Fig. 2. (a) reveal that there is seasonal component in original datasets of tourist arrivals and overnight stays. For that reason, this time series were seasonally adjusted by the Arima X-12, widely used software for seasonal adjustments.

Figure following on the next page
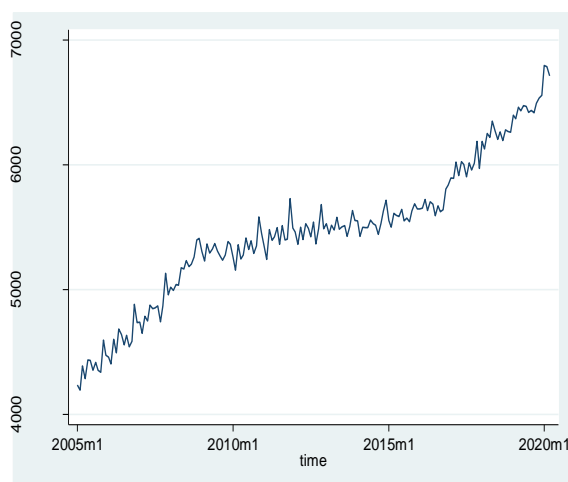
*Figure 3: Average monthly net salary
(Source: The Croatian National Bank)*
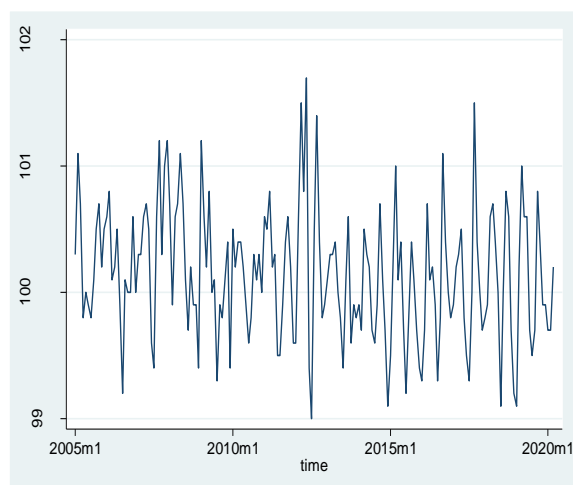
*Figure 4: Consumer price index
(Source: The Croatian National Bank)*
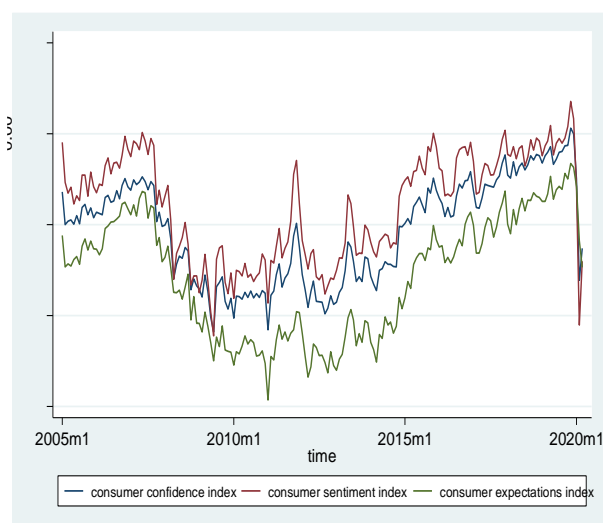
*Figure 5: Consumer confidence index, consumer sentiment index and consumer excpectations
index
(Source: The Croatian National Bank)*

This paper aims to provide an empirical evidence on the variables affecting domestic tourist to travel in Croatia, using artificial neural networks models. The widespread use of artificial neural networks is based on their information processing capabilities, which are mainly related to non-linearity, fault tolerance and learning and generalisation abilities. For the purpose of this research a multilayer perceptron (MLP) network has been used. This is a class of feed forward artificial neural network which usually has three layers; input layer, one or more hidden layer(s) and an output layer. Each of them contains nodes, which are connected to sequential layer. Each node of network is a processing unit with a weight and sum-function. (Constantino, Fernandes, & Teixeira, 2016). Generally, the network model can be specified as:

$$Y_t = f(X_t, \alpha, \beta) + \varepsilon_t = \alpha_0 + \sum_{j=1}^{n} \alpha_j F(\sum_{i=1}^{12} \beta_{ij} x_{ij} + \beta_{0j}) + \varepsilon_t \qquad (1)$$

where Y_t is dependent variable, X is a vector of indepenedent variables, n is a number of units in middle layer, α_t a vector of weights from the middle to output layer unit, β_t a matrix of coefficients from the input to middle-layer units at time t, and t is some period time.

The methodology for developing an artificial neural network usually consists of data pre-processing, defining the network architecture, the learning process and testing the network (Baldigara, 2020). In this research, all data were normalised in the pre-processing phase by subtracting the minimum and dividing by the range, [(x-min)/(max-min)], so all normalized values were in [0,1] interval. The normalization is needed given that in some machine learning algorithms objective functions will not work adequately without normalization. Due to the small data set, the method also uses batch training to update the weights until one of the stopping rules is satisfied. An architecture (the number of layers, units in each layer and the connections among units) is designed as follows: The standard three-layer multi-layer perceptron feedback artificial neural network model is used. One output node is employed. The activation function for hidden layer nodes is hyperbolic tangent function:

$$\gamma(x) = tanc(x) = \frac{e^x - e^{-x}}{e^x - e^{-x}} \qquad (2)$$

The hyperbolic tangent function is a zero-centred function and its range is between -1 and 1. Since this function is zero-centred, it is easier to model inputs with strongly negative, neutral and strongly positive values. The activation function for hidden layer nodes is sigmoid function:

$$f(x) = \frac{1}{1 + e^{-x}} \qquad (3)$$

The sigmoid function takes real-valued arguments and transforms them to the range 0 to 1. The main drawbacks are sharp attenuating gradients during backpropagation, gradient saturation, slow convergence and non-zero centred output, which causes gradient updates to propagate in different directions. Data were divided in three samples; train, test and fold sample. The training sample comprises the data sets used to train the neural network; 70% of the cases in the data set the training sample to obtain a model. The test sample is an independent set of data sets used to track errors during training to prevent overtraining. This sample consists of 20% of the cases. The holdout sample is another independent set of data sets used to evaluate the final neural network. This sample consists of 10 % of sample. In terms of accuracy, this sample gives an "honest" assessment of the predictive ability of the model, as the holdout cases were not used to build the model.

As a measure of modelling accuracy mean absolute percentage error – MAPE, has been used. Computing formula is as follows:

$$MAPE = \frac{1}{N}\sum_{t}^{n}\frac{|(A_t - F_t)|}{A_t}\cdot 100 \tag{4}$$

Where A_t is the actual value, F_t is the forecasted value, N is the number of observation and t is some period time (Baggio and Klobas, 2011, Mamula, 2015)

In the data preparation and analysis SPSS software has been used.

4. RESULTS AND DISCUSSION

For this research, a common artificial neural network architecture is used, which can be described as: Continuous-valued input layer containing five nodes (processing units) corresponding to the number of input variables, one hidden layer to represent nonlinearities in data set and one output node, which represents the dependent variable. Bias node has been included also. This is a node whose value is set to 1 without regard for the data in a given pattern. It is analogous to the intercept in a regression model, and serves the same function. As already said, the activation function for hidden layer nodes is hyperbolic tangent function and activation function for hidden layer nodes is sigmoid function. The procedure yielded ten models for each dependent variable, and one best fitting model was selected for each variable (the one with the lowest MAPE). The following figure shows the neural network diagram for each dependent variable whose MAPE error was the smallest.
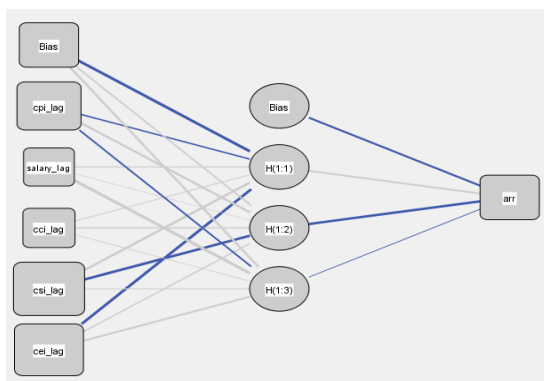
a) domestic tourist arrivals – original data diagram
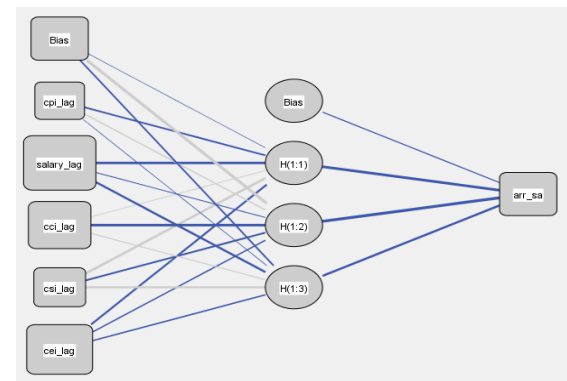
b) domestic tourist arrivals – seasonally adjusted data diagram
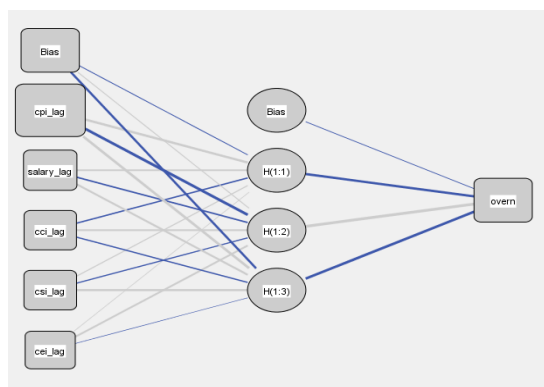
a) domestic overnights – original data diagram
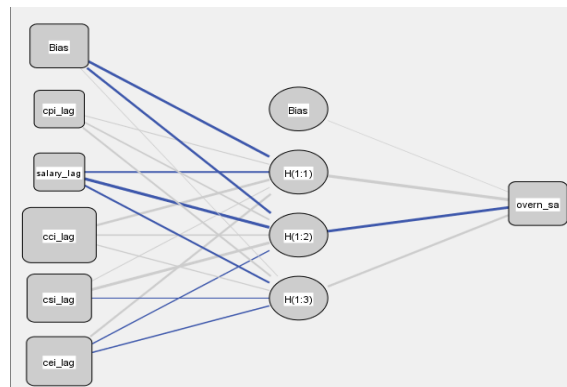
b) domestic overnights – seasonally adjusted data diagram

Figure 6: Artificial neural network diagrams
(Source: Author)

Pre-processed data (including seasonally adjusted time series) have been converted from neural network back to their original scales. The total performance, as well as training, validation and folding sample is evaluated by Mean Absolute Percentage Error.

DATA TYPE	MAPE			MAPE
	TRAINING	VALIDATION	FOLD	
Arrivals	39,12	37,37	50,71	39,84
Arrivals (seasonally adjusted)	4,64	4,33	12,63	5,32
Overnights	45,21	43,31	48,02	46,10
Overnights (seasonally adjusted)	4,56	5,22	12,40	5,43

Table 1: Forecasting errors
(Source: Author)

The diagrams (Fig. 6.) themselves show that connections showed by the weighting factors are more pronounced in neural networks where output is a dependent variable that is seasonally adjusted. Independent variable importance tables for each neural network model are presented below.

	Importance	Normalized Importance
cpi_lag	.237	70.0%
salary_lag	.047	14.0%
cci_lag	.068	20.1%
csi_lag	.339	100.0%
cei_lag	.309	91.2%

a) domestic tourist arrivals – original data network

	Importance	Normalized Importance
cpi_lag	.081	24.5%
salary_lag	.331	100.0%
cci_lag	.223	67.4%
csi_lag	.105	31.6%
cei_lag	.260	78.7%

b) domestic tourist arrivals – seasonally adjusted data network

	Importance	Normalized Importance
cpi_lag	.513	100.0%
salary_lag	.151	29.4%
cci_lag	.128	24.9%
csi_lag	.132	25.8%
cei_lag	.077	15.0%

a) domestic overnights – original data network

	Importance	Normalized Importance
cpi_lag	.079	23.0%
salary_lag	.087	25.1%
cci_lag	.345	100.0%
csi_lag	.239	69.2%
cei_lag	.251	72.7%

b) domestic overnights – seasonally adjusted data network

Table 2: Independent variable importance - tables
(Source: Author)

Which variables play a key role in a particular network can also be seen in the following diagram.

Diagram following on the next page

a) domestic tourist arrivals – original data network

b) domestic tourist arrivals – seasonally adjusted data network

a) domestic overnights – original data network

b) domestic overnights – seasonally adjusted data network
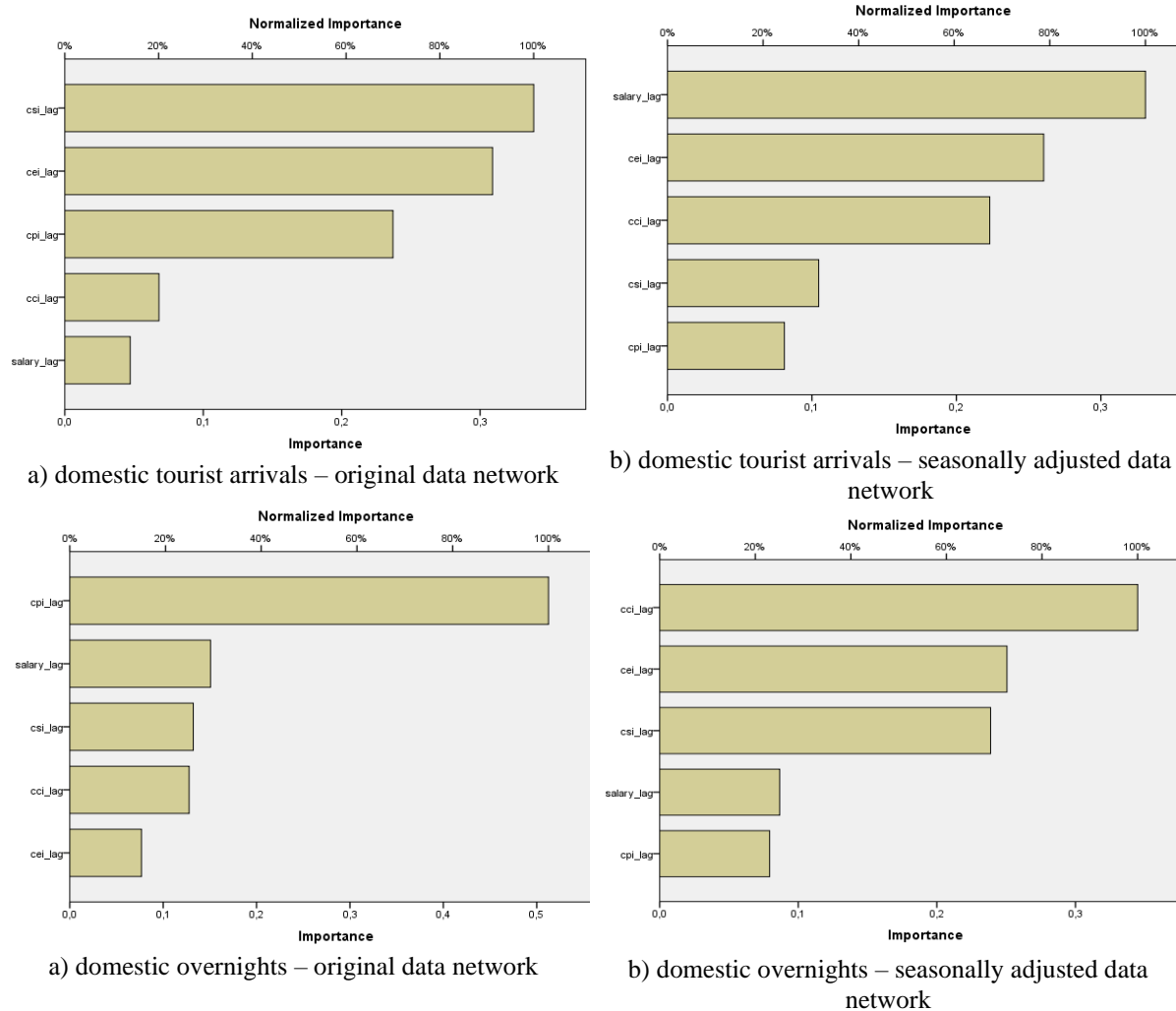
Diagram 1: Independent variable importance - diagrams
(Source: Author)

Given the level of error of MAPE, which indicates high accuracy of the models estimated based on seasonally adjusted data, the networks for seasonally adjusted data are analysed below. The artificial neural network for seasonally adjusted data shows that the most significant variables for the seasonally adjusted domestic tourist arrivals are the average monthly net salary, lagged variable (100%), the consumer expectations index, lagged variable (78.1%) and the consumer confidence index, lagged variable (67.4%). For seasonally adjusted tourist nights, the consumer confidence index, lagged variable (100%), the consumer expectations index, lagged variable (69.2%) and the consumer sentiment index, lagged variable (72.7%) are highly significant. The study shows that in both cases the consumer price index (lagged variable) does not have a large impact on the dependent variables. Considering the methodology used to calculate the indices, as well as the general social situation currently prevailing due to the Covid 19 pandemic, it is expected that these variables could continue to be an important factor in the decision to engage in tourism activities by domestic tourists in general.

5. CONCLUSIONS
Given the importance of domestic tourism, as highlighted by the UNWTO (2020), there is no question of the need to pay attention and consideration to domestic tourism demand in addition to international tourism demand. This study is a contribution in this sense, and as such it has yielded main conclusions.

Although artificial neural networks are capable of learning and therefore should be able to generalise the behavioural pattern of time series that have a seasonal component, this research shows this is not the case; artificial neural networks are not able to model seasonality directly. The model based on the seasonally adjusted number of arrivals and overnight stays of domestic tourists proved to have better accuracy. In this sense, the conclusion is that domestic tourism is influenced by average net salary, consumer confidence index and consumer sentiment index. Of course, the results of this research are also limited by certain facts. First of all, it is a smaller number of independent variables included as input to the model. Also, a phenomenon with a strong seasonal component was analysed. In this sense, it is recommended that in future research to include a larger number of variables in the model and to apply some of novel approaches such as long-term memory (LSTM) networks that can incorporate multivariate time series data.

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YOUTH UNEMPLOYMENT AND PROVIDING CONDITIONS FOR EMPLOYMENT AND ENTREPRENEURSHIP IN BULGARIA

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ABSTRACT
This research attempts to make a brief review and analysis of youth unemployment rate in the labour market in Bulgaria. It briefly describes programmes and measures existing at the Bulgarian labour market and implemented though Employment Promotion Act and National Employment Action Plan. It attempts to describe and provide a reasonable proposal for changes in order to increase the effectiveness of the applied tools concluding that the relative percentage of unemployed youth is the highest compared to other age groups.
Keywords: *Youth unemployment, Employment, Entrepreneurship, Bulgaria*

1. INTRODUCTION
Employment and unemployment rates have always been one of main indicators for economic and political development of a society. The conditions of the labour market effect the most each individual. Dozens of factors influence the labour market and according to their impact, we can determine their significance. Undoubtedly, the negative consequences of the COVID-19 pandemic are one of these factors that to different extent affect different sectors of the economy and therefore the labour market. The taken measures and initiated by the governments and respective organizations programmes created conditions for overcoming the critical situation without going to extremes or complicating it. The following waves of the pandemic reduced or strengthened the influence of this group of factors and dictated the necessity of making crisis decisions that last until today (Terziev, 2020a; 2020b). This generally provides and answer or rather an explanation that the developed in advance or existed plans of action in such emergency situation are not effective enough for the labour market (Terziev, 2020c; 2020d). If we except, but not in an absolute way, that the existing on the labour market young people are more flexible and creative, then we will have a reason and will have to analyze the existing statistical information from the last two years to establish what critical situations and factors causing youth unemployment affect these processes the most.

2. YOUTH UNEMPLOYMENT RATE
Data from the National Employment Agency show that unemployment among young people under the age of 24 and under 29 in Bulgaria increased in 2020 compared to 2019. The average monthly number of registered unemployed people under the age of 24 is 12,504, and in the total number of unemployed, it is 5.2%. This number increases by 35.5% (3,237 people) compared to 2019, and the relative share compared to the total number of registered unemployed increased by 0.2 percentage points. In 2020, the average number of registered unemployed under 29 years old was 30,824, which is 12.8% of the total number of unemployed. The parallel with 2019 shows an increase in the absolute number, which is 28.6% (6 856 people), and the relative share compared with the total number of registered unemployed decreased by 0.02 percentage points. Youth inactivity on the labour market is a result of a number of factors:
- The lack of relationship between education and the labour market is crucial as it a problem of both secondary and higher education. This lack creates unrealistic expectations of students and discourages them when first meeting the requirements of business.

- Certain cultural and social peculiarities, such as late age of young people leaving their parental homes, low degree of flexibility of the workforce in general;
- Insufficient level of social and economic development of some regions and in particular, issues concerning labour and social integration of ethnic minorities;
- Dropping out of the educational system is also one of the reasons preventing from self-realization and employment of young people;
- Unrealistic expectations of young people in terms of remuneration, working conditions, etc.

All these issues require first of all focusing on prevention of youth unemployment and inactivity. It can be achieved through different approaches, one of which is the close partnership with the educational institutions. The main goal in the implementation of the joint initiatives is to provide students with access to information about appropriate employment through forums: "Open Doors", "Career Days", "Together in the future", "Occupation Day", "National Career Days - Good Career, Good Life" and information days with graduating students, to consult on youth initiatives and to motivate to use the instruments on the labour market, which are implemented by the National Employment Agency and its territorial divisions; to promote the procedures for applying for summer student internships in the state administration. Youth mediators, health mediators from the municipalities, experts on ethnic and integration issues, mayors of small owns and other authorities work together to identify and register inactive young people with the employment services. In 2020 1,687 people were registered with the employment services as a result of the work of youth mediators.

3. TOOLS FOR INFLUENCING YOUTH UNEMPLOYMENT
Using a set of tools to influence this process is crucial. National Employment Action Plan of the Republic of Bulgaria adopted annually by the Bulgarian government aims at implementing these tools. These tools comprise of the following projects and measures.

3.1. "Ready for work" project
The main objective of "Ready for work" project is to motivate young people under the age of 29, including those who neither participate in education or training process, nor are employed and are not registered as unemployed with relevant employment agencies. Another objective is to improve their opportunities of finding a job and help their self-realization on the labour market.

3.2. The European Youth Guarantee
Monitoring the progress of the activities related to the National Plan for Implementation of the European Youth Guarantee. The European Youth Guarantee helps improve the transition from education to employment of young people registered with the employment services, as well as find employment for the inactive. The opportunity for learning and working of every young person is the basis of their professional development and well-being. Actions targeted at youth unemployment are implemented in the context of the National Plan for Implementation of the European Youth Guarantee 2014-2020. The accelerated reduction of youth unemployment, especially in the group of the inactive, is a priority. Timely and individual work with each young person within 4 months of registration with the employment service is extremely important, as good education combined with the needs of the labour market guarantee employment. The results achieved by the activities aimed at young people are presented in Table 1 (Employment Agency, 2021).

INDICATOR	PERIOD FROM JAN. 2020 TO DEC. 2020
1. Newly registered young people with developed Individual Action Plans	**81 653**
2. Engaged in employment and training, incl.:	**47 908**
2.1. Started a job:	**46 598**
2.1.1.Started a job on a primary market	40 768
2.1.2. Started a job under 'Human resources development operational programme'	4 284
2.1.3. Started a job under employment programmes	1 096
2.1.4. Started a job under employment measures	450
2.2. Participate in education	**1 310**
2.2.3. Participate in education under art. 63 of the Employment Promotion Act	341
2.3. Individual face-to-face counseling for young people, at least once a month	**240 713**
Specialized counselling services:	
1. Included in recruitment agencies	9 572
2. Received specialized individual counselling from a case manager	655
3. Received specialized individual counselling from a psychologist	889
4. Received group counselling from a psychologist	731
5. Career guidance	33 882
5.1. Individual career guidance	30 125
5.2. Group career guidance	3 757

Table 1: Individual action plans for newly registered young people with the employment services in 2020 in Bulgaria
Note: The data are from the operational statistics of the Ministry of Labour and Social Policy of the Republic of Bulgaria

3.3. Project no. BGO5M90PO01-1.005 – "education and employment for young people"
"Education and employment for young people" project aims at helping unemployed young people up to 29 years of age find a job by providing training and a subsidy for long-term employment. Following the changes in the criteria for selection of an operation adopted by the Monitoring Committee of the Operational Program "Human Resources Development" 2014-2020, the duration of the project has been extended until 2023. The project is implemented in two components. Component I is the integration of inactive and unemployed young people up to 29 years of age, registered with the employment services, into employment in a real sector of the economy or local government institutions through trainings tailored to the individual needs of the workplace and employment subsidy. Component II is the integration of inactive and unemployed young people with permanent disabilities up to 29 years of age in employment in a real sector of the economy or local government institutions through training tailored to individual needs in the workplace, subsidies, employment and a one-time incentive for sustainable employment.

The main objective is to provide opportunities for the acquisition of work experience of unemployed young people who have completed their higher education, in order to facilitate the transition between education and employment. The immediate objectives are related to:

- Prevention of disqualification of young people;
- Prevention against "human capital flight";
- Providing opportunities for renewal of the public administration;
- Providing an opportunity for permanent employment of some young people;
- Achieving a flexible combination of knowledge, skills and experience corresponding to the requirements of a market economy.

Employers are public administrations – the central departments, including their secondary units and their territorial divisions, which are part of the administration of the executive power, according to Article 36 of the Law on State Administration, District and Municipal Administrations. The main immediate objective is the social integration of the economically inactive people of working age and the unemployed from the vulnerable groups on the labour market and the reduction of the risk of poverty. Supporting the labour and social integration of unemployed people by providing mediation services, identifying other services (social, health, educational, etc.) that they need, and assisting in their provision. Supporting the organization and conducting of community service by unemployed people of working age who receive social benefits in order to restore/acquire work habits and motivate to look for employment and gain income and improve the living environment in the municipalities.

3.4. "New career start' project"
The essence of this project is to increase the level and quality of knowledge and skills of the unemployed through training in professional fields sought by employers, to achieve a balance between supply and demand in the labour market and provide higher and good quality employment. Specific objectives are related to providing a new job opportunity for unemployed people from marginal social groups, through professional training in fields in-demand in the labour market and training in specific skills and competencies; meeting the needs of the business by providing trained staff and achieving a match between the skills of the workforce and the needs of employers in the labour market; reducing unemployment among vulnerable groups in the labour market by providing employment in accordance with the qualifications of individuals and the needs of the business; building a cooperation between employers, training organizations and the social system for better implementation of public funds and providing lifelong learning opportunities for unemployed people from marginal groups. One of the focus groups is Unemployed youth up to 29 years of age.

3.5. "Challenges' project"
The aim of the project is to create sustainable employment of people from the marginal groups on the labour market, as well as to help 1,250 unemployed / inactive people increase and / or acquire professional qualification and key competencies and skills in occupations in-demand in the labour market. Training of the labour force in specific professions and specialties declared by employers is done to reduce the imbalance between labour supply and demand, as well as to meet the growing demand from the business. One of the focus groups is Unemployed youth up to 29 years of age.

3.6. Art. 36, para 1 of the employment promotion act
The Regulation is determined by the Employment Promotion Act and creates conditions for each employed person without a job for the time during which he / she has been employed, funds are provided from the State Budget for his / her remuneration in the amount of BGN 550

for those with secondary and lower education and BGN 630 for those with higher education / employed in positions for which the minimum educational and qualification level, according to the NCAP, is defined as a completed degree of higher education/. The state budget shall also provide the funds for additional remunerations at minimum amounts, established in the Labour Code and the remunerations for basic paid annual leave under Art. 155 or Art. 319 of the Labour Code, as well as the monetary remuneration under Art. 40, para. 5 of the Social Insurance Code and the due insurance contributions, which are at the expense of the employer, on the received, including accrued and unpaid, gross remuneration or unaccrued gross remuneration, including the remuneration under item 3 and item 4, according to Art. 6, para 3 of the Social Insurance Code.

4. CONCLUSION

With an unemployment rate of 5.6% registered by the National Statistical Institute of the Republic of Bulgaria in the second quarter of 2021, the unemployment rate of people aged 15-24 is 15.5%, which defines it as the highest compared to other age groups and is twice as high as that of the age group 25-34 and approximately three times higher than other age groups. The available set of programmes and measures in Bulgaria do not provide the necessary positive influence on the labour market to help young people find employment or engage them in entrepreneurial activity. It is necessary to increase the number of measures and programmes in the next period of setting annual goals and to implement changes in the National Employment Action Plan for 2022. This would create better conditions for impact, as the first expected positive results can be registered in the second half of next year the earliest. If no changes are introduced to the policy in this direction, the number of the unemployed people registered with the employment services and the unemployment rate among young people will remain unchanged.

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GDP AND REMUNERATION GROWTH: COMPARISON OF THE CREATIVE INDUSTRIES AND THE MANUFACTURING INDUSTRY

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ABSTRACT

This article aims to determine the relationship between the GDP growth time series of a particular sector of the economy and the average remuneration growth time series in that specific sector of the economy. More precisely, the article aims to determine whether the GDP growth time series can be used to forecast remuneration growth. Over the last three decades, the countries of Central Europe have undergone significant development. Historically, heavily industrialized countries are now converging at different speeds towards a knowledge-based economy. The article compares two vastly different sectors of the economy in the Czech Republic, namely, the manufacturing industry and the creative industries, which belong to the knowledge economy. The relationship analysis between the GDP growth time series and the average remuneration growth time series was achieved through the Granger causality test. Even though the statistical analysis did not confirm the possibility of predicting remuneration growth through GDP growth, findings from the time series analysis confirmed multiple multinational trends in the Czech Republic. The first one is the more dynamic growth of the creative industries sector compared to the manufacturing industry. The second is slower average remuneration growth in the creative industries compared to the manufacturing industry, which suggests the questionable treatment of the creative labour.
Keywords: Creative Industries, Manufacturing Industry, Economic Growth, Remuneration, Working Conditions

1. INTRODUCTION

The beginning of the expansion of the creative industries can be traced to the 1990s when policies began to emerge to support them to revive the economic growth of post-industrial countries. This time, the growth was based on the population's creativity, skills, and knowledge (Banks and O'Connor, 2009). However, this change and the creative industries' open welcome were preceded by many years of heated debate with several conflicting views. This debate began in 1947 with Adorno's and Horkheimer's work Dialektic der Aufklärung (Dialectic of Enlightenment), in which they assigned the original term Kulturindustrie (Cultural Industry) a very negative connotation (Adorno and Bernstein, 2001). Over time, this connotation has gradually changed, and today the creative industries, despite their often-controversial development (Cunningham, 2009), are part of modern and advanced economies (Castro-Higueras and de Aguilera-Moyano, 2018). So, there is no longer a debate about the many benefits of the creative industries that are generally accepted today. On the other hand, however, new topics are being raised, one of which is the unfair remuneration of work in the creative industries.

The issue of employee remuneration is complicated, as multiple factors influence the employee's performance. There are many remuneration methods, and it depends primarily on the type of job position for which we want to create the most fitting compensation package. The issue of remuneration and working conditions in the creative industries are, in many respects, different from the more traditional sectors of the economy. The very assumption of rational behaviour of creative employees is valid only to a certain point. Inspiration, passion, vision, or freedom play a significant role among the creative industries' employees. These stimuli influence their decision-making process and work organization (Purnomo and Kristiansen, 2018). People working in the creative industries are often willing to sell their services, talents, or ideas at a lower wage than in other industries. Compensation for reduced remuneration is the internal reward of creative work, often based on optimism (Lampel and Germain, 2016). The very mental setting of entrepreneurs in the creative industries is quite different from traditional thinking. Despite the gradual adoption of conventional entrepreneurial thinking throughout their careers, many aspects remain based on their intrinsic values and principles applied in the creative industries. Therefore, entrepreneurs in the creative industries are often a significant challenge for traditional business models operating in other areas of the economy (Werthes et al., 2018). The article statistically analyses time series and seeks an answer to whether it is possible to predict the average remuneration of workers through the time series of GDP development. The analysis will be performed in two diametrically different sectors of the economy, namely, in the manufacturing and creative industries. The theoretical part of the article will focus primarily on presenting an overview of scientific research on the topics of remuneration and working conditions, along with any differences that are specific to the creative industries. Then, the methodological part of the article will follow, in which all selected procedures will be described and summarized. The methodology will be followed by results and discussion, in which the selected time series and their statistical analysis will be presented. The last part of the article will summarize the results of the research conducted in the article.

2. LITERATURE REVIEW

Pay-for-performance methodologies are part of almost all compensation systems and are referred to as rewards, which vary depending on the degree of individual or organizational performance (Milkovich et al., 2013). The effect of pay-for-performance remuneration can be divided into a motivational effect and a sorting effect (Cadsby et al., 2007; Gerhart and Fang, 2014). The motivational effect reflects the direct influence of the amount of remuneration on the employee's performance. The sorting effect then reflects the fact that pay-for-performance plans affect the quality of jobseekers (Rynes et al., 2005) and, at the same time, the level of performance of those leaving the organization (Salamin and Hom, 2005). Although remuneration through pay-for-performance systems is perceived positively, several studies describe the inefficiency of this form of remuneration (e.g., Pfeffer, 1998; Beer et al., 2004). Employee satisfaction and motivation are usually associated with remuneration. However, working conditions are likewise an imperative element. Although the financial reward is still the primary motivating factor, companies should continuously monitor their employees' needs and adapt the entire reward system. Even after more than two decades of development of the creative industries, they remain a very unfair place from a work point of view (Banks and O'Connor, 2009). We are talking about irregular income, lack of job security, low wages, and above-standard requirements for increased mobility (Eikhof and Warhurst, 2013). Approximately half of the creative employees are forced to have more than one job to manage their monthly costs, often outside the creative industries (Campbell, 2020). As Win (2014) points out, nowadays, the artist is often forced, in addition to creating the performance itself, to secure resources by fundraising, creating marketing, collaborating, and networking.

Kong (2014) also draws attention to the exaggerated idealization of creative labour, emphasizing the need for better policy intervention, given these employees' working conditions. By better understanding these employees' needs, it will be possible to harness their potential by improving their working conditions. In the last decade, we have seen economic growth in all advanced economies. After the last financial crisis, companies have recovered, achieved record profits, and historically low unemployment. Nevertheless, wages are not rising adequately with rising inflation. The Deloitte survey (2019) shows that many organizations are reluctant to raise wages but extend nonmonetary benefits to their employees. The widening trend is flexible working hours, free lunches, more holidays, and many other benefits to improve working conditions. The remuneration philosophy is undergoing a gradual rebirth, with companies beginning to see rewards as an investment, not as an inevitable expense. According to Hays's (2020) survey, the most frequently requested benefits are flexible working hours, an extra week of vacation, company cars or mobile phones, meal vouchers, or allowances for recreation and other leisure activities. Furthermore, for the career advancement of employees in industry and trade, the possibility of education and the development of their skills are vital. Nevertheless, in the creative industries, we often encounter the absence of employee benefits. In some countries, it is even possible to speak of the absence of health insurance or secondary terms of employment (Hennekam and Bennet, 2017). Remuneration linked to the EVA or EBITDA indicator corresponds to the company's performance. It is also important to realize that the company's performance is further affected by macroeconomic development, i.e., the economic cycle and the gross domestic product development. GDP is the primary aggregate of the economy. Great interest in this indicator stems from the fact that we can assess the economy's performance, thanks to it. It is usually measured for one year and includes immediate consumption of goods and customer durables (Holman, 2016). It is generally accepted that the individual phases of the business cycle affect the company's performance, and thus the results achieved. An enterprise is considered a system that is affected by its external environment. It is divided into individual subsystems, such as production, logistics, human resources, and others (von Bertalanffy, 1968; Dostál et al., 2005). Its surroundings influence the ties within the company, and therefore it is necessary to identify objects of reality. This means getting to know the system more deeply, as only a few systems are closed and do not need to communicate with their surroundings (Dostál et al., 2005). It is a systems theory that explains the relationship between the behaviour of macroeconomic factors and business performance (Egbunike and Okerekeoti, 2018). Systems theory was first defined between 1949-1952 by Ludwig von Bertalanffy. This theory has found its foundation in the emergence of specific problems in studying complex objects across various disciplines (von Bertalanffy, 1968). Businesses are open systems that continuously interact with their external environment, which in turn affects their performance. This interconnectedness has been confirmed for companies in the banking or financial industry sector (e.g., Sheaba, 2017) and manufacturing companies (Egbunike and Okerekeoti, 2018, Imoughele and Ehikioya, 2014). Other authors (e.g., Deming, 1986; Glaser, 1993) also consider that the performance of an employee (manager) is up to 85% influenced by external factors beyond the employee's control, and only 15% of his performance can be attributed to their activities. For this reason, in this article, we want to analyse the possibility of forecasting the impact of GDP growth on business performance, which affects workers' remuneration.

3. METHODOLOGY

This article aims to analyse the relationship between GDP's time series and the average remuneration's time series. Two different industries were chosen, namely manufacturing and creative industries. In order to carry out this analysis, it is first necessary to obtain time-series data on the evolution of total GDP, the evolution of manufacturing industry GDP, the evolution of creative industries GDP, and the evolution of the average wages in the manufacturing

industry and the creative industries. These data were obtained from the databases of the Czech Statistical Office (2021) and the National Information and Advisory Centre for Culture (NIPOS, 2021), which, in cooperation with the Czech Statistical Office, compiles an annual Satellite Account of Culture. The initial year 2011 was chosen because this, year for the first time, the Satellite Account of Culture was published, which includes the necessary statistics of creative industries. The last year analysed is 2019, the last year for which the Satellite Account of Culture results have been published. The production approach of GDP recalculation was chosen for the GDP time series. The Granger causality test was chosen to detect the influence of one time series on the other time series. However, to apply this test to the data analysed, it was necessary to verify the stationarity of the time series using the Augmented Dickey-Fuller unit root test. Since the analysed time series did not satisfy the stationarity condition necessary for applying the Granger causality test, the first differences of these time series were created, which satisfied the stationarity condition. Subsequently, vector autoregressive models could be created on which the Granger causality test was applied. The statistical analysis was performed using the statistical software Stata. The results of these tests are described in the following chapter.

4. RESULTS AND DISCUSSION

Before assessing the relation between average remuneration and the development of GDP, basic descriptive statistics of selected time series from the manufacturing industry and the creative industries were performed.

Year	Total GDP (million CZK)	Creative industries		Manufacturing industry	
		Share of the creative industries on GDP (million CZK)	Average remuneration in creative industries (CZK)	Share of the manufacturing industry on GDP (million CZK)	Average remuneration in manufacturing industry (CZK)
2011	4 062 323	49 154	24 704	994 355	23 798
2012	4 088 912	57 653	24 982	997 639	24 572
2013	4 142 811	55 513	23 341	1 015 227	24 892
2014	4 345 766	58 667	25 588	1 139 437	25 729
2015	4 625 378	62 905	25 966	1 228 720	26 492
2016	4 796 873	63 318	26 279	1 281 556	27 711
2017	5 110 743	70 017	27 643	1 338 415	29 550
2018	5 409 665	83 450	29 618	1 361 435	31 925
2019	5 790 348	92 067	32 835	1 449 727	34 004
Change	**+ 42,54%**	**+ 87,29%**	**+ 32,91%**	**+ 45,80%**	**+ 42,89%**

Table 1: Development of GDP and average remuneration
(Source: own compilation based on data from Czech Statistical Office (2021) and NIPOS (2021))

Based on the first table, several important observations can be described. The first one is that the creative industries are a very dynamically developing sector of the Czech Republic's economy. Over the nine years analysed, the sector's GDP increased by 87%. This is twice as fast as the growth of the country's overall GDP and the GDP of the manufacturing industry.

Furthermore, the creative industries sector has great potential for further growth, as currently, the creative industries do not yet account for even 2% of the total GDP of the Czech Republic, whereas the shares in other countries of the European Union are on average considerably higher (Boix-Domènech, Rausell-Köster, 2018). In contrast, we can observe a slower growth of the manufacturing industry, which followed the development of the overall GDP. However, it is vital to recognize the importance of the manufacturing industry for the Czech economy, which is incomparable to the creative industries, given the share of each sector in the country's total GDP. Given the results, we can speak of a positive development of the Czech Republic's convergence towards a knowledge-based economy. One of the positive consequences of this trend is the dynamic development of the creative industries, which are based on the creativity and knowledge of the country's population. Therefore, the creative industries can be seen as enabling the country's sustainable growth. However, despite developing a knowledge-based economy, the Czech Republic remains a strongly industrial country, ranking among the top countries of the European Union in the amount of greenhouse gas emissions produced (Eurostat, 2021). This is underlined by the already mentioned high share of the analysed manufacturing industry in the country's total GDP. Several important observations can also be described in the case of average wages in the creative industries and manufacturing industry. First, the average remuneration of work in the creative industries was lower than that of the manufacturing industry in most of the analysed years. Over the analysed period, remuneration increased in the creative industries by around 33%, whereas the average remuneration in the manufacturing industry grew by 43%. That is a difference of almost ten percentage points. In the theoretical section, we wrote that it is pretty standard for the work in the creative industries to be less compensated, with the offset for this lower remuneration being the employee's intrinsic sense of satisfaction (Lampel, Germain, 2018). Nevertheless, the 10% difference is quite conspicuous given that in the case of employees in the creative industries, we are talking in most instances about people with a university degree (Hennekam, Bennet, 2017; Campbell, 2020). This may be globally acknowledged problem concerning suboptimal working conditions and the exploitation of creative labour in the creative industries, described in the theoretical part of the article, to be also valid in the Czech Republic. After depicting and describing the time series, we proceeded to their statistical analysis. The aim was to find out whether it is possible to predict the time series of the average work remuneration of a given sector of the economy through the time series of the GDP of the chosen sector. For this, we chose the Granger causality test. However, one of the prerequisites for using this test is the stationarity of the analysed time series. It was, therefore, necessary to first test the stationarity of the analysed time series. To do this, we used the Augmented Dickey-Fuller unit root test. Considering the results of this test, we found that our time series did not meet this prerequisite. Thus, to apply the Granger causality test on the analysed data, it was necessary to transform the given time series into stationary one using the first differences of these time series, which satisfied the stationarity condition. Differencing time series can help to stabilise the mean of a time series by removing or reducing trend and seasonality. Using the Stata statistical software, new time series of the first differences of the original time series were created. Then, the vector autoregressive model was built on these time series, in which the time variable was declared in the form of the analysed years. Only then could the Granger causality test itself be applied. The Granger Causality test is a statistical hypothesis test to ascertain whether one time series can be used to predict another. Given this fact, it is necessary first to define the null hypotheses, which read as follows:

- *H_0_1: Lagged Creative Industries GDP development does not Granger cause the development of the average remuneration in the Creative Industries.*
- *H_0_2: Lagged Manufacturing Industry GDP development does not Granger cause the development of the average remuneration in the Manufacturing Industry.*

Equation	Excluded	F	df	df_r	Prob > F
CI_GDP	CI_AVGREM	1.5603	2	1	0.4926
CI_AVGREM	CI_GDP	12.462	2	1	0.1964

Table 2: Granger causality test – Creative Industries
(Source: own compilation)

Equation	Excluded	F	df	df_r	Prob > F
MI_GDP	MI_AVGREM	1.9154	2	1	0.4550
MI_AVGREM	MI_GDP	3.9206	2	1	0.3363

Table 3: Granger causality test – Manufacturing Industry
(Source: own compilation)

Given the Granger causality test results shown in the second and third table, wherein neither case was the Prob > F value less than the required 0.05, retaining the null hypotheses and rejecting the alternative hypotheses in both analysed cases is necessary. However, it should be noted that the small data set option was checked in the Stata statistical software, which made the vector autoregression model more rigid. If this option was not ticked, the result indicated the opposite of the hypotheses set, i.e., that the average remuneration evolution can predict the evolution of the time series of GDP of a given sector. Thus, a limiting factor in this statistical analysis is the short time series, within which Granger causality cannot be confirmed. Nevertheless, we were not able to create a more extended time series because, as we mentioned in the methodology section of the article, 2011 was the first year for which the Satellite Account of Culture was published.

5. CONCLUSION

The creative industries' remuneration and overall working conditions differ from the more traditional economic sectors, such as the analysed manufacturing industry. The uniqueness of the nature of the creative class plays an essential role in this, as it has often created significantly distinct business models, which remain a challenge for traditional management theory. In the case of the time series analysis of the development of the GDP, the development of the creative industries sector was more dynamic, with the growth rate being up to twice as fast as that of the GDP of the whole country and the manufacturing industry. Many developed countries, led by the UK and Australia, have embraced and encouraged the development of creative industries precisely because of their potential to promote sustainable economic growth and increase employment. Therefore, such dynamic development of the creative industries within the Czech Republic can be assessed as positive. However, in the case of the development of average remuneration, the situation can no longer be regarded as positive. The difference between the two analysed industries was as high as 10% to the detriment of the creative industries. This difference exists even though in the case of creative labour, the majority of individuals are highly educated. The evolution of the time series of remuneration suggests the possible existence of several problems described in the theoretical section, but mainly suboptimal working conditions and exploitation of creative labour. The paper aimed to determine whether it is possible to predict average wages' time series evolution using the GDP of a particular industry. The Granger causality test was used, and it did not confirm this assumption. However, the results suggest that the primary problem is insufficient time series length. In this case, our research was limited by the absence of relevant data before the first period we analysed.

In further research, it would be appropriate to compare the findings within the creative industries' subsectors. Because while the manufacturing industry can be considered a primarily homogeneous industry, it is impossible to talk about such homogeneity in the creative industries. This means that what applies in one subsector of the creative industries may not necessarily be applicable to another subsector. Research on the creative industries must be, therefore, repeatedly approached contextually.

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EFFECTS OF STUDENT GENDER AND STUDY YEAR ON DIGITAL LEARNING PERFORMANCE IN KOSOVO HIGHER EDUCATION DURING COVID-19

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ABSTRACT
The spread of the covid-19 pandemic and government measures aimed at limiting the extent of the risks it carries have greatly affected the normal development of the educational process. Depending on the countries and their flexibility in adapting quickly to change, education is said to have suffered consequences of different degrees. In the case of Kosovo, the development of the educational process has been hit relatively hard by the spread of this pandemic and since the government and the competent bodies for education were focused on pre-university education, HEIs had to rely on their own forces and individually fight against this pandemic to maintain the continuity of the learning process. Thus, HEIs in Kosovo have adopted different forms to compensate for the impossibility of classroom teaching. Through this research we aim to study the reactions of students to these forms based on theirgender and study year. We conducted a quantitative study focusing on Universum College, a private HEI in Kosovo which started implementing the entire educational process on online platforms immediately after the total lockdown ordered by the Government of Kosovo on March 13, 2020. The study included 141 students who were randomly selected from all the enrolled students at this HE. The results show that surveyed students prefer the in-class learning method above all other methods and formats and there are no statistically significant gender or study year differences in these preferences. This suggests that HEIs and all relevant stakeholders should take into account the aspect of socialization and interactivity when designing future education programs and platforms that include the electronic component.
Keywords: E-learning, education process, training, digital platforms

1. INTRODUCTION AND STATEMENT OF PROBLEM
The Kosovo Association of Information and Communication Technology (STIKK) and Kantar Index Kosova in a survey with a Kosovo representative sample reveals that 96% of Kosovo households are connected to the Internet. Vast majority of the Kosovo population (81%) use the Internet every day. The more educated people are, the more they use the internet. Internet is used on average only slightly more in the urban areas (94%) compared to the rural areas (91%). Far ahead of the rest stands the usage of the mobile phones which is almost at three quarters (73%), whereas the remaining quarter of used equipment to connect to the internet is shared amongst TV (14%), computer (8%), tablet (3%) and other equipment used for playing

video games at 2%. Another striking discovery of the research is that 93% of Kosovo citizens use the internet for communication. The rest of the usage is rather moderate, such as 37% for listening to music, 35% for reading curiosities on Google search, Wikipedia and so on, 22% for reading the news, 19% of their time is spent on emails, 18% on materials for research and their studies, 17% on content related to sports, 14% to watch movies online, 10% on their work mail, 8% to download movies and music, 8% in online shopping, and 3% playing video games (STIKK, 2019). Internet access in schools exists, but the number of computers for students is small, and the rate of their use by students and their integration in teaching remains low, due to a device for a teacher to use information technology for teaching (Aliu, 2018). As COVID-19 first cases started to emerge, Government of Kosovo took decision to switch the education from in classes to online (GoRK, 2020). The decision suspended the education process on private and public institutions. In order to prevent and control the spread of the Corona Virus that causes COVID-19 disease, and given the circumstances created, the measures continued to remain in force until April 6, 2020. Consequent to that situation Ministry of Education and Science published the Guideline on the organization of lessons in the school year 2020/2021 in terms of the pandemic COVID-19 addresses the following issues:

- Planning Framework (Policies, Safe Operation, Participant Responsibilities, Marginalized Groups, and Funding);
- General COVID protection measures 19;
- Organizing education / learning according to scenarios for all levels and methodological guidelines;
- Curriculum Implementation and Methodological Guidelines; Digitalization of education / learning;
- Training of educators / teachers for teaching in educational institutions and online;
- Monitoring by the Education Inspectorate of (MES, 2020).

MES published two manuals, Teacher's Manual of the "LearnIn" platform for Learning during Emergencies and 'LearnIn' Platform Manual for Emergencies for students in order to facilitate the process of integration of students in the process with the new approach of teaching and learning. Despite to that, according to the MES report, 9070 students did not attend distance learning, respectively 11.5% of students did not attend distance learning (MES, 2020). In order to keep education running, educational institutions have had to quickly adapt to the situation (Teräs et. Al., 2020). Thus, E - learning does not replace physical education. It is seen as the only alternative only if the level of risk is very high and schools are completely closed and the state of public emergency has been declared with total closure instruction. However, digitalization strategy and investment in times of crisis, can and should be sustainable activities, and address urgent issues, issues that develop in successive stages or those in combination. There are some prerequisites for online learning:

- Inclusion;
- internet connection;
- possession of equipment (by students, school and teachers); transforming online content and using platforms;
- training of teachers and schools on the use of platforms and online teaching (MES, 2020).

2. LITERATURE REVIEW

In the research of STIKK in 2019 is indicated a very low level of usage of internet for research purpose, where 18% of respondents used internet on materials for research and their studies STIKK (2019). But as the lockdown has compelled many educational institutions to cancel their classes, examinations, internships (Jena, 2020).

All these proactive measures to protect all students and professors from possible risks of contracting COVID-19 due to lot of student's meetings, interaction and other physical contacts pause a great danger and an outbreak like COVID-19 can rapidly spread (Mulenga & Marbán, 2020). As the switch to online learning, the level of application of technology met an intrinsic increase in education. Government measures required mobilization of all the actors to adapt to these changes. As the disease can spread rapidly from person to person, therefor it is created a collective and individual impact. Epidemic psychology seems to involve at least three types of psychosocial epidemic. The first of these is an epidemic of fear. The second is an epidemic of explanation and moralization and the third is an epidemic of action, or proposed action (Strong, 1990). As we move from one phase to another phase of development, different stakeholders provide their inputs on how to manage the situation and guaranteeing the maintenance of education process. Politicians play a front line position on policy-making, simultaneously setting restrictions and measures based on health experts' assessments and constructing their official and authoritative narratives. With the Covid-19 pandemic, educational institutions have struggled to find resources to ensure students can continue their studies despite the situation. As result of that, it is created the ideal period switch to online learning. For the continuation of studies, educational institutions have put the efforts on finding the quickest fixes with education technology (Teräs et. al., 2020). Some educations sectors even before the COVID-19 were using digital tools in education process in the form of electronic textbooks, journal articles, online presentations, and surgical videos on a variety of websites. E-learning platforms became very popular in education, where through a survey in American orthopedic residents, a web-based training resource was found to be the most commonly used with 99.5% of respondents (Stambough et. al., 2020). COVID-19 pushed teachers to assign tasks to students via internet, lecturing through live video conferencing using different Apps like Zoom, Google meet, Facebook, Youtube, and Skype etc. Communication groups created on various media of communication between teachers, students and parents for affective communication through which they are always in touch to exchange the information (Jena, 2020). The education sector is witnessing a paradigm shift (Mulenga & Marbán, 2020). As the new approach is introduced, education institutions need to take steps to continue communication with students and parents, they must skill up to teach remotely. This emergency is not the time to put into effect complex institutional plans for distance learning as it would be in different situation. Now the quote "if a job is worth doing, it's worth doing badly" is valid. Teachers should utilize the potential resources on their daily tasks to reassuring students which is more important than trying to learn new pedagogy or technology (Daniel, 2020). The students who aren't privileged like the others will suffer due to the present choice of digital platforms. But universities and the government should try to come up with a solution to resolve this problem and establish the communication of triangle school, student and parent. As such, even if the COVID-19 pandemic continues it is urgent need to take efforts on maximum utilization of online platforms so that students not only complete their degree in this academic year but also to get ready for the future digital oriented environment (Jena, 2020).

3. METHODOLOGY

The aim of this study is to examine the effects of student demographic factors like gender and study year in usage and preferences of students for different learning and assessment methods, including physical, online and hybrid ones.

The research questions of this study are:

- Q1: Do gender and study year affect students' preferences for different learning methods?
  - H0. Gender and study year do not affect students' preferences for different learning methods
  - H1. Gender and study year do affect students' preferences for different learning methods

- Q2. Do gender and study year affect students' perceptions about the quality of learning across different learning methods?
  - H0. Gender and study year do not affect students' perceptions about the quality of learning across different learning methods?
  - H1. Gender and study year do affect students' perceptions about the quality of learning across different learning methods?

This study was conducted through quantitative method and cluster sampling techniques. The study was focused on private Higher Education Institutions, among which Universum College was selected as a cluster. The sample units were selected randomly from the whole list of Universum College's active students. The data collection instrument used in this case was a structured questionnaire with 12 questions, distributed to 141 students during January 2021. Of 141 respondents, 62 percent of respondents were female and 38 percent were male. Participants represent different regions of Kosovo. For purposes of the research, we have created 5 metrics of distance from the campus. In order to have a more representative sample, we have included students from all years of undergraduate full-time studies. One limitation that this methodology encounters is that it focuses on only one HEI and in studying similar phenomena in the future more HEIs who have used other ways of adjusting their learning and teaching process to the Covid-19 pandemic should be included in the sample.

4. RESULTS
In the survey we have included demographic questions about participants, questions regarding the online learning platforms they have used during the year 2020, their preferences about these platforms, their preferences about the method of studying: online vs physical, the quality of learning and teaching across different platforms, etc., with each question representing a variable. For all these variables we initially ran descriptive statistics by gender, distance from the campus, study year, and GPA, and for those of more interest we ran linear regression analyses. From all 141 respondents in the study, 62% were women and 38% were men. Of those respondents, 39% were students in the first year, 44% in the second year, and 17% in the third year. This percentage of participation in the survey by gender and study year is representative of the whole population, in this case the students of Universum College, where there are more women than men enrolled, and generally the number of the students in the second and third year starts decreasing because of the high dropout rate.

4.1. Most used platforms
Initially, students where asked about what were the most used online platforms for learning during the covid-19 pandemic. Their answers are shown in the table below. However, it is important to mention that the use of these platforms wasn't dependent on students' preferences, but rather a combination of choices made by the college's management and instructors of the respective courses they were taking.

Table following on the next page

	Big Blue Button	Google Meet	Zoom	Other
Gender				
Girls	86.0%	12.8%	1.2%	0.0%
Boys	74.0%	22.0%	2.0%	2.0%
Study year				
First year	84.0%	13.6%	2.5%	0.0%
Second year	80.4%	19.6%	0.0%	0.0%
Third year	66.7%	22.2%	0.0%	11.1%

Table 4: Most used platforms by students

Further, we wanted to see which of the learning methods are more preferred by students and whether there are differences in preferences across different genders and study years. The results presented in the table below show that the physical (offline) learning method is most preferred by them, with approximately 65% students choosing this option, and without any statistically significant gender or study year differences. Among male respondents 62.3% prefer education process to continue in class compared to 64.8% of female respondents. Similarly, for all three study years the most preferred method is education process to continue in class.

	Physical	Combined	Online	Differences
Gender				0.1908 (0.1269)
Girls	64.8%	27.3%	8.0%	
Boys	62.3%	13.2%	24.5%	
Study year				0.1054 (0.0951)
First year	69.5%	18.3%	12.2%	
Second year	53.2%	29.8%	17.0%	
Third year	66.7%	16.7%	16.7%	

Table 5: Prefered methods of learning among students of different gender and study year

Additionally, we wanted to see how learning and teaching quality across different methods is perceived by students. In line with the previous results, this one also shows that students consider the physical method to be the one with the highest quality of the learning and teaching process. Here as well, we do not see any significant differences across gender or study year.

	Physical	Combined	Online	Differences
Gender				-0.2668 (0.1699)
Girls	76.1%	18.2%	5.7%	
Boys	71.7%	11.3%	17.0%	
Study year				0.0881 (0.1295)
First year	80.5%	12.2%	7.3%	
Second year	66.0%	19.1%	14.9%	
Third year	66.7%	25.0%	8.3%	

Table 6: Gender and study year differences in students perceptions of quality of teaching across platforms

Going into deeper detail, we wanted to see what students think about the effects transferring to online learning platforms in their overall learning outcomes. For this purpose, we asked the question "How do you think the online learning has affected your learning?" in a Likert scale from "much worse" too "much better". Later, in our data analysis we encoded "much worse" with the index -2, and "much better" with the index 2. Results show that the mean of responses is -0.51. This shows that students on average believe that the online methods have affected their learning in a rather negative way, as the average responses fall in the negative spectrum. Results are shown on the table below and we can see that here as well there are no gender or study year differences.

	Much worse	Worse	Same	Better	Much better	Differences
Gender						0.1822 (0.2104)
Girls	15.9%	40.9%	28.4%	12.5%	2.3%	
Boys	24.5%	34.0%	15.1%	15.1%	11.3%	
Study year						-0.917 (0.1866)
First year	18.3%	41.5%	19.5%	15.9%	4.9%	
Second year	14.9%	38.3%	34.0%	6.4%	6.4%	
Third year	41.7%	16.7%	8.3%	25.0%	8.3%	

Table 7: Effects of different learning platforms on students' academic performance

In regard to testing, overall students still prefer in class testing than online testing or a hybrid form, with approximately 50% of students across different genders and study years choosing in class testing as their most preferred one. Online assessment is the least preferred one, with only a small percentage of about 8-20% of students of different genders and study years choosing this option. Hybrid testing is more popular among female students at level of (33%), while male students are at (19%). Preference for testing in class is more dominant among male students (60%). Online testing is equally preferred by female and male students at (19%) respectively (20%). In relation to year of studies, we noticed an increasing percentage of students who prefer hybrid test on last year of studies, where (42%) of students prefer hybrid approach on tests at third year of studies, (27%) of second year and (24%) of third year. In class tests still dominate with around 50%, and online tests are less preferred on last year of studies (8%) compared to first (21%) and second year (20%). However, we did not find any statistically significant differences across gender and study years on preferences about assessment methods, meaning that in-class assessment is the most preferred method.

	In classrom assessment	Online assesment	Hybrid assessment	Differences
Gender				-0.1958 (0. .1587)
Girls	48.86%	18.18%	32.95%	
Boys	60.37%	20.75%	18.86%	
Study year				-0.1433 (0. 1252)
First year	54.87%	19.51%	25.60%	
Second year	51.06%	21.27%	27.65%	
Third year	50.00%	8.33%	41.66%	

Table 8: Preferences of students for assessment methods, by gender and study year

The last issue we wanted to explore is the prefered combination of different methods of learning for these students in the future. They were asked to choose which would be their prefered combination from the following list:
1) 70 in-class & 30% online
2) 50 in-class & 50% online
3) 30 in-class & 70% online

The results of their responses are shown in the table below, from where we can see that overall students mostly prefer the ration 70%-30% in favour of in-class learning, without any significant differences across gender or study year. The second favorite ratio is that of 50%-50% and the least favorite one is that of 30%-70% in favour of online learning. This, once again proves that students are happier with learning and being assessed in physical traditional classrooms rather than in online platforms or other combination format of these two.

| | Ratio of combination between in-class and online learning | | |
	70%-30%	50%-50%	30%-70%
Gender			
Girls	65.53%	31.76%	4.71%
Boys	64.15%	20.75%	15.09%
Study year			
First year	68.35%	22.78%	8.86%
Second year	57.45%	31.91%	10.64%
Third year	58.33%	61.67%	0.00%

Table 9: Preferences of students for learning options in the future

5. CONCLUSIONS

From the results presented and discussed above, we can conclude that the level of using the E-learning platforms during the lockdown caused by the Covid-19 pandemic in 2020 was over 90% among students of Universum College. The largest percentage and users turn out to be active among first-year students. In regard to our research question "Do gender and study year affect students' preferences for different learning methods?" we can conclude that neither gender nor study year affect students' preferences for different methods. Students of both genders and all three study years prefer to attend physical classes to online classes or any hybrid format. In regards to our second research question "Do gender and study year affect students' perceptions about the quality of learning across different learning methods?" the results show that neither gender nor study year affect students' perceptions about the quality of learning across different learning methods. All students, without statistically significant differences believe that the quality of the learning and teaching process at their college has been worsened with the implementation of online learning platforms due to the pandemic and requirements for social distancing. These results can be explained with the fact that in-class learning includes elements of interactivity and socialization with both, other students and instructors, which enrich the college experience for students. This is an indicator that HEIs and all relevant stakeholders should take into account the aspect of socialization and interactivity when designing future education programs and platforms that include the electronic component.

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THE ROLE OF ONLINE MEDIA CHANNELS IN PORTRAYING THE EFFECTS OF THE COVID-19 PANDEMIC ON VULNERABLE GROUPS

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ABSTRACT
The COVID-19 pandemic has drastically changed people's way of life and severely affected the lifestyles and daily rotuines of vulnerable groups. In this context, mass – media channels have an essential role in portraying the way certain groups of people managed to cope with the pandemic. In this regard, the purpose of our paper was to analyze the way online media channels present how the life of vulnerable groups was affected by the pandemic, in order to raise awareness about the challenges such groups had to face in this time of crisis. In order to conduct the research we used content analysis as method, while having as a research instrument a content analysis grid which comprises several categories refering to the context and the topics of the news: difficulties of the elderly, pisho-social effects of the pandemic on the elderly. Thus, we conducted a comprartive and thematic analysis and we assesed the news presented online during the period March 2020- September 2021, by Romanian and foreign media channels, such as: Digi 24, Antena 3, Realitatea TV, BBC, CNN, ABC. The main findings of our research revelead that both groups of media channels focused more on describing the experiences of the eldelry during the pandemic. Hence, the online media presented the elderly as the main vulnerable and at risk group, highlighting the negative effects of the pandemic on their psycho – social and physical health. Moreover, the results of our research also revealed that the online media reported on sensational, special situations of older people contracting the virus and healing from the dissease. Therefore, our research provides relevant information on the difficulties encountered by the elderly in the context of the pandemic, and such information could be further taken into account in the process of improving the life of vulnerable groups.
Keywords: *Covid 19, Effects, Elderly, Online media, Vulnerable groups*

1. INTRODUCTION

In the context of the COVID – 19 pandemic, many aspects of people's daily lives were affected. The virus, was initially found in the city Wuhan from China (Shereen et al., 2020), and due to its fast transmission rate, on March 11 2020, the World Health Organization declared the COVID – 19 pandemic (World Health Organization, 2020). Thus, in order to stop the spread of the virus, governments all over the world adopted restrictive measures which limited peoples'

freedom of movement, measures such as lockdowns (Eyawo et al., 2021), social distancing, quarantine, self – isolation, travel restrictions, closure of schools, closure of restaurants (Georgieva et al., 2021, p.1). While the restrictive measures implemented were meant to prevent people from contracting the virus, they also influenced in a negative manner their social lives. Thus, a previous study conducted in Singapore revelead that social distancing restrictions, had negative effects on people's well being, their level of life satisfaction being lower compared to the period before the lockdown (Cheng, Kim and Koh, 2020). In this regard, although all people were affected by the pandemic, some categories of people, such as the elderly or people with other types of disseases, were more prone to geeting infected with the virus. Hence, since studies revealed that the "fatality rate increases substantialy with age" (Verity et al., 2020, p.676), that older people have weak, slower and less effective immune systems (Nikolich-Zugich et al., 2020), it can be stated that, during the pandemic, older people fell into the category of the most vulnerable people (Nasution and Pradana, 2021, p. 618), them being at a higher risk of getting infected with the virus. In this context, apart from being directly affected by the virus, we argue that the life of older people, the life of homeless people or of those already living in poor conditions was also affected by the restrictions implemented by governments, and by the way mass – media channels described the experiences through which other vulnerable groups went during the pandemic. Thus, the purpose of our paper was to analyze the way online media channels presented how vulnerable groups were affected by the pandemic, in order to raise awareness about the challenges such groups had to face in this time of crisis. Moreover, in our research we were particularly interested in identifying the way online mass – media channels described how the elderly and other at risk individuals managed to cope with the pandemic, what are the difficulties they encountered, and how the media chose to refer to the vulnerable individual when describing them or their experiences. In this regard, after providing a brief literature review on the role of mass – media channels in society and in influencing public opinion, and on the negative effects of the pandemic on vulnerable groups, we describe the methodoly, the results of our research followed by conclusions and several limitationsof the research.

2. LITERATURE REVIEW
2.1. Mass - media and its role within the society
Whether we refer to traditional or new media channels, mass – media has always had an essesntial role in society. Besides from its role of providing people with relevant information, through the way media representatives choose to frame and portray events, they can influence the opinion of the public. Broadly, mass – media is represented by any „medium used to transmit mass communication" – a message sent through a device to a large audience (Pavel, 2010, p.106). Traditional media comprises one way mass – media channels designed to send uniform messages to the large public, and some of its functions include: entertainment, advertising or promotion, agenda setting (Apuke, 2016, p.84). Thus, TV channels, radio or newspapers can be included in the category of traditional media. On the other hand, in a comprehensive manner, new media can be understood as the type of media which comprises websites or other channels that allow digital communication, and that allow active users to " engage in behaviors that can be consumed by others both in real time and long afterwards, regardless of their spatial location" (Hennig-Thurau et 1l., 2010, p.312). In other words, channels which require internet connection in order to function and which allow people to interact with each other, can fall within the category of new media, and some of them are represented by social networks: Facebook, Twitter, or by platforms that allow video blogging such as Youtube (Ahmed, et al., 2019, p.2), but also by websites, blogs. Thus, due to the development of the internet and implicitly the development of new media, there are many media channels that can be used to educate, inform or entertain the members of society (Singh and

Pandey, 2017, p.127). Hence new media, or online media, facilitated the way information is sent to different categories of public. In the context of news, scholars state that besides offering acces to information anytime, anywhere, new media managed to transform the news, meaning that online news are usually "repackaged content developed initially for other media, including Television and newspapers" (Pavlik, 1999, p.56). Referring, to the functions of mass – media, besides informing people, mass – media also manages to entertain people, influence their emotions, shape reality, to determine what events or situations are more important than others, and through the way it presents certain stories, it manages to " shape the way we think, feel and act" (Rabiu, 2010, p.186). Hence, since previous studies showed that, compared to positive information, information with negative valences has more influence in incresing the negative mood of people and decreasing their positive mood (Zhou et al., 2021, p. 8), it becomes very important to asses the way mass – media decided to describe the effects of the pandemic on vulnerable groups. In other words, we argue that if the media is more orientated towards highlighting the negative effects of the pandemic, this might determine vulnerable groups such as the elderly, to have more negative feelings and to perceive in a more negative manner the situation they are in. Furthermore, in regard to the role of mass – media, the agenda setting theory is also relevant in the context of the pandemic. According to this theory, mass – media determines people to be focused on specific issues and topics. Even thought there are many events that could be described, the media has to describe the issues considered to be of utmost importance. In time, the public accepts the agenda set by the media and belives that those issues reported are indeed the most important ones (McCombs and Guo, 2014, p. 252). Thus, in the view of McCombs and Guo (2014), this effect is not premeditated by the media, but instead it results from the need of mass – media channels to present subjects which are of high interest to the public. However, in the view of other scholars, media purposely established which subjects should be reported more and which subjects are neglected or less important (Shin et al., 2016, p.347). Considering these aspects, it can be inferred that during the pandemic, the news were mostly focused on information related to the virus, to its effects on different categories of people and also on the restrictive measures implemented by governments.

2.2. Media representations of vulnerable groups during the pandemic

Taking into account the experiences of vulnerable groups during the pandemic, previous studies revealed interesting results when it comes to the way mass – media channels decided to portray those experiences. A study which focused on identifying the content posteb by people on Twitter about the eldery in the time of the pandemic, showed that messages involving jokes, those meant to ridicule the elderly (21,9%), or those implying that the life of the elderly was not as valuable as the life of other people (21,1%) were among the messages frequently posted on this platform (Jimenez-Sotomayor et al., 2020, p.1664). Moreover, while reviewing the literature, scholars also found that in the time of the pandemic, messages which promoted an "ageist" discourse – messages discriminating older adults on the basis of their age, were present in the media, them causing disputes between different categories of people (Silva et al., 2021, p.8). A previous study also shows that on social media, as of March 2020, the expression "boomer remover", started to become viral, people using it in order to state that the virus was created with the purpose of solving the overpopulation problem, by affecting severly the elderly (Meisner, 2021). Another study which focused on the media representations of older adults in China, revelead that very often, mass – media channels had a dichotomic discourse, comparing young people with older people. Thus, the elderly were associated with negative qualities such as being vulnerable, ignorant, stubborn, or more prone of having depression (Zhang and Liu, 2021, pp. 154 - 155). Similarly, a study which assessed how the elderly were presented in French – Canadian media, showed that the recurrent themes in the description of the elderly, were the ones which described older adults as vulnerable, isolated, lonely and the ones related

to the concept of death or disease (Lagacé et al., 2021, p.5). Next, in New Zeeland, the media also described the elderly as people of high risk of getting infected, as people who were not able to voice their opinions or "speak for themselves" (Morgan et al., 2021, p. s127). Furthermore, a study conducted in Spain, on the way media in Spain portrayed the elderly, revealed that 71,4% of the title presented information with negative valences about older people, them being described in relation with the notion of death, vulnerability, and in relation to the living conditions and lack of resources in residential homes (Bravo-Segal and Villar, 2020, p.268). Moreover, a previous study which focused on highlighting the effects of the pandemic on vulnerable groups including the elderly, mothers and children, the poor or even prisoners in West Africa, revelead that these people faced abuses, they lacked access to health and education, and also revelead that mothers and children were the people that most news reffered to (Saalim et al., 2021, p.11). Hence, during the pandemic, the lives of vulnerable groups in general, and of the elderly in particular, were deeply impacted by both the virus and the way mass – media presented their experiences. Peoples' perception of older adults was also influenced and in this regard, these adults experienced high levels of depression (Anwar et al, 2020, p.4). Hence, the narrative of the media revolved around the idea of ageism, the elederly being presented as weak, vulnerable people who could be "a risk to other people" (Buffel et al., 2021, p.10). Another similar study, which analysed the messages sent by mass – media during the pandemic, revelead that most messages concerned the elderly, people with mental illness or people with disabilities (Bailey et al., 2021). Considering the effects of the pandemic, previous studies showed that the elederly were mostly worried about their own or other's health 44,9%, many of them were worried about societal (69,5%) and financial (25,1%) consequences, and mane resorted to measures such as physical distancing (71,2%) (Kivi et al., 2021). In the context of the challenges older people had to face, besides having to deal with the effects of restrictive measure, which influenced their social and personal life, the elderly also had to deal with misinformation, with feelings of depression, fear or anxiety, with limited acces to healthy food, or with discrimination on the basis of their age (Radwan et al., 2020, p.2). Taking into account the vulnerable people, a study focused on people with disabilities showed that their mental health and quality of life was more negatively influenced in the time of the pandemic, them experiencing less social interaction (Steptoe and Di Gessa, 2021, p. e372). Thus, an analysis of the way adults aged 60 or above manage to copw with the pandemic, revealed that their feeling of loneliness increased, they started to use the email more often, but also started to have less physical activity and to eat less than before the pandemic (Emerson, 2020, p.6). While the media discourses which present the elderly from an ageist perspective, make it more difficult for older adults to deal with the pandemic (Brooke and Jackson, 2020, p.2044), when media channels in general and social media in particular is used for raising public awareness, such positive use can contribute to improving or even saving the lives of people (Khalifa et al., 2021, p.14).

3. MATERIALS AND METHODS
3.1. Purpose, objectives and hypotheses of the research
The purpose of our paper was to analyze the way online media channels presented how vulnerable groups were affected by the pandemic, in order to raise awareness about the challenges such groups had to face in the time of crisis. In regards to the purpose of the paper we also established a series of objectives. Thus, the objectives of the research refer to: identifying the type of vulnerable people that the news mostly described, identifying the experiences of the elderly in the pandemic as described by the media, and identifying the perspective from which media channels decided to portray vulnerable groups. Concerning the hypotheses, in our research we started on the premises that the news mostly described the experiences of the elderly, and that it mostly presented them as weak, vulnerable, but also stubborn people.

3.2. Sample and procedure

In our paper we focused on analyzing the news presented online by national and international TV channels, on their official websites, about vulnerable groups during the pandemic. We analysed the news referring to vulnerable groups presented by the international channels BBC, ABC News, CNN and by the Romanian channels DIGI 24, Realitatea TV and Antena 3. On the official websites of these news channels we searched for the news which presented the experiences of vulnerable groups: people with disabilities, the elderly, from March 2020 to September 2021. Thus, a total of X news were analysed from the 6 media channels included in the research.

3.3. Method and instrument

In order to conduct the research we used content analysis as method, while having as an instrument a content analysis grid. The analysis grid was created by taking into account a framework developed in a previous study (Zhang and Liu, 2021, p.151), and it comprises categories referring to the issues and difficulties vulnerable groups had to face in the time of the pandemic, such as: health conditions of the vulnerable groups, discrimination, income/financial issues, coping strategies, mental health, lack of social interaction. Each of the channels included in our research was analysed depending on the analysis grid which is presented in Table 1 (the "X" shows that the channels has posts in that category, while "-" means the channels did not have posts in that category)

Categories	BBC	ABC News	CNN	Realitatea TV	DIGI 24	Antena 3
News about the elderly	X	X	X	X	X	X
News about people with dissabilities	X	X	X	X	X	X
News about homeless people	X	X	X	X	X	X
Coping strategies	-	X	-	-	X	-
Mental health	X	X	X	X	-	-
Physical health	X	X	X	X	X	X
Lack of social interaction	X	X	X	X	X	X
Income/Financial problems	X	-	-	-	-	-
Discrimination	X	-	X	X	X	X
Vaccination	X	X	X	X	X	X

Table 1: Analysis grid

4. RESULTS AND DISCUSSIONS

The analysis we conducted on the official websites of the 3 international news channels and on the 3 Romanian channels revelead that these channels focused mainly on presenting the experiences of elderly during the pandemic, and even though there were news about them, the channels focused less on other categories of vulnerable people. According to the results of the research, described in Table 1, it can be stated that the news focused more on the negative experiences of vulnerable groups and on the negative effects of the pandemic on their personal and social life, but some channels, such as BBC, CNN, also reported sensational and positive cases, in which people healed from the virus.

For example, one news title from BBC, focused on a couple who healed and was reunited: "Covid: 'Lovely' for elderly couple reunited in hospital after separation", and another title from CNN described how a 71 old man managed to heal from the disease: "He survived severe Covid-19; now he's getting vaccinated, but losing friends". Considering the type of vulnerable groups, the elderly were in the center of the news reported by the channels analyzed. In the case of homeless people, most news focused on describing how certain people became homeless during the pandemic, or how homeless people were evicted from the shelters they were living in: "Homeless Victorians to be evicted from crisis accommodation following funding cut" – ABC News. With regrads to people with dissabilities, the news channels presented the differences and inequalities these people had to face in the context of working: "Americans with disabilities in the workforce disproportionately affected by COVID-19", and other news from Romanian channels showed that in centers for people with dissabilites, there were massive COVID – 19 outbreaks: " Massive outbreak of COVID – 19 at a center for disabled people in the city of Botosani" – Realitatea TV. Taking into account the coping strategies of vulnerable groups, only two channels had some news in this regard, ABC News and DIGI 24. In the case of the elderly in residential homes, the international news showed that sometimes, in order to help the elderly cope with the pandemic, the homes in Sydeny, collaborated with young volunteers who spoke on the telephone with patients in order to cheer them up: "Isolated residents delighted with check-in calls from young volunteers during Greater Sydney's lockdown" – ABC News. However, it can be inferred that in the online environment, the news channels focused more on presenting the difficult situations in which the elderly were during the pandemic, and did not focus much on the strategies these people used in order to deal with the siutations they were in. With regards to the mental health of vulnerable groups, the news channels highlighted the fact that the elderly faced mental health issues and isolation. The news described that older people were afraid to go outside, that they were at higher risk of developing depression. For example, one title from ABC News, stated that "COVID sees elderly face higher rates of mental health issues, isolation, cognitive decline", while one news from CNN showed that "Distress in seniors surges amid coronavirus pandemic". With reference to the physical health of the elderly, while all the news channels analysed presented how the pandemic affected their physical health, the Romanian news channel Antena 3 focused on describing the poor conditions of elderly who live in social centers. Thus, one news title stated: " old and ill people, starved and held in the cold in a social center from the county of Alba: they are humiliated and nobody cares about them" - Antena 3. Considering the lack of interaction, the channels analyzed emphasized the difficulties the elderly encountered, especially on Christmas holydays, when they could not spend time with their families in the way they wanted to. For example, one news title from BBC, states that the UK's medical adviser, advise people not to hug their older relatives: "Covid: Don't hug elderly relatives at Christmas warns Chris Whitty". Other news emphasized the feeling of loneliness in the case of the elderly, feeling they mostly had because they were not able to be with their families: "The unspoken COVID-19 toll on the elderly: Loneliness" – ABC News. Even more, certain news reported on studies which found that even if older people had virtual contact with their relatives, they still felt lonely, and even more lonely than in the case in which they did not have contact at all: "Virtual contact was worse for older people during the pandemic than no contact, study finds" – CNN. Taking into account the Romanian news channels, their approach in describing vulnerable groups tends to be more harsh and aggressive, than the approach of the international news channels. Thus, in the context of no social interaction and loneliness, an example of news title from PRO TV, stated that single old people remained alone, with no one to take care of them: " Single old people left alone. They are found dead in their houses and even if they call 112, they receive help after 3 days".

On the other hand, even though in a smaller percent, there were some Romanian news which showed the actitivites that the elderly in home cares can carry out, activities which could reduce their feelings of loneliness during the holidays: Holydays through the eyes of the elderly and the children- the stories of people who do not remain alone even if they are away from their families" – Digi 24. About financial problems or income, only BBC reported some news in relation to the situation of the elderly. Next, considering news which referred to discrimination, on the channels analysed there were news which reported differences in deaths and infection cases depending on the ethnicity of people and on their living area. For example, in a news from BBC entitled "Covid in Scotland: People in deprived areas 2.5 times more likely to die", it was emphasized the idea that people with Pakistani ethnicity were more likely to get infected than people with White Scottish ethnicity. Furthermore, the news channels described situations in which the elderly were discriminated on the basis of their age, which made them more vulnerable to contracting the virus. Hence, a news title from BBC, revelead that old people were responsible for the closing of a bar in Scotland: "Covid: Older people 'partly to blame' for bar shutdown". Other news, emphasized the discrimination felt by the elderly who already had health issue and were also black: "Elderly, ill and Black in a pandemic: 'I'm doing everything I can not to get this virus" – CNN. In the context of vaccination, the international news channels, such as BBC, besides providing information on the difficulties the elderly encountered, such as standing in line in the cold "One woman in a wheelchair said she had been waiting outside a vaccination centre in Sittingbourne, Kent, for an hour and 20 minutes on Wednesday", also offered information about certain vaccination scams that the elderly had to face "Elderly people in Merseyside targeted in Covid-19 vaccine phone scam". In the Romanian context, media channels put an emphasis on sensational news, highlighting the fact that "The oldest man in Romania received the vaccine against Coronavirus"- Realitatea TV, but they also reported news which referred to risks the vaccines implies, stating that "The COVID – 19 vaccine might be too risky for the elderly or the very ill people" – Antena 3. However, these news were reported when the vaccines were only in the trial phase. In the case of Romanian news, media channels show that the elderly were discriminated when they presented themselves at vaccination centers, due to the fact that they did not make an online appointment: "Dozens of elderly people, were refused the right to be immunized, at a vaccination center in Brașov." – Realitatea TV. Taking into account the results described above, our research is in line with previous studies which presented the elderly as vulnerable, weak, or helpless people, which showed that the elderly were often associated with death, higher risks of getting infected, and also with studies that revelead discriminatory acts against the elderly, on the basis of their age (Lagacé et al., 2021; Bravo-Segal and Villar, 2020; Silva et al., 2021).

5. CONCLUSIONS
In a crisis situation such as the crisis generated by the COVID – 19 pandemic, the way mass – media reports on events and certain categories of people becomes very important. In this regard, the purpose of our paper was to analyze, the way online media channels presented how vulnerable groups were affected by the pandemic, in order to raise awareness about the challenges such groups had to face in the time of crisis. In the online environment, both Romanian news channels and the international channels focused more on describing the experiences of the elderly, than the experiences of other categories of people. Moreover, the media decided to portray vulnerable groups from a rather negative perspective, focusing on the negative situations they were in. Hence, the results of our paper shed some light on the difficulties vulnerable groups in general, and the elderly in particular faced during the pandemic. By obtaining information about the experiences of the elderly, people could offer vulnerable groups more support in the future and could pay more attention to the needs of such people.

Thus, the news analysed described the way the pandemic affected the physical health of older people, especially those living in home cares, but also their mental health, showing that they felt more depressed and lonely. Other topics frequently addressed by the news were the topics of the lack of interaction of the elderly with their families, mainly on the holydays, and the topic of vaccination. Further, the news showed that the elderly were discriminated during the pandemic on the basis of their age.

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TRANSFORMATION OF BUSINESS PROCESS MANAGEMENT THROUGH DIGITALIZATION

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ABSTRACT

Without digitalization, today's world could hardly function. Digitalization together with business process management can bring great success to companies. The aims of this paper are to: clearly define business processes, describe how they are managed, give an answer to how digitalization helps processes and show how digital transformation is interconnected with business process management. In also presents a business process example in one Croatian company that was changed and improved through digitalization. It is stated and proven in this paper that business process management and digital transformation complement each other.
Keywords: *business process management, digital strategy, digital technologies, digital transformation*

1. INTRODUCTION

Business process management (BPM) and digital transformation are areas that have been a topic of interest for academia and for practice. Both, research and practice state that BPM and digital transformation are interconnected (Bosilj Vukšić, Ivančić, Suša Vugec, 2018) so one could raise a question regarding the role which BPM plays in digital transformation. The main aim of this study is twofold. The first aim is to present an overview of the available literature regarding the link between digital transformation and BPM. The second aim is to present a case study of BPM transformation through digitalization. This paper is structured as follows: first, introduction is given. Second, the theoretical background on BPM is explained. Third, digital transformation is described. Fourth chapter shows how are BPM and digital transformation interconnected. Fifth, case study of one business process in Croatian bank is presented. Finally, the conclusion is given.

2. THE THEORETICAL BACKGROUND OF BUSINESS PROCESS MANAGEMENT

Organizations are continually under competitive pressures and forced to re-evaluate their business models and underline business processes (Škrinjar, Indihar Štemberger and Hernaus, 2007). A business process can be explained as a structured, analytical, cross-functional set of activities that requires constant improvement (Kolić, 2021). It is essential how specific processes will be performed for the overall success of the organization. BPM relies on a business approach to change direction to improve business processes. The ultimate goal is to achieve business goals, where change encompasses the entire life cycle of the process: from defining and modelling to performing, analysing, and optimizing operations. Lee and Dale (1998) state that BPM is intended to align the business processes with strategic objectives and customers' needs, but requires a change in a company′s emphasis from functional to process orientation (Lee and Dale, 1998). BPM solves many of the problems of the traditional hierarchical structure (DeToro and McCabe, 1997) because it: focuses on customers, manages hands-off between functions, employees have a stake in the final results.

The functional approach creates barriers to achieving customer satisfaction (Kueng and Hagen, 2007) and that is why today′s companies, in order to stay competitive, become more and more process oriented. The adoption of BPM is not a single act, but a process that occurs over time. Once BPM is implemented in a company, additional efforts must be made to follow this concept and to reap the benefits of its implementation. Experience from business practice suggests that implementation happens as soon as a BPM project is successfully completed, though successful adoption happens when the organization accepts BPM concepts in its' everyday practice. BPM adoption can enable an organization to achieve improved efficiency and quality and, ultimately, a positive return on investment in BPM. Reaching the ultimate goal "increased efficiency" has proven to be challenging in many ways. This challenge includes defining key performance indicators (KPIs), which align process performance with business objectives and strategy (Bosilj Vukšić, Milanović Glavan, Suša, 2016).

3. DIGITAL TRANSFORMATION

Today, without digitization and the use of digital devices, the world could hardly function. From digital technologies to digitalization, all the way to digital transformation, that is how people, companies, various organizations, and companies operate today. Digitalization is used for processing, storing, and transmitting data because it allows all types of information to be executed in almost all forms with the same efficiency (Kolić, 2021). The very concept of digitalization implied the use of digital technology due to changes in business models and increased revenue to enable the creation of new values in an organization. It is a process that leads to digital business. Digital transformation brings companies various benefits such as: helps the companies to become more competitive, makes employees more productive, provides a better customer experience, increases analytical capacity and creates new business opportunities (Erjavec et al., 2018). The digital transformation uses digital technologies to create some new or perhaps modify some already existing technologies. It refers to the process that stars when a particular company begins to introduce digital technologies in all business areas and lasts until the moment of their full integration. Digital technologies can bring many benefits to organizations in every industry, which is the main reason that more and more initiatives are being conducted, aiming to explore and exploit digital technologies (Matt, Hess, Benlian, 2015). The most commonly used digital technologies are:

- Cloud technology - which helps keep data in a safe place by making backups;
- The Internet of Things - is a system that is interconnected with a large number of computers, mechanical and digital machines, objects and people who have the ability to share data over a network without the need to interact with people or computers;
- Robotics - can be defined as the technology that controls the design, construction, operation and application of robots. It definitely plays a big role in increasing operational efficiency and creating more time to accomplish larger tasks;
- Artificial Intelligence - shows a simulation of human intelligence in devices that are programmed to think like humans and to mimic human activities;
- Augmented reality - this is a technology that shows elements that do not actually exist in the real world through an application through the screen of a device;
- 3D printing - it is used to create a prototype in physical form.

Having listed which digital technologies can significantly help in business, the steps in creating a strategic plan for the application of digital technology in business are also important. These are actually the stages in which the application of digital technology is developed by applying certain methods from the business plan (Pejić Bach, Spremić, Suša Vugec, 2018):

1) Global vision and business analysis;
2) Industry analysis of the external business environment;

3) Analysis of the internal business environment;
4) Designing a digital business model;
5) Analysis of the functioning of the existing information system;
6) Visions and goals of the information system that support the digital business model;
7) Information system guidelines;
8) Operational implementation of the digital business transformation plan.

So, in addition to the fact that a specific organization introduces digital technology into its business, it is not enough to just experience digital transformation (Spremić, 2017). To achieve a successful digital business transformation, it is essential to meet the following six criteria:

- Communication, change management, and consistency (it is essential to communicate openly with the business team, inform them about the changes and assign a role to everyone);
- Objective assessment of the current situation (it is essential to clearly define the state of the company and have an insight into all its shortcomings to come up with the right solutions that would bring the best result);
- Management support (digitalization of business must be a strategic priority and have the necessary budget);
- Use the feedback from the business team (the business team is the one that will use s new applications);
- Educate employees and explain the benefits of digitization;
- Make a budget plan for the implementation of new solutions;
- Define and present short-term and long-term results of digitalization (it is necessary to communicate with the whole business team daily, clarify what the tasks and responsibilities are. This contributes to avoiding mistakes and delays in business digitalization).

To conclude, for conducting a successful digital transformation it is not only important to use digital technology, but to also develop a good and clear digital strategy. As already stated digitalization brings significant changes. It has significant impact on economy, society and governance. In 2020, the European Commission published its annual DESI (The Digital Economy and Society) index which shows that Croatia ranks 20th among the 28 EU member states.
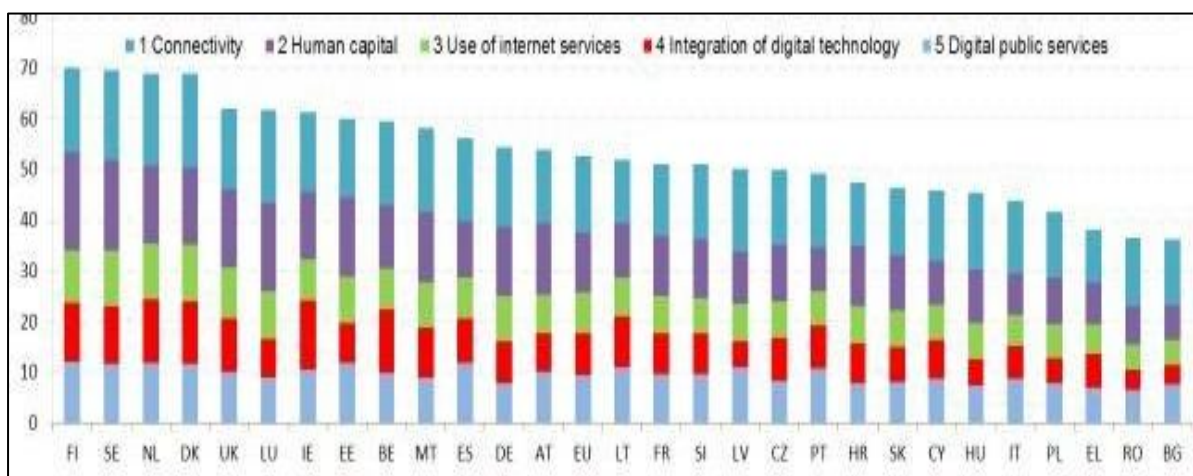
Figure 1: Digital Economy and Society Index (DESI) 2019
(Source: European Commission - European Commission)

Figure 1 shows that Croatia has good results in fixed broadband coverage, but unfortunately, achieves poor results in connectivity. Of all the categories, it shows the best results in the human capital category and ranks eighth in terms of the share of people with a degree in IDT. In addition, Croats are among the most numerous readers of online news in the EU, and Croatian companies take advantage of various opportunities for social media, big data, and e-commerce.

4. CONNECTION BETWEEN BPM AND DIGITAL TRANSFORMATION

Heberle, Lowe, Gustafsson, and Vorrei (2017) argue that for successful digital transformation, it is essential to automate existing business processes within an organization by digitization, integration, and analysis of data, as well as the establishment of new business models by digitalization. In accordance, vom Brocke et al. (2017) stress the significant role that structured data along with stable, reliable, and integrated processes play in digital transformation. The role of BPM system is crucial in developing digital transformation. At the same time, the application of BPM system requires radical changes and reconsideration of the mode of operation. And it is precisely this radical change that is the key to why BPM software is so associated with digital transformation. Although most companies today have decided to use BPM software, after a while, they achieve a high level of efficiency and learn how to use it properly to improve performance, but day by day, there are new challenges as technology advances. For this reason, various analysts suggest that changes should be constantly monitored, and the practice of BPM itself should be treated as a continuous initiative. When the digital transformation initiative is mentioned in this case, the BPM system has three main tasks (Vial, 2019), which are:

- The growing complexity of business operations that forces organizations to review, change, and improve their processes constantly needs to be addressed.
- The growing need for extensive cooperation, flexibility, and mobility needs to be addressed to make business processes as good as possible, reduce complexity, and increase collaboration.
- The need to increase the efficiency of process interaction needs to be addressed to improve relationships with customers, partners, associates, and customers, thus ensuring effective communication, information exchange, and collaboration.

In addition, BPM should be used for direct support and certainly to simplify the entire process, automate individual tasks that could be performed without interaction with clients, and reduce the time spent that users need to complete a particular process successfully. So, BPM deals with processes that are constantly changing in business. When an organization wants to introduce some innovations and adapt them to business processes, BPM provides an additional platform that can be used to view specific data, change something, or even improve it. Digital transformation includes changes in thinking, changes in business, acceptance of new technology, digitalization of company resources, and acceptance of innovation. From these facts, it can be concluded that BPM and digital transformation complement each other.

5. CASE STUDY

Digitalization has enabled various industries to accelerate processes. Case study presented in this paper shows the transformation of one business process through digitalization in banking industry. The following Figure shows the card issuing process in one Croatian bank before digitalization. The procedure begins at the bank, where the client comes to the counter. The bank employee checks in the system whether the client is bank user or not. If he is a bank user, the employee hands him a card request document that needs to be signed and moves on to the further procedure. The user fills out a document and he is informed that during next 7 days the card will arrive to his address. Once the card arrives, he has to wait another 7 days for the PIN to arrive.

After that, the card is ready for use. If the client is not a bank user, first he has to fill out the documents to become bank user and then the same procedure described above is repeated.
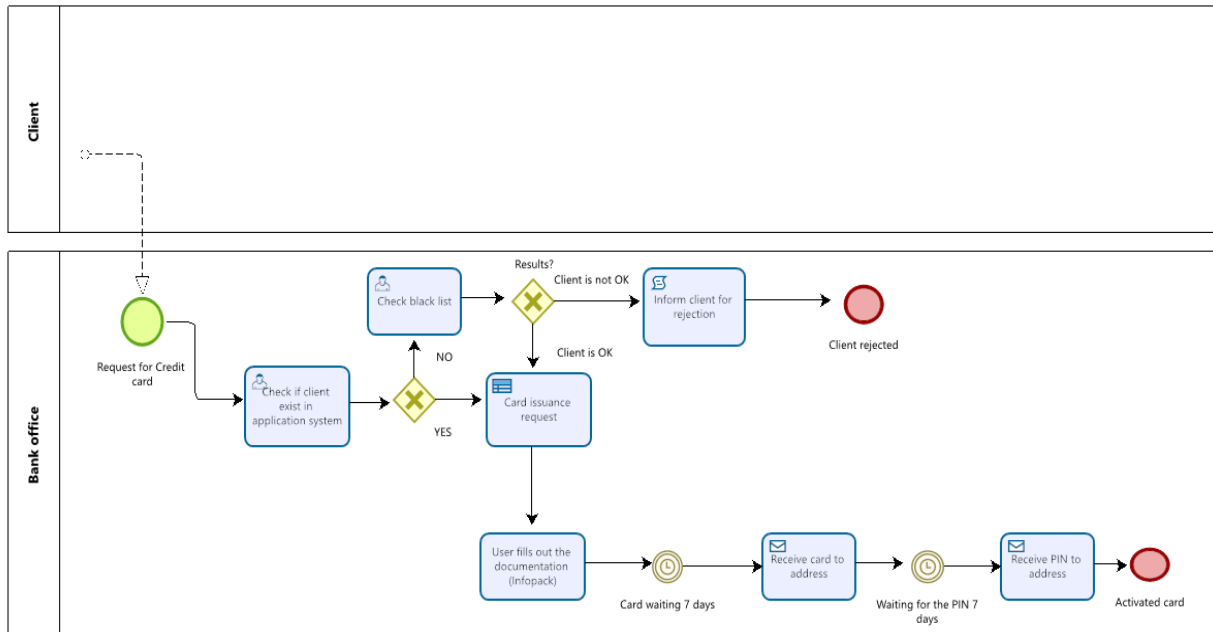
Figure 2: Model of card issuing process before digitalization
(Source: Author's work)

Bank has introduced new technology that enables sending automatic messages and it caused transformation of this business process. Figure 3 shows process for card issuing through an e-branch. So, it presents a process model after digitalization. In this model, the bank user talks on the phone with a bank employee and asks to be allowed to activate m-banking and to fill in card issuing request online. The client needs to download the application and automatically receives the activation code for m-banking. He enters the activation code, and the application is ready for use. Bank employee sends him form request for card issuing via application. The client returns the completed form with electronic signature on it. The bank makes the decision. If the decision is negative, the request is rejected. If the decision is positive, the client waits 3 days for the PIN to arrive on his mobile phone, after which the card is ready for use.
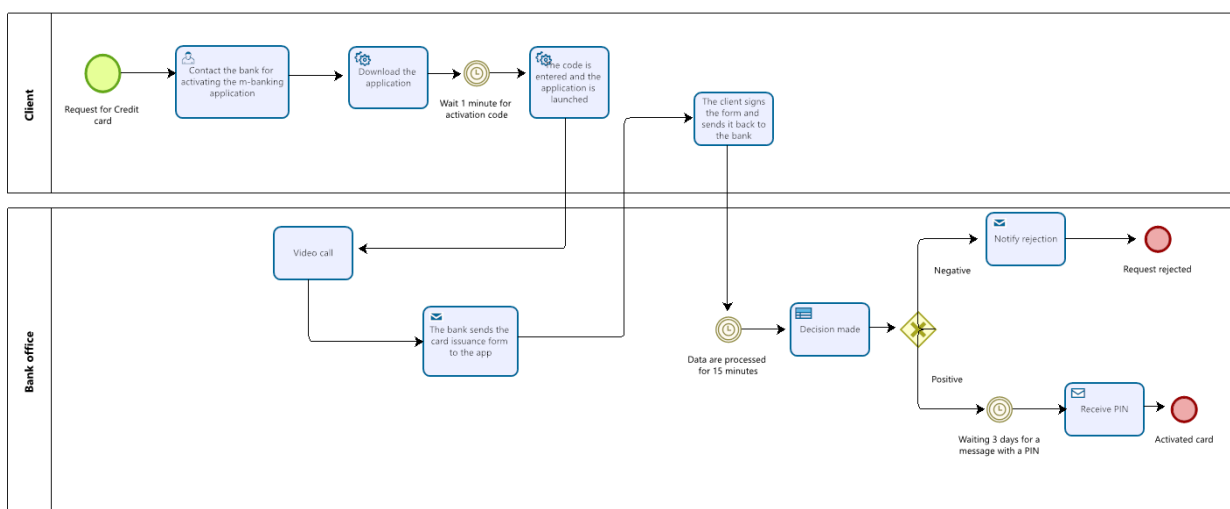
Figure 3: Model of card issuance process after digitalization
(Source: Author's work)

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This case study shows transformation of business process through digitalization. Technology that enables sending automatic messages has changed business process in a way that is managed. Additionally, business process becomes more effective and more automated and also time for process execution and step errors are reduced.

6. CONCLUSION

It can be concluded that digital transformation is the creation of new, innovative business models and/or change and improvement of the existing business model with the help of digital technologies. This paper presents two main components important for today's business practitioners, namely: business process management and digital transformation. It also presents case study of a bank in Croatia that confirms that business process can be improved through digitalization. Further research is also possible. It can include investigation on business process management in the digital era, especially in relation to digital transformation initiatives in organizations.

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THE MULTILATERAL METHODS FOR THE CONSUMER PRICE INDEX MEASUREMENT USING SCANNER DATA IN THE CONDITIONS OF THE SLOVAK REPUBLIC

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ABSTRACT

The consumer price index (CPI) is the best-known indicator that measures inflation. Slovakia, like many other countries has CPI production based on a fixed consumer basket of goods and services that consumers normally buy and data collection is carried out directly in shop premises and outlets where inhabitants usually do shopping. The current method of calculating CPI, as well as the method of obtaining input data, are insufficient in terms of increasing demands on quality and performance towards products of the official statistics. The transition from survey data to scanner data, means, in general, the transition from a fixed consumer basket to a dynamic world that contains all the goods sold. There are currently a number of approaches available to construct price indices using scanner data but the choice of formula and method can have a significant effect on the results obtained. Multilateral methods are a specific type of index compilation methods that can be applied to scanner data .The paper presents selected findings of the experimental study focused on the use of multilateral methods for the compilation of elementary price indices, performed on real data of five retail chains for the "Food and non-alcoholic beverages" division.
Keywords: Consumer Price Index, Multilateral Index Formula, Scanner Data

1. INTRODUCTION

The CPI is defined by ILO et. al. (2004) as *"an index that measures the rate at which the prices of consumption goods and services are changing from month to month (or from quarter to quarter). The prices are collected from shops or other retail outlets. The usual method of calculation is to take an average of the period-to-period price changes for the different products, using as weights the average amounts that households spend on them."* CPIs are official statistics that are usually produced by national statistical offices, ministries of labour or central banks. In the conditions of the Slovak Republic the calculation of these indices is performed from data obtained through field data collection of prices of goods and services. Data collection is carried out directly in plants and outlets where inhabitants usually do shopping, throughout the Slovak Republic, and the prices, that are being surveyed, are so-called counter prices or prices of product-offers[1]. The quantities of individual goods and services sold are not available and the traditional consumer basket on which the calculation of the consumer price index is based is a relatively small sample of the whole set of goods and services (price representatives). Since January 2020, after the revision of the CPI, the development of consumer price indices has been monitored on a universal consumer basket, based on a set of 728 representatives - selected types of goods and services paid by the population. 146 representatives, out of the abovementioned number, belong to the division "Food and non-alcoholic beverages." The method of obtaining input data as well as the current method of calculation seems to be insufficient and inefficient[2] enough in terms of increasing demands on the quality and pace of the official statistics production.

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[1] The term 'product offer' is specific to the HICP. Article 2(4) of Regulation (EU) 2020/1148: *'product-offer' means a product specified by its characteristics, the timing and place of purchase and the terms of supply, and for which a price is observed*
[2] The traditional price survey is one of the most expensive surveys at the Statistical Office of the Slovak Republic

For this reason, we started to deal with the possibilities of implementing a certain type of transaction data, referred to as scanner data, into the production of price statistics. Scanner data constitute a rapidly expanding source of data with considerable potential for CPI purposes. Scanner data offers more detailed and accurate information because of the large number of price observations involved. Scanner data are detailed data on sales of consumer goods and provides information at the level of the barcode or, more correctly, Global Trade Item Number (GTIN, formerly known as EAN code). Other codes than GTINs can also be used, so, we will use the general term 'item code'. There are several price index methods for calculating CPI based on data from scanners, that take into account the prices and possibly the weights of products in the two comparison periods. In multilateral methods, the aggregate price change between two comparison periods is obtained from prices and quantities observed in multiple periods. The paper presents selected findings of the experimental study focused on the use of multilateral methods for the compilation of elementary price indices, performed on real data of five retail chains for the Food and non-alcoholic beverages.

2. SCANNER DATA PROPERTIES

Scanner data is a relatively new source of data for statistical offices and its availability has been increasing in recent years. This type of transaction data is defined by Eurostat (2017, p.5) as *"transaction data obtained from retail chains containing data on turnover, quantities per item code based on transactions for a given period and from which unit value prices can be derived at item code level."* In scanner data, we usually do not observe counter prices (or prices of product-offers), but rather unit values (average prices) of some item codes are calculated (average price = turnover / number of units sold). Scanner data for a specific retailer and time period represent an exhaustive list of all item codes, their turnover, and the quantities sold. Scanner data enable to compile an index from all transactions of the retailer or the store and allow statisticians to use what has actually been sold and to include much more items in the CPI / HICP[3] in comparison with a traditional price collection. It also means that if turnover information is available, we can assign a weight to each item. Item codes identify the goods very accurately, so two items with the same item code are identical from the consumer's perspective. Scanner data reflect the dynamics of actual purchases in each elementary aggregate[4] because every transaction is recorded. The making up new item codes and termination of item codes and changes in their relative importance are visible in the dataset. Over the course of the year, 25 % to 60 % of the item codes are terminated, of course depending on the country (Eurostat 2017, p.8). Except the items, which are indeed the new ones, there are also the items which are just replaced by new versions called "relaunches". These are principally the same items, but only with some superficial differences, such as a new package or a new item code. In case of a discount (e.g. by 20% more volume for the same price), the new code is assigned to the item. In other cases, replacements are more significant if, for example, items of a particular brand are replaced by similar items of another brand. The dynamics or the churning in and out of product category items is a key characteristic of consumer goods and should be given sufficient attention when analysing and using scanner data to measure the CPI /HICP.

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[3]The Harmonized Indices of Consumer Prices (HICPs) are a set of European Union consumer price indices (CPIs) calculated according to a harmonized approach and a single set of definitions. The production of the HICP, its methodology and the data to be sent to Eurostat are governed by EU law.

[4] ILO et.al (2004, p. 445) '*The smallest aggregate for which expenditure data are available and used for CPI purposes. The values of the elementary aggregates are used to weight the price indices for elementary aggregates to obtain higher-level indices. The range of goods and services covered by an elementary aggregate should be relatively narrow, and may be further narrowed by confining the goods and services to those sold in particular types of outlet or in particular locations*'

3. DATA SOURCES AND DATA PRE-PROCESSING

The subject of the study was data from the five largest retail chains in Slovakia, which currently provide the Statistical Office of the Slovak Republic with data on prices and quantities of food and non-alcoholic beverages sold on a weekly basis and which cover approximately 2,500 stores in Slovakia. The assortment of food and non-alcoholic beverages is covered, in the conditions of Slovakia, by 7,000 to 29,000 items, depending on the retail chain. As a minimum requirement, the data need to be mapped to ECOICOP[5] subclasses (ECOICOP 5 digit), but very often more detailed national classifications are used. Based on detailed information about individual products[6] obtained from scanner data, 354 homogeneous groups of products for division 01 - Food and non-alcoholic beverages of the classification ECOICOP have been defined, i.e. the "national" level of classification ECOICOP 6 digit (sub-subclasses) for division 01 has been defined, which is common for the data of all retail chains that are currently cooperating with the Statistical Office of the Slovak Republic in this area. Each product should enter into the calculation of elementary index on the basis of its importance. Practical guide for processing supermarket scanner data (Eurostat, 2017, pp. 25-29) recommends two possible approaches for the selection of the items that should be included in the calculations, namely the static approach (static product universe with fixed weight) and the dynamic approach. The static approach imitates the traditional fixed selection (consumer basket) with the difference that there is the change in pricing concept. Prices obtained in the traditional way are replaced by prices per unit of goods from the scanner data. The dynamic method automatically selects a representative selection of item codes for every two consecutive months (t and t + 1, t + 1 and t + 2, t + 2 and t + 3, and so on) by selecting all matched items that have turnovers above a certain threshold. Depending on method used for index compilation, filters are applied to the data set that exclude some products from the calculation. Since multilateral methods are in principle based on all transactions, there is no need to sample products or to exclude products with a low turnover[7]. Filtering removes extreme price changes with minimum and maximum price change on the basis of experiments set to 0,3 and 3 (outlier filter), and clearance products, if price change is ≤ 0,8 and at same time the change of turnovers is ≤ 0,2 (dumping filter). The effect of data filtering on the numbers of products that enter the calculation of indices can be seen in Table 1.

Type of filter	Description	No.of records after filtering
Without filtering		60 239
Filter 1	outlier filter	60 070
Filter 1, 2	outlier filter + dumping filter	59 638
Filter 1, 2, 3	outlier filter + dumping filter +low sale filter[8]	17 057

Table 10: Impact of filters on data set reduction (COICOP 01, average month 2019)
(Source:eigen processing)

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[5] European Classification of Individual Consumption by Purpose. The European version is compatible the official UN version, but has added a more detailed level by breaking up the UN 4-digit classes into 5-digit level subclasses

[6] The term 'product' often refers to multiple items. For example, toothpaste is a product that contains many items (brand and type of toothpaste) but, in conditions of Slovak Republic and for ECOICOP 01 - the division "Food and non-alcoholic beverages" item code was chosen as product.

[7] Removing products with relatively small expenditures in a pre-processing step could bias the results, see Eurostat (2021, p. 5)

[8]The dynamic basked method typically includes a low-sales filter, see Eurostat (2017)

4. PRICE INDICEC

The price index measures the aggregate change in the price of the current period relative to the price of the base period. There are several index formulas that take into account the prices of the products and their eventual weights in the two periods being compared. The choice of index formula is one aspect of a broad spectrum of choices that have to be made in order to compile index numbers. Each choice aspect may have an impact on the index, which can be quite large (Chessa, 2016, 2017, 2018; Chessa et al., 2017 cited in Chessa 2019). As moving away from the base period, the overlap of products decreases, limiting the price comparison calculation. One way to ensure product overlap is to frequently update the base period and chain bilateral price indices. However, such an approach may be subject to "chain drift"[9], especially if the products are weighted. Multilateral methods have been found to be a solution to the problems encountered with bilateral methods. They take into account all the products that are available in the different periods. They allow to explicitly weight each product according to its importance in each period. Finally, they aim to avoid the chain-drift problems encountered with chained bilateral indices. Given these advantages, multilateral methods have been recommended as suitable price index compilation methods for transaction data despite their additional complexity compared to bilateral methods (Eurostat, 2021, p.3).

4.1. Multilateral price indices

Recently, multilateral methods have received a great deal of attention, both from NSIs[10] and researchers from academia (Ivancic et al., 2009, 2011; de Haan and van der Grient, 2011; Krsinich, 2014; Chessa, 2016; Chessa et al., 2017; ABS, 2017; Diewert and Fox, 2017; Van Loon and Roels, 2018; cited in Chessa 2019). Multilateral price index methods have been usually used to compare price levels between countries and regions and they have been adapted to make comparisons across time (Ivancic, Diewert, and Fox (2011)). The best known are the The Gini-Eltetö-Köves-Szulc (GEKS) method, Weighted Time Product Dummy method, and Geary-Khamis method and they are also presented in Chapter 10 of the CPI manual (ILO et. al, 2020, pp. 228-233). Multilateral indices are defined by Eurostat (2021) as '*a category of index number formulas that measure the aggregate price change between two periods based on prices observed in multiple periods including the two comparison periods. For price comparisons over time, multilateral index formulas are mainly used with scanner data and their main advantage is to avoid chain drift associated with the use of chained bilateral price index formulas in dealing with changing and dynamic consumption universes.*' Multilateral indices meet the requirement of circularity or transitivity; it means, that it is possible to achieve the identical results regardless of whether the entities are compared to each other directly or by means of relationships with other entities. This means that the results is independent of the choice of the base period. This is a key property which avoids the chain drift problem.

4.1.1. Gini-Eltetö-Köves-Szulc (GEKS)

The transitive multilateral index GEKS is the geometric mean of the ratios of all bilateral (in the standard version of Fisher's) indices where each entity is considered as a base. When the method is applied, at first, it is necessary to determine the length of the interval (window) to which the method is to be applied. As a rule, the method is applied to a window length for one or two years plus one period to consider products burdened by seasonality as well. The length of window is denoted by *w*. Within the window, the base period, denoted as *k,* is selected and bilateral index between the period *k* and each subsequent period in the window is calculated.

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[9] '*An undesired property associated with the application of chained indices, where the prices and quantities of products typically bounce up and down thus causing indices to systematically drift away from its expected price trend. A way of measuring the degree of chain drift is to apply the multiperiod identity test*' (Eurostat, 2021, p. 55).
[10] National Statistical Institutions

The procedure is repeated for all possible alternatives *k*. In this way, it is possible to get a matrix of bilateral indices of size *w x w* for all possible pairs of individual periods within the window. Then GEKS indices are calculated for the first *w* periods as:

$$I^{0,t}_{W(GEKS-Tq)} = \prod_{k \in W} \left(I^{0,k}_{Tq} * I^{k,t}_{Tq} \right)^{\frac{1}{|W|}} \tag{1}$$

$$\left[\prod_{k=1}^{w} P^{k,1}\right]^{1/w}, \left[\prod_{k=1}^{w} P^{k,2}\right]^{1/w}, ..., \left[\prod_{k=1}^{w} P^{k,w}\right]^{1/w} \tag{2}$$

where the term $P^{k,t}$ is the bilateral index between period *t* and base period *k*. In the original version, *P* was Fisher index, currently is also used e.g. Tornquist, Walsh or Jevons index. However, any other bilateral index can be used, as long as the index satisfies time reversibility. This property requires that the index between periods a and b is equal to the inverse of the same index between periods b and a. The matrix of bilateral indices *w* x *w* looks as follows:

$$P = \begin{pmatrix} P^{1,1} & \cdots & P^{1,w} \\ \vdots & \ddots & \vdots \\ P^{w,1} & \cdots & P^{w,w} \end{pmatrix} \tag{3}$$

Then, the first value of the series of GEKS indices for the first *w* periods is the geometric mean of the elements in the first column of the above matrix, the second term is the geometric mean of the second column, and so on.

4.1.2. Time windows and extension methods

In the case of multilateral indices, the problem arises by adding information from the new month. In a statistical production environment, each month, the time window has to be adjusted to include the data from the latest month. There are various strategies for adjusting time windows:

- Each month, the time window is shifted forward by one month. The length of the time window is kept constant. The latest month is included whereas the oldest month is removed.
- Each month, the time window is extended by one month. The length of the time window increases each month by one month. After one year, the length of the time window is reset to its initial length.

Each time a new time window is used, the previously calculated indices may change. Therefore, splicing techniques must be used which links the latest multilateral index onto to previous results in order to avoid revisions of already published results. Technically, the splicing of two series operates via a link month. There are different options for the selection of the link month when compiling the results in month t.

- Movement splice: The period t-1 is used as the link period (de Haan and van der Grient (2011))
- Window splice: The period t-w+1 is used as the link period (Krsinich 2014)
- Half splice: The period t-(w+1)/2+1 is used as the link period (de Haan, 2015)
- Mean splice: All the overlap periods are used as link periods (Diewert, and Fox 2017)
- Fixed base: The previous December is used as the link period

Chessa (2016) proposed a method without using a monthly rolling window. Instead, it uses a time window with a fixed base month every year (December). The window is enlarged every month with one month (Fixed Base Monthly Expanding Window – FBEW). Lamboray (2017) proposed a mix of the FBEW method and the movement splice.

His approach uses a rolling window where the last month of the window is compared to the previous December month. This December plays the role of fixed base, as in the FBEW method. This method is called the Fixed Base Moving Window method (FBMW). Chessa (2019) pointed out that there are in fact two main variants for splicing methods. Successive window shifts generate a sequence of recalculated or 'revised' indices alongside the initial published index in the same period. Both the recalculated and published indices are candidates for the index on which a new index series can be linked. Therefore, we will distinguish two variants of splicing (except from movement splicing, which has the index published in the previous period as the only link option):

- Link the multilateral index compiled in period t with the multilateral index compiled in period t-1.
- Link the multilateral index compiled in period t with the published index.
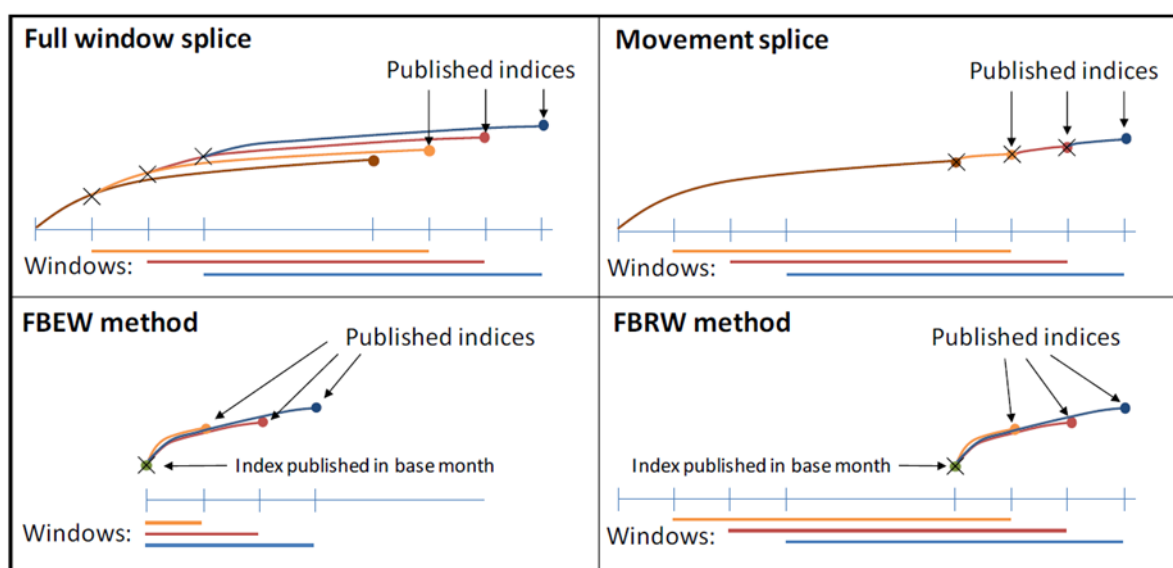
Figure 1: Illustration of index extension methods, with × denoting linking month and index
(Source: Chessa (2019, p. 5))

5. EMPIRICAL STUDY
5.1. Data sets
The extension methods described in the previous section are applied to transaction data of food and non-alcoholic beverages of the five largest retail chains in Slovakia. The data used in this study cover periods of 25 months (Dec. 2018 – Dec. 2020). The outlier filter and the dumping filter (see section 3) have been applied on the data set.

5.2. Index comparisons and results
The extension methods are applied in combination with GEKS methods (GEKS_Jevons and GEKS_Tornqvist). Time windows of 13 months are used in each extension method. Monthly GEKS multilateral indices in this study are compiled at the lowest aggregation level over the common product database, i.e. only time and product aggregation are applied in the processing because the elementary level is not chain-specific. Elementary level at which price indices are compiled in the condition of the Slovak Republic is the level of 'national' 6 digit COICOP–354 sub-subclasses (product groups) of 'Food and non-alcoholic beverages ' division. One of them is product group 'COICOP 01.1.4.1.1 (fresh whole milk)' through which we illustrate the results of the compilation of the price indices.

The GEKS indices for the 354 product groups have been aggregated to higher COICOP levels using standard annually chained Laspeyres-type indices with fixed weights that are related to the previous year. The same procedure is used to aggregate the "official" indices.

Table 2 illustrates the selected extension (splicing) methods and the results obtained, where t is the current period and T is the window length.

Period	1	2	3	...	11	12	13	14	15	16
1.roud 0-13 month	100.0	100.7	99.3	...	100.2	99.9	99.9			
2.roud 1-14 month		100.0	98.6	...	99.5	99.2	99.1	100.1		
3.round 2-15 month			100.0	...	101.0	100.6	100.5	101.6	100.3	
4.round 3-16 month				...	99.9	99.5	99.3	100.5	99.2	101.6
Published index										
MOVEMENT SPLICE - Link onto the published series: $$I_{pub}^{0,t} = I_{pub}^{0,t-1} * I_{[t-T+1,t]}^{t-1,t}$$										
	100.0	100.7	99.3	...	100.2	99.9	99.9	100.90	99.64	102.13
WINDOWS SPLICE - Link onto the previously calculated series: $$I_{pub}^{0,t} = I_{pub}^{0,t-1} * I_{[t-T,t-1]}^{t-1,t-T+1} * I_{[t-T+1,t]}^{t-T+1,t}$$										
	100.0	100.7	99.3	...	100.2	99.9	99.9	100.84	99.64	102.14
WINDOWS SPLICE - Link onto the previously published series: $$I_{pub}^{0,t} = I_{pub}^{0,t-1} * I_{pub}^{t-1,t-T+1} * I_{[t-T+1,t]}^{t-T+1,t} = I_{pub}^{0,t-T+1} * I_{[t-T+1,t]}^{t-T+1,t}$$										
	100.0	100.7	99.3	...	100.2	99.9	99.9	100.84	99.62	102.16
HALF SPLICE - Link onto the previously calculated series: $$I_{pub}^{0,t} = I_{pub}^{0,t-1} * I_{[t-T,t-1]}^{t-1,t-\frac{T+1}{2}+1} * I_{[t-T+1,t]}^{t-\frac{T+1}{2}+1,t}$$										
	100.0	100.7	99.3	...	100.2	99.9	99.9	100.85	99.63	102.04
HALF SPLICE - Link onto the previously published series: $$I_{pub}^{0,t} = I_{pub}^{0,t-1} * I_{pub}^{t-1,t-\frac{T+1}{2}+1} * I_{[t-T+1,t]}^{t-\frac{T+1}{2}+1,t} = I_{pub}^{0,t-\frac{T+1}{2}+1} * I_{[t-T+1,t]}^{t-\frac{T+1}{2}+1,t}$$										
	100.0	100.7	99.3	...	100.2	99.9	99.9	100.85	99.62	102.05

Table 2: Comparison of the price indices obtained by applying different splicing methods for
COICOP 01.1.4.1.1 (fresh whole milk)
(Source: eigen processing)

		WINDOW	HALF	MOVEMENT	MEAN	FBEW	FBMW
GEKS - Jevons	Mean	0.43	0.56	0.42	0.51	0.44	0.45
	StdDev	0.23	0.34	0.25	0.29	0.30	0.24
GEKS - Tornqvist	Mean	-0.06	-0.05	-0.05	-0.06	-0.08	-0.07
	StdDev	0.05	0.05	0.05	0.05	0.08	0.07

Table 3: Differences between splicing indices and full window indices
for COICOP 01.1.4.1.1 (fresh whole milk)
(Source: eigen processing)

Price indices obtained with the extension methods are compared with indices that are transitive on the full length of the time period covered by the data sets. The tables 3-5 and the figure 2 show the mean differences between diferent extension (splicing) indices and full window indices (w=25) chosen as benchmark at the elementary aggregate level and at the COICOP 3 digit level.

Six different extension methods have been tested for the multilateral methods GEKS_Jevons and GEKS_Tornqvist and calculated for COICOP 01.1,01.2 and 01.1.4.1.1 over the entire length of the interval. The standard deviations are also given.
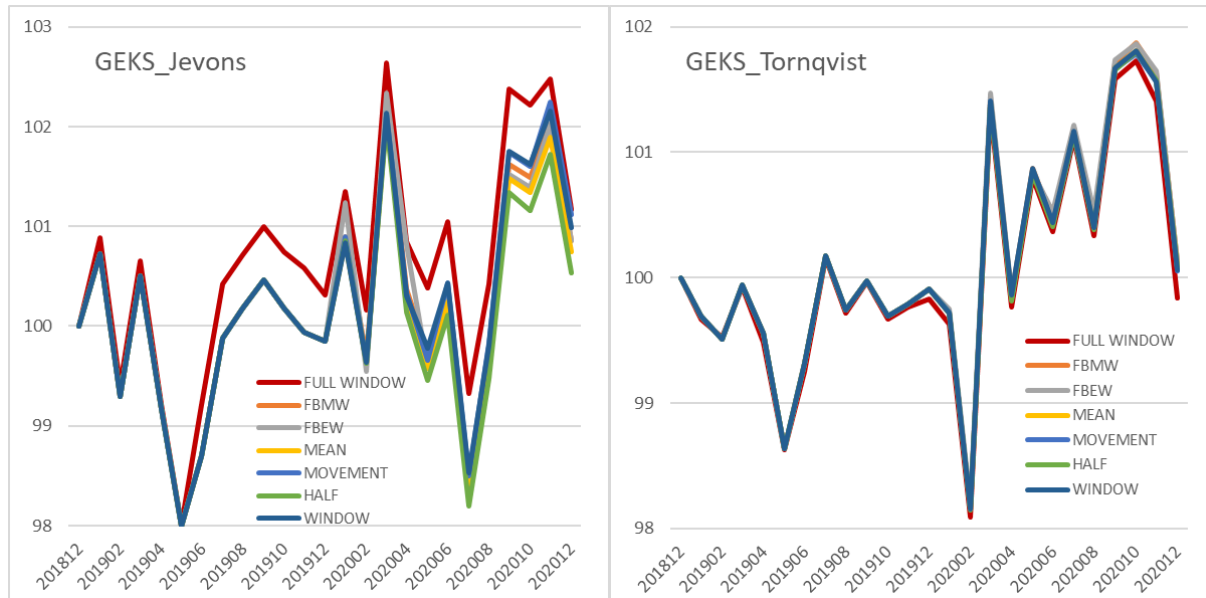
Figure 2: Illustration of differences between splicing indices and full window indices for COICOP 01.1.4.1.1 (fresh whole milk)
(Source: eigen prossesing)

		WINDOW	HALF	MOVEMENT	MEAN	FBEW	FBMW
GEKS - Jevons	Mean	0.41	0.47	0.40	0.45	0.51	0.42
	StdDev	0.20	0.27	0.19	0.24	0.30	0.21
GEKS - Tornqvist	Mean	0.18	0.22	0.17	0.19	0.21	0.16
	StdDev	0.09	0.13	0.08	0.10	0.11	0.08

Table 4: Differences between splicing indices and full window indices
for COICOP 01.1. (Food)
(Source: eigen processing)

		WINDOW	HALF	MOVEMENT	MEAN	FBEW	FBMW
GEKS - Jevons	Mean	0.56	0.69	0.55	0.65	0.77	0.65
	StdDev	0.26	0.37	0.24	0.33	0.43	0.33
GEKS - Tornqvist	Mean	0.12	0.19	0.14	0.17	0.22	0.18
	StdDev	0.06	0.13	0.08	0.10	0.16	0.11

Table 5: Differences between splicing indices and full window indices for COICOP 01.2.
(Non alcoholic beverages)
(Source: eigen processing)

The presented results show non-significant differences between the extension methods of both GEKS_Tornqvist and GEKS_Jevons. However, the situation is different when comparing the two multilateral methods with each other. In case of the GEKS _Jevons, the average difference is two up to three times larger than in case of the GEKS _Torqvist, even for the product group COICOP 01.1.4.1.1 it is an order of magnitude larger. The GEKS_Torqvist index for product group COICOP 01.1.4.1.1 is only on average by 0.05 up to 0.08 points higher than the index based on the full window.
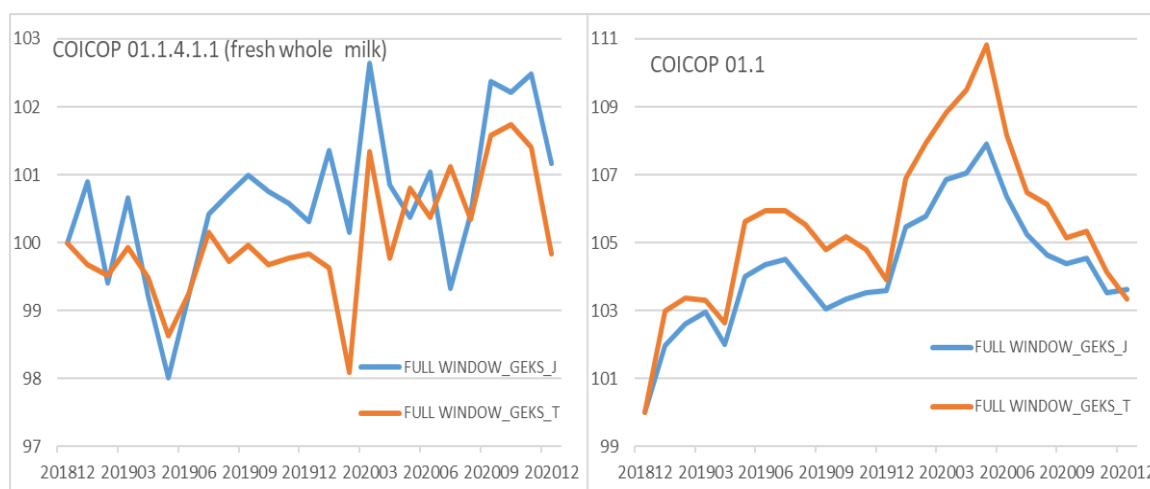
Figure 3: Difference between GEKS_Jevons and GEKS_Tornqvist calculated over the whole period of 25 months (full window)
(Source: eigen processing)

Figure 3 shows the significant difference between multilateral methods GEKS_Jevons and GEKS_Tornqvist calculated over the whole period of 25 months. GEKS_Jevons cannot fully exploit the potential of scanner data because it is an unweighted index and the ability to construct weights at the elementary level is one of their advantages.

6. CONCLUSION

Multilateral methods are a specific type of index construction methods that can be applied to transaction data and we have no doubt that these methods represent the optimal solution because they eliminate the chain drift and take into account a dynamic product universe. Nevertheless, the selection of an appropriate index number formula remains the great challenge. The selection of index formula is just one decision that have to be made when compiling multilateral price indices. Multilateral methods are defined with respect to time windows over which the index formula is compiled and to splicing techniques which should be used to combine the respective indices. These are the aspects we have tried to highlight in the paper. The Slovak Republic is still "on the way" in the process of preparing for the regular and official use of scanner data as the official data source for the compilation of CPI. Many questions related to the implementation of this data source in statistical production are still unanswered and require further research and experimentation on real data.

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COVID 19 - INFLUENCE FACTOR OF ALTERNATIVE WORKPLACE

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ABSTRACT
Given the characteristics of today's labor market and the impact of the COVID 19 pandemic, the question needs to be asked: Is an alternative workplace a perspective or a pure necessity? Changes are already affecting and will affect the way business is organized. The COVID 19 pandemic is accelerating and has a significant impact on business transformations in terms of job and workplace perceptions. An alternative workplace is a substitute for the current definition of a classic workplace consisting of a worker, a secured job and, the necessary resources for work. The increasing use of the alternative workplace brings with it certain advantages and disadvantages. This paper analyzes and critically examines previous research on the application of alternative workplaces. Some of the practical goals are also to present the current perspective of an alternative place of work in the Republic of Croatia in comparison to other countries. Special emphasis is placed on the fact that in today's uncertain and high-tech world, it is the pandemic that significantly affects the behavior of employees and employers and creates new attitudes about the application of alternative workplaces.
Keywords: *alternative workplace, COVID 19 pandemic, labor market*

1. INTRODUCTION
According to the European Center for Disease Prevention and Control, data as of the first half of October 2021 show that almost 239 million cases of Covid-19 disease have been reported worldwide (ECDC). According to the so-called fourth wave of the Covid-19 pandemic, 418,028 cases have been reported in the Republic of Croatia so far. Unfortunately, we are witnessing that the effects of a pandemic are reflected in all the socio-economic indicators of society. Restrictions on social and economic activities since the beginning of the Covid-19 pandemic have had and still have a significant impact on the labor market, which is evident from the data of the Central Bureau of Statistics of the Republic of Croatia. After several years of recorded employment growth and falling unemployment, the Republic of Croatia, unfortunately, faced the interruption of these favorable trends precisely because the Covid 19 pandemic preventing them from carrying out their activities. When workers are unable to be present at the workplace due to critical events such as work in time zones, extreme weather conditions, social exclusion, and isolation measures in the fight against epidemics (e.g. COVID-19) or natural disasters, teleworking offers opportunities for continuation of work (Aurer Jezerčić, 2020). Sus and Sylwestrzak (2021) emphasize the crisis caused by the epidemic coronavirus has shown that companies must introduce changes in the competency requirements of employees. The style of work changes, new skills acquire new meaning, such as adaptation to changes, mental resilience, and self-organization of work. It this paper that summarizes current knowledge about alternative workplaces during the COVID-19 pandemic and provides insight into the current situation of teleworking in the Republic of Croatia as well as comparing with other countries.

2. ALTERNATIVE WORKPLACE - THEORETICAL FRAMEWORK
The workplace we have known so far can be said to be slowly dying out. In a very short period time, there have been significant changes in the perception of the workplace. Thanks to the constant advancement of technology, new forms of the workplace are being developed.

On the one hand, we are guided primarily by increasing productivity and competitiveness through the possibility of reducing costs and on the other hand by the desire to increase employee satisfaction and interest in the job. One of the first steps may be to apply for alternative jobs. The topic of telecommuting began to gain publicity in academic circles in the early 1970s when the energy crisis occurred which led researchers to think of telecommuting as an alternative physical journey to work (Haddon, Lewis 1994). There are different definitions and concepts of understanding alternative jobs even within the European Union member states themselves. The lack of a harmonized definition prevents a coherent approach in such a way that, for example, precedents based on one type of telework do not have to be relevant to another type of telework (Bilić, 2011). At the EU level in 2002, the European social partners signed the Framework Agreement on Telework. Within the Framework, teleworking and its scope are defined as: "a form of organization and/or performance of work using information technology, in the context of employment contracts, whereby work, which may also be performed at the employer's premises, is regularly performed outside them". Under the agreement, such workers are called teleworkers (Aurer Jezerčić, 2020). The following four types of alternative workplaces are most often mentioned in the literature:

- teleworking,
- remote work with the use of electronic devices,
- work from home and
- work at home.

Teleworking with the use of electronic devices also implies that workers perform part or all of their work outside the usual workplace, not necessarily at home using electronic devices, and can also be carried out by dependent and independent workers. Work from home refers to work that takes place in whole or in part within the residence of the worker. The physical location where all or some of the work is performed is, therefore, the workers' own home (Grečić, 2021). Work at home can be defined as a subcategory of work from home. They are usually defined as "workers whose main place of work is their own home". In other words, workers who work at home are those who usually do their work at home, regardless of whether their home could be considered a default place of work (Grečić, 2021). It is important to emphasize that all four categories are interrelated and have certain matches (overlaps). The following is a tabular overview of the basic definitions of Telework and ICT-based mobile work according to the EWCS-2015 survey as well as Eurofound 2020a and work from home/home based telework.

Type of work	Definition	Source
TICTM (Telework and ICT-based mobile work)	Is a work arrangement characterized by working from more than one place (not necessarily from home), and is enabled by ICT. It can be performed by both dependent and independent workers	EWCS-2015/Eurofound, 2020a
Work from home/ Home-based telework	Refers to work that takes place fully or partly within the worker's own home, can be performed by both dependent and independent workers, and does not necessarily entail the use of digital devices	EU-LFS European survey on ICT usage in households and by individuals Eurofound's Living working and Covid online surveys

Table 1: Definition of telework adopted in available comparative data sources
(Source: Samek Lodovivci, M. et al., (2021))

It is also necessary to emphasize the definition of necessary terms arising from the operationalization of T/ICTM categories according to the use of ICT and workplace, which can be seen from Table 2 where remote work is described or identified with mobile work based on ICT. Eurofound and the ILO define mobile work based on teleworking and ICT, which is characterized by multi-site work, enabled by ICT. There are four categories of teleworking based on the application of ICT and the workplace:

- permanent work from home: workers who often use ICT to work from home;
- extremely mobile: workers who often use ICT for work and have a high level of mobility;
- casual: workers who occasionally use ICT to work outside their employer's premises;
- self-employed: self-employed workers who occasionally or frequently use ICT to work from places other than their premises.

Category	Use of ICT	Place of work	
Regular home-based telework	Always or almost of all the time	Working in at least one other location than the employer's premises several times a month	From home at least several times a month and in all other locations (except employer's premises) less often than several times a month.
High mobile T/ICTM			At least several times a week in at least two locations other than the employer's premises or working daily in at least one other location.
Occasional T/ICTM			Less frequently and/or fewer locations than high T/ICTM.
Always at the employer's premises	All categories	Always at the employer's premises.	

Table 2: Operationalisation of categories of T/ICTM according to 'use of ICT' and 'place of work items
(Source: Eurofound and the International Labour Office (2017), Working anytime, anywhere: The effects on the world of work)

Characterizing and defining telework seems to be increasingly difficult as technology, office work, and homework separate and intertwine in new ways (Wilks, L., Billsberry, J., 2007). The introduction of teleworking has called into question the applicability of the legal system, in particular labor law regulations, to new issues related to this form of work. Although the issue of telework has been considered for several decades, there is still no universal definition of it, or even a unique term to denote such a form of work (Bilić, 2011). It should be emphasized that the Republic of Croatia does not have legally regulated teleworking and that the regulations are dangerously late, and we cannot exclude the fact that teleworking is increasingly represented, especially by the impact of the Covid-19 pandemic. The Labor Act and the Occupational Safety and Health Act define a separate job. A separate place of work is a place of work in which the employee performs the contracted work at home or in another space other than the employer's space is evident from Article 3, paragraph 1, item 5 of the Occupational Safety and Health Act. Amendments to the Labor Act have been announced only for the first half of 2022, which, given the accelerated changes in the application of telework, can be considered a rather late implementation.

According to the Independent Croatian Trade Unions, the European Economic and Social Committee (EESC) notes that there is no consolidated European framework for teleworking. It, therefore, recommends evaluating the existing rules to determine their effectiveness given the rapid expansion of teleworking, awareness of new risks, and lessons learned. In particular, it encourages the social partners to revise the 2002 Framework Agreement on Telework and give it new impetus. They believe that the social partners can, for example, through collective bargaining, play an important role in promoting teleworking in a way that contributes to gender equality, the promotion of workplace well-being, and productivity.

3. METHODOLOGY

Due to the impossibility of conducting own empirical research, the paper used data from previous professional and scientific research, primarily secondary data from Eurostat (Statistics | Eurostat (europa.eu)) and the unique e-research from Eurofound, Living, working and COVID-19 data (https://www.eurofound.europa.eu/data/covid-19/working-teleworking). Eurostat labor force data will be used to analyze trends in work from home over the past periods. Data collected will be presented to Employed persons working from home as a percentage of total employment, by sex, age, and professional status (%). The data are available for all EU member states as a whole as well as individually for each country. The aforementioned Eurofound study shows the impact of the COVID-19 pandemic on human life. So far, three rounds of e-research have been conducted. The first round of research was conducted from April 9, 2020, when most EU member states were incomplete closure. Then the second round of research was in July 2020 and the last round of research was conducted in March 2021. The target population of Eurofound surveys is over 18 years of age. Survey participants were recruited using snowball sampling methods and social media advertisements. The data are available for all EU member states as a whole as well as individually for each country. Eurofound includes employment status, working hours, work-life balance, job security, job quality, and the data that will be largely displayed through this paper is the level of telework and experience related to working from home. The target population of Eurofound surveys is over 18 years of age. The data are available for all EU member states as a whole as well as individually for each country.

4. RESULTS AND DISCUSSION

As stated in the methodology, a several smaller surveys have been conducted in the field of application of alternative forms of the workplace, while the most extensive and latest research has been conducted by Eurostat and Eurofound, Eurofound, Living, working and COVID-19 surveys. the results. The European Working Conditions Survey (EWCS), which is conducted every five years, is important for the issues of this paper. Unfortunately, due to the impossibility of conducting the survey in 2020, the survey was conducted in 2021, but the data of the latest survey will not be available until the second half of 2022. Eurostat labor force data will be used to analyze trends in work from home over the past periods. Data were collected on employees who work from home as usual, sometimes or never. If we compare the data of EU27 employees between 2006, where work from home was 10%, and in 2019, 14.3%, it can be concluded that the number of workers in the EU27 working from home grew. This increase is mainly due to the increase in the share of those who work from home only occasionally (in 2006 from 5.5% to 9% in 2019), it should be emphasized that a significant role is still played by the self-employed who work from home. If we look at employees who usually work at home, the results of the Republic of Croatia concering other EU member states are devastating. The Republic of Croatia is at the back of the countries with 3.1% together with Hungary, Turkey, Northern Macedonia, Romania, and Bulgaria.

While data on employees who sometimes work from home are slightly more favorable, 7.9%, and the Republic of Croatia ranks among countries such as Hungary, Norway, the Czech Republic, Slovakia, etc. According to EWCS data for 2015, and compared to the available data, homework is more present in northern European countries today, while countries such as Bulgaria, Romania, Cyprus, etc. have a significantly lower representation of work from home.

	2016		2017		2018		2019		2020	
	males	females	males	females	males	Females	males	Females	males	females
usually	1,1	1,7	1,1	1,8	0,8	2,0	1,3	2,6	2,8	4,2
sometimes	3,8	4,8	4,5	4,7	5,5	5,2	5,3	4,7	6,9	9,2

Table 3: Application of work from home 2016-2020 by gender
(Source: Author according to Eurostat database)
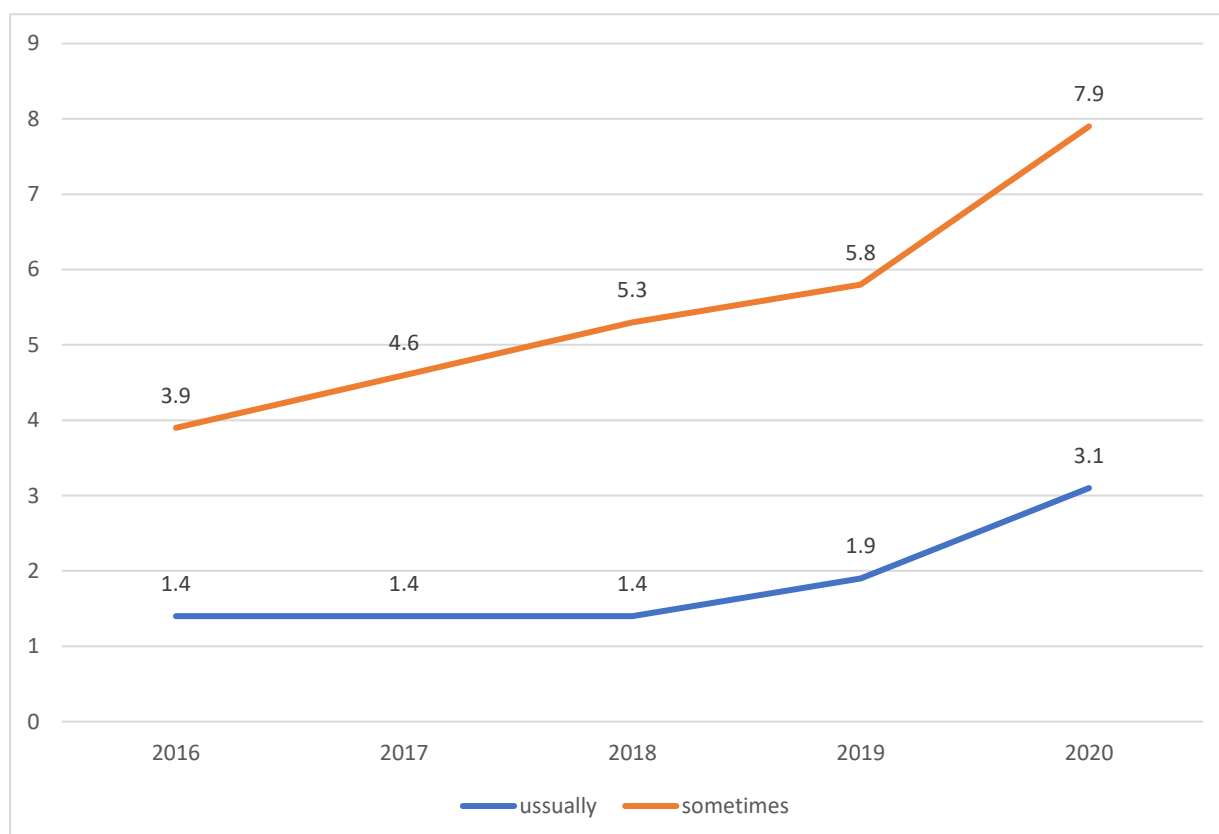
Graph 1: Application of work from home in the Republic of Croatia 2016-2020
(Source: Author according to Eurostat database)

Table 3 and Graph 1 show that the increase in work from home in Croatia occurred in the observed period 2016-2020. Significant growth is among employees who sometimes work from home from an initial 3.9% in 2016 to 7.9% in 2020, while among employees who normally work from home, slightly weaker growth was observed compared to the observed years. It is also important to note that a higher proportion of women than men are among employees who typically work from home with a significant emphasis in 2020 at 4.2%. The gender gap in work from home among employees was also observed in other European countries such as France, Poland, Romania, Slovenia, and Malta, where even the frequency among women was twice as high as that observed for men. According to the results of the Eurofound survey, when asked during the Covid 19 pandemic where you worked, almost 32.5% of Croatian respondents answered that they worked at home, unlike in 2020, where 20.2% of respondents answered in the affirmative.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Croatia	16.1	33.9	25.8	14.5	9.8
EU27	20.2	36.8	23.9	10.8	8.4
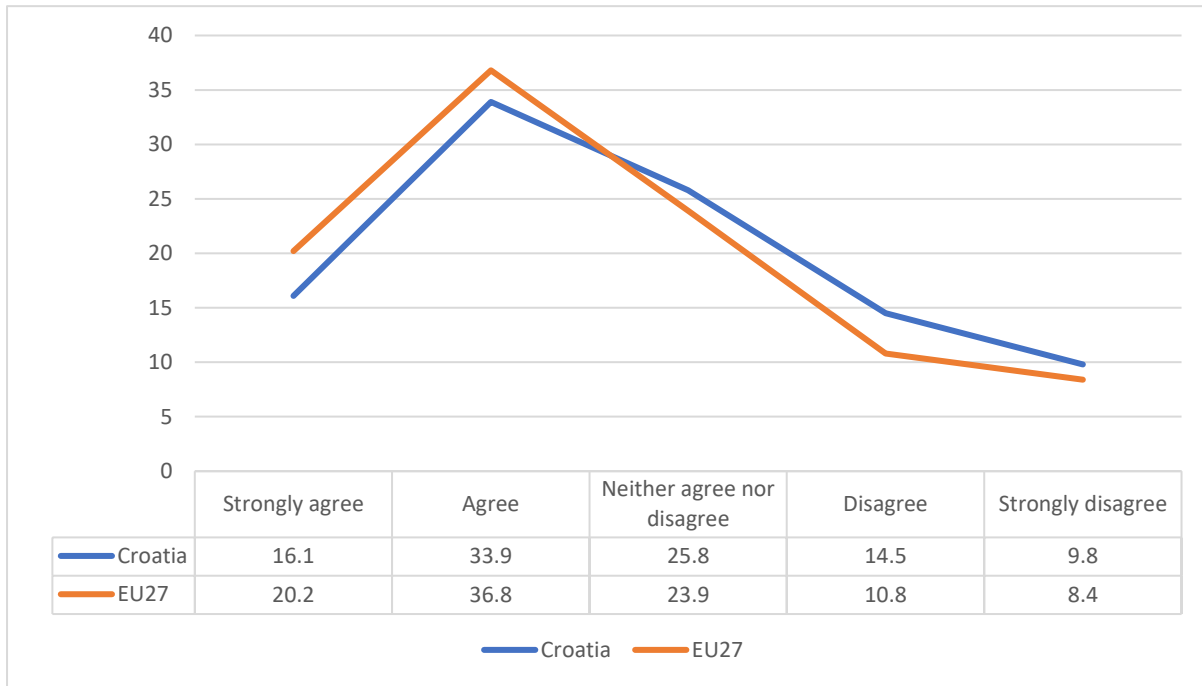
Graph 2: Satisfaction with the experience of working from home
(Source: Author according to Eurofound (2020), Living, working and COVID-19 dataset)

Examining Satisfaction with the experience of working from home, it can be seen from Graph 2 that the respondents to the stated statement: In general, I am satisfied with the experience of working from home. The largest percentage expressed that they agree with the statement 33.9% and completely agree with the statement 16.1% from which we can conclude that most respondents are satisfied with their experience working from home. If we compare the same indicators with the EU27 data, we can say that they differ slightly.

Last month, how many hours per week did you work on average?		
	2020	2021
CROATIA	56,8	46,7
EU 27	41,4	40,1
Out of these, how many hours did you work from home?		
CROATIA	8,4	6,8
EU 27	14,2	14,5

Table 4: Weekly work compared to hours of work from home
(Source: Author according to Eurofound (2020), Living, working and COVID-19 dataset)

Asking respondents last month how many hours a week they worked on average, respondents answered that they worked an average of 46.7 hours (2021), which compared to the results obtained by the survey in June/July 2020, the average was an incredible 56.8 hours, which is significantly higher than the EU27 average where the indicators are significantly lower 40.1 hours (2021) and 41.5 hours (2020 June/July). Respondents were asked to state from the number of hours they worked on average last week how many hours they worked at home. On average, mean HR 2020 - 6.8 hours and 2021 8.4 hours, while the EU27 2020 average - is 14.2 hours and 2021 14.5 hours, which is significantly more than the data for the Republic of Croatia. Respondents were also asked to choose how often they would like to work from home if there are no restrictions due to COVID-19 (seen in Chart 3). 19.5% several times a week, 19.9% several times a month, less often 7.7% never almost 36.1%.

If we compare the indicators with 2020, there are smaller differences except in the increase in the number of those who would never want to work from home, but also in the observed period there is a decrease in those who would work less often from home.
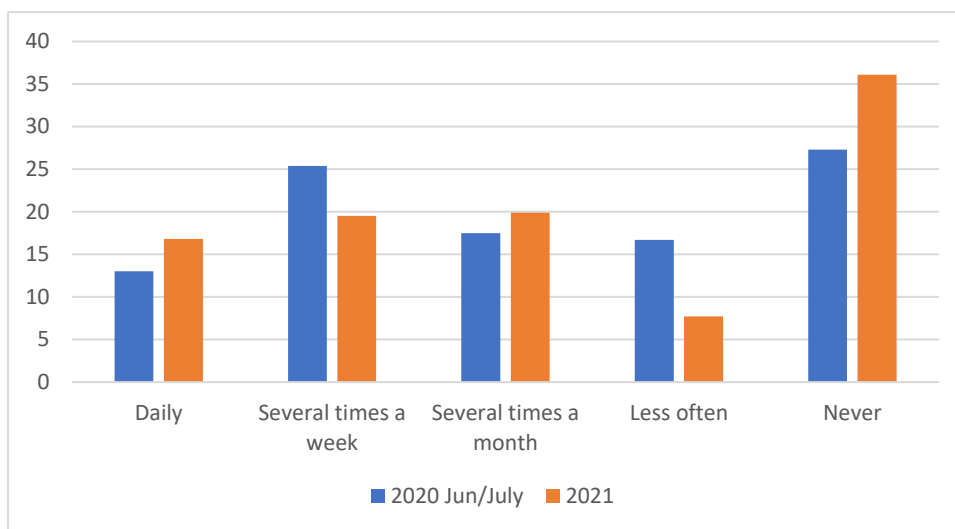
Graph 3: Desire to work from home
(Source: Author according to Eurofound (2020), Living, working and COVID-19 dataset)

The MojPosao portal in the Republic of Croatia surveyed in 2021 on organizations about what forms of work they have, how they measure productivity in working conditions from home, and what their plans are when the epidemic ends. 103 organizations participated in the research, of which 41% were organizations with more than 200 employees. A quarter (27%) employ 50 to 200 employees, and 32% up to 50 employees. 41% of organizations are privately owned, and 38% are privately foreign privately owned. The results of the survey show that 45% of organizations offer their employees the option of working remotely, every third organization 32% work from home (but only to employees of certain departments) while almost 23% of organizations do not offer the possibility of working from home. In organizations that offer the possibility of working from home, most workers opted for a hybrid way of working, i.e. a combination of coming to the office and staying at home (59%), a quarter working exclusively from home (24%), while 17% usually come to the office. The majority of employers (75%) believe that working from home will stay in the culture permanently due to employee habits and lower organization costs. When it comes to monitoring work performance and trust in employees, respondents believe that the performance of employees at home measures the same as when they are in the office: it is important to complete the set tasks in an appropriate time frame. More than half of employers (55%) said they are convinced that most of their employees work correctly, with a few exceptions, while as many as 38% of employers claim to have full confidence in their employees. Only 7% of employers are suspicious and claim that their employees should be under constant control and supervision (MojPosao.hr). From all the above, it can be concluded that Covid-19 caused major changes in a very short period time. If we consider the indicators for working from home before the pandemic, it has visibly had and still has a significant impact, but still different for individual EU member states. Indicators for the Republic of Croatia are somewhat more modest compared to EU member states, as a reason we can point out the unpreparedness of the legal framework, the unwillingness of employers and employees themselves who had almost no experience or minimal experience working from home. Yet the unplanned ad hoc use of alternative workplaces due to the Covid-19 pandemic can result in far-reaching consequences for the very use of alternative workplaces.

5. CONCLUSION
The study of the impact of teleworking and digital work on workers and society Special focus on surveillance and monitoring, as well as on mental health of workers from April 2021 conducted at the request of the Committ+ee on Employment and Social Affairs (EMPL) of the European Parliament. Conducted by the Department of Economic, Scientific, and Quality of Life Policy, based on an extensive literature review, web surveys, interviews, and five case studies in Finland, Germany, Ireland, Italy, and Romania, the following conclusions were reached. Teleworking allows workers more flexibility in determining time and place of work, greater autonomy, improved work balance and reduced travel time to work. On the other hand, this way of working often results in higher intensity and longer working hours, which leads to a feeling of isolation and negatively affects the mental health of workers. Also, there is increasing use of network surveillance thus raising the issue of privacy, and the lack of workspace and ergonomic equipment leads to increased health risks for teleworkers (Samek Lodovivci, M. et al., 2021). Contreras, Baykal, and Abid (2020) emphasize that as a result of applied research, it is necessary to create profiles on the suitability for teleworking. Employees who can take advantage of teleworking must establish a variety of skills based on the job or task. Some jobs are adapted to work in alternative places, while we must be aware that there are several jobs that are not adaptable by changing jobs, primarily jobs in some of production and service professions for which the workplace is key to the job description (nurses, drivers, etc.). Ultimately, teleworking did not show direct detrimental effects on the workplace or workers 'perceptions related to their careers. Researchers suggest that it is of great importance to adapt to such work and pay attention to where it is being done. Teleworking programs are not necessarily a "universal size for all", and companies should differ in the design of their jobs by observing the characteristics of their workers and the work tasks to be performed (Aurer Jezerčić, 2020). Since changes in legal systems are slow and do not keep pace with rapid social changes, such as those related to the organization of work and new forms of work, the best solution for employers and teleworkers would be that their mutual employment contract, with the help lawyers or counselors for labor law issues, cover as many possibilities and difficulties as they could face in their mutual relationship, rather than leaving the judgment of these issues to the interpretation of the courts (Bilić, 2011). It must also be considered and the intercultural differences in the workforce must not be neglected through the availability of the global workforce, which is exactly what alternative jobs allow us to do. This paper analyzes and critically examines previous research on the application of alternative jobs and as such should serve as a basis for conducting primary research. Future research should result in a body of knowledge about the disadvantages and advantages of alternative jobs. It is important to define what skills employees should have that are suitable for working in alternative jobs. Also, approach a detailed analysis of the financial costs and benefits of teleworking so that ultimately the organizations themselves can increase organizational performance and improve employee well-being in a healthy work environment.

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APPLICATION OF LOGISTIC MODELS IN ANALYSIS OF VERY LOW WORK INTENSITY OF SLOVAK HOUSEHOLDS

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ABSTRACT
The main aim of the article is to quantify the effect of relevant factors on the very low work intensity of Slovak households in 2020. The analysis included data from the statistical survey EU SILC 2020 and we used the logistic models applied in the statistical software SAS Enterprise Guide to perform the analysis. The results presented in the article mainly provide an overview of the socio-economic situation of Slovak households, but also a procedure for analysis of least squares means using the LSMEANS, CONTRAST and ESTIMATE statements in the PROC LOGISTIC procedure.
Keywords: *least squares means, logistic regression, very low work intensity*

1. INTRODUCTION
Today, poverty is one of the global problems affecting the quality of life of people in the world. Poverty is generally considered a socio-economic problem affecting an individual or a household that affects almost every country in the world. By reflecting the quality of life of the population, poverty is assessed from several aspects, such as equivalent disposable income (income poverty), material deprivation or very low work intensity (Šoltés et al., 2020). The risk of poverty depends on various factors, and if we look at this problem in terms of very low work intensity, the risk of household poverty depends mainly on the composition and size of the household, the number of economically inactive people and at the same time people who are able to perform a work activity, which is called work intensity (Džambazovič, 2010; Šoltés and Vojtková, 2018). The work intensity represents how much of the total possible time was actually worked by people aged 15 to 64 (people of productive age), in a simplified way, how the work potential was used in the household. Households with a very low work intensity then include those in which the work potential has been used to less than 20 % (Eurostat, 2021). Based on the statistical survey EU-SILC 2020, approximately 4.3 % of the Slovak population lived in households with very low work intensity. According to the division of regions, regional differences were significantly reflected in the rate of very low labor intensity. The highest proportion of persons at risk of low work intensity was recorded in the Banská Bystrica Region (8.1%). The Košice and Prešov regions were also above the national average (7.4 % and 5.9 %). The inhabitants of the Žilina, Trenčín, Nitra, Trnava and Bratislava regions were the least endangered by low work intensity (Vlačuha and Kováčová, 2021).

2. LOGISTIC REGRESSION
Logistic regression is one of the statistical methods by which we can quantify the one-sided dependence between model variables. The use of logistics models in statistical analyzes requires the fulfillment of certain conditions. One of the conditions of the application is a qualitative, specifically binary type of dependent variable (Vojtková and Stankovičová, 2020).

2.1. Logistic Regression Model

The principle of logistic regression is very similar to classical linear regression. In the case of linear regression, we work with a continuous target variable depending on one or more independent variables. Given that in the logistic regression the explained variable is a dichotomous or binary variable, which has an alternative probability distribution and takes values 0 and 1, we work in the analysis with conditional probabilities:

$$p = P(Y = 1/\boldsymbol{X})$$

where *p* is the conditional probability that the observed event will occur and X is a vector of explanatory variables.

The transformation of the explained qualitative variable into a quantitative variable is necessary to express the shape of the logistic regression model. The adjustment of the target variable consists in expressing the log-odds (logit):

$$logit(p) = ln\left(\frac{p}{1-p}\right)$$

$$odds = \frac{p}{1-p}$$

where we logarithm the probability ratio that the observed event will occur *p* and the probability that the observed event will not occur *1 - p*. In this case, where the dependent variable is expressed by logit (p), we get a linear relationship between the explanatory variable and the vector of explanatory variables.

The resulting equation of the logistic regression model can be expressed as follows:

$$logit(p) = ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \cdots + \beta_k X_k$$

where β_j are unknown model parameters.

It is important to note that the interpretation of the results, despite the transformation from a nonlinear relationship to a linear relationship between the model variables, differs from the classical regression. The odds ratio is used to interpret the values of individual parameters of the logistics model:

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

If the value of the given relation is higher than 1, we can state that the chance that the desired event will occur will increase e^{β_j}- fold (Terek, Horníková and Labudová, 2010). Other authors who deal with the issue of logistic regression models and their application are for example: Borucka (2020), Brownlee (2016), Devopedia (2021), Hosmer, Lemeshow and Sturdivant (2013), Joby (2021), Lever et al. (2016), Swaminathan (2015), Vojtková, et. al (2019) etc.

3. ANALYSIS OF VERY LOW WORK INTENSITY OF PERSONS IN SLOVAKIA USING LOGISTIC REGRESSION

The next part of the paper will be devoted to the analysis of the effect of relevant factors on the very low work intensity of individual persons of Slovak households. The input database consists of data relating to household members obtained from the statistical survey EU-SILC 2020, while we used the statistical software SAS Enterprise Guide to perform the analysis. The target variable VLWI (*very low work intensity*) is a binary with the variables *no* (persons who do not live in a household with very low work intensity) and *yes* (persons living in a household with very low work intensity). Explanatory variables, in other words the factors we included in the analysis are also qualitative, so they are categorical variables with several levels – *Status of economic activity* (EAS), *Education* (EDUCATION), *Type of household* (HT), *Marital status* (MARITAL_STATUS) and the *Region* of origin (REGION). The individual categories of these factors are listed in more detail in the appendix of this article (Table 6).

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	1926.9166	24	<.0001
Score	2799.0973	24	<.0001
Wald	750.3063	24	<.0001

Table 1: Test of statistical significance (quality) of the logistics model
(Source: EU-SILC 2020, own processing in SAS Enterprise Guide)

The basis of a reliable analysis is to estimate a model that can best describe the input database. We can verify the statistical significance of logistics models through three tests – a *Likelihood Ratio test,* a *Score test* or the *Wald test*. The final decision to accept or reject the claim depends on the calculated test statistics. If the value of the test statistic exceeds the critical value, we reject the null hypothesis. Since the output from the statistical software does not provide information on the values of the critical area, we can use the p - value to verify the significance, in other words the lowest level of significance at which the null hypothesis can be rejected. It holds that if the p - value is lower compared to the specified level of significance α, we reject the argument about the statistical insignificance of the variable. In the opposite situation, when the p - value exceeds the level of significance, we accept the null hypothesis. Based on Table 1, we verify the statistical significance of the model by testing the null hypothesis:

- H_0: *the model is not statistically significant*
  compared to the alternative hypothesis
- H_1: *the model is statistically significant*

All three tests have very small p - values (p < 0.0001) compared to the determined significance level α = 0.05, which means that the estimated model of logistic regression with selected factors can be considered statistically significant. In addition to assessing the significance of the created model, it is important to verify whether the influence of selected factors on the target variable is or is not statistically significant. Table 2 provides the results of the null hypothesis tests:

- H_0: *the effect of the factor on the target variable is not statistically significant*
  compared to the alternative hypothesis
- H_1: *the effect of the factor on the target variable is statistically significant*

Type 3 Analysis of Effects			
Effect	DF	Wald Chi-Square	Pr > ChiSq
EAS	3	547.2738	<.0001
HT	8	221.9208	<.0001
EDUCATION	4	85.0575	<.0001
REGION	7	35.3209	<.0001
MARITAL_STATUS	2	10.5475	0.0051

Table 2: Test of statistical significance of the effect of independent variables on the VLWI variable
(Source: EU-SILC 2020, own processing in SAS Enterprise Guide)

Using a *chi-square* test of the effect of the individual explanatory variables included in the model on the explained VLWI variable at the selected significance level of 0.05, we find that each of the explanatory variables included in the model has a statistically significant effect on the VLWI. As the effect of the variables is not the same, it is assessed on the basis of the size of the calculated test statistics. Given that the test statistic has an asymmetric distribution and acquires only positive values, it follows that the higher its value, the greater the factor has an effect on the explanatory variable. Since the test statistic has an asymmetric distribution and acquires only positive values, we can say that the higher its value, the greater the factor has an effect on the explained variable. We arranged the factors according to the size of the effect on the target variable, on the basis of which we can state that the highest effect on the target variable has the Status of economic activity, then the Type of household, Education, Region and the least effect has Marital status. The odds ratio is used to interpret the parameters of the logistic regression model. Due to the extent of the output, we will list only some of the resulting values. Even when assessing the effect of factors on the target variable, we found that the EAS variable has the greatest effect. The significance of individual categories of the variable was confirmed in all cases (p - value was less than α = 0.05), while we chose the category *at_Work* (Employed person) as the reference category. Based on the resulting values of the odds ratios for the EAS variable, we can conclude that the odds that a person will be at risk of a very low work intensity is 192.937-times higher for an unemployed person than for a person who is employed. In terms of the EDUCATION variable, for which we chose *Tertiary_2_3* (2nd and 3rd degree higher education) as the reference category, those with lower than secondary education came out as the most at risk. The odds of very low work intensity in the case of people with less than secondary education is 2.567-times higher than in the case of people with 2nd or 3rd degree higher education. The reference category of the HT variable is *2A_2Ch* (person living in the household of two adults with two dependent children). In terms of the odd that a person will be endangered by a very low work intensity, we can say that the high-risk category is category *2A_1R* (a person living in the household of two adults without dependent children, with at least one person aged 65 and over). Compared to the reference category, we found that the odd of very low work intensity in the case of a person living in a household *2A_1R* is 80.626-times higher than in the case of a person living in the household of two adults with two dependent children. For the REGION variable, we chose the Bratislava region as the reference category, and we can consider those living in the Banská Bystrica region as the high-risk people based on the results of the odds ratio. The MARITAL_STATUS factor has the smallest, but nevertheless statistically significant effect on the target variable VLWI, in which we chose *Married* as the reference category. The *Widowed* category was the high-risk category within this variable. The odd of a person facing a very low work intensity are 2.123-times higher for a widowed person than for a married person.
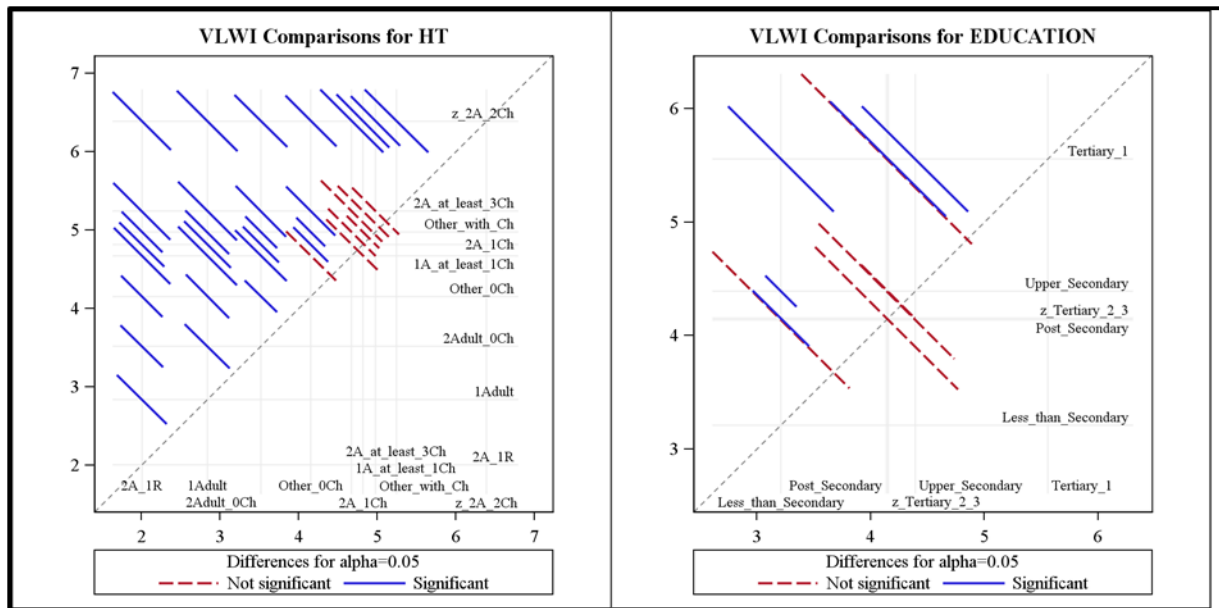
*Figure 1: Interval estimates of the marginal mean values of the logit of the target variable
VLWI depending on the variables HT (left) and EDUCATION (right)
(Source: EU-SILC 2020, own processing in SAS Enterprise Guide)*

Comparing the marginal mean values of the target variable logit for each category of the two selected explanatory variables HT and EDUCATION (Figure 1), we found that there is no significant difference (red) between some pairs in the odds that a person will be at risk of exclusion from the labor market, ie the odds that a person will face a risk of very low work intensity. In Figure 1 (left) we can see a statistically insignificant difference for some categories, specifically between the categories 1A_at_least1Ch (household of one adult with at least one dependent child), 2A_1Ch (household of two adults with one dependent child), 2A_at_least_3Ch (household of two adults with at least three dependent children) and Other_with_Ch (other households with dependent children). The insignificance of the target variable difference for the EDUCATION variable (Figure 1 on the right) was confirmed between the categories Post_Secondary (post-secondary education) and Upper_Secondary (upper secondary education), where p - value = 0.6779, Post_Secondary and Tertiary_2_3 (higher education 2. and 3rd degree), where p - value = 0.9815 and a pair Upper_Secondary and Tertiary_2_3, where p - value = 0.3232. Based on the existence of statistically insignificant differences between the categories of variables, we decided to merge some of the categories and thus create a new categorical variable. Due to the smallest differences, it would be appropriate for our analysis to merge the categories Post_Secondary, Upper_Secondary and Tertiary_2_3 for the variable EDUCATION and to merge the categories 1A_at_least1Ch, 2A_1Ch, 2A_at_least_3Ch and Other_with_Ch for the variable HT. We will be convinced of the correctness of the assumed mergers of categories on the basis of adequate tests, which we present in the following part of the article.

3.1. Analysis of the effect of relevant factors on VLWI using the CONTRAST and ESTIMATE statements

We verify the assumption of the agreement of the marginal mean values of the logit of the most similar categories of HT and EDUCATION factors using the CONTRAST statement. Executing the order and at the same time achieving the correct results requires, in addition to correctly formulated null hypotheses, the correct entry of coefficients in the order. The advantage of the CONTRAST command is the ability to test several null hypotheses at the same time, which we call simultaneous testing of null hypotheses.

Each null hypothesis must be defined in such a way that we obtain the coefficients that will be used to define the order. In the case of the variable, we assume the similarity of the marginal mean value of the logit of the target variable between the categories - 1st, 3rd, 5th and 8th. Since we assume the agreement of the marginal mean values of the logit of very low work intensity in the four categories *(1A_at_least_1Ch* - μ_1, *2A_1Ch* - μ_3, *2A_at_least_3Ch* - μ_5 *a Other_with_Ch* - μ_8*)*, we will test the following null hypotheses for the categories of the variable HT. The first hypothesis tested will be

$$H_0: \mu_1 = \mu_3$$

adjusted to

$$H_0: \mu_1 - \mu_3 = 0$$

the second hypothesis tested will be

$$H_0: \frac{\mu_1 + \mu_3}{2} = \mu_5$$

adjusted to

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

the third hypothesis tested will be

$$H_0: \frac{\mu_1 + \mu_3 + \mu_5}{3} = \mu_8$$

adjusted to

$$H_0: 0{,}3333 * \mu_1 + 0{,}3333 * \mu_3 + 0{,}3333 * \mu_5 - \mu_8 = 0$$

From the first null hypothesis we obtained a coefficient 1 for the category *1A_at_least_1Ch* and a coefficient -1 for the category *2A_1Ch*. In the case of the second null hypothesis, we obtained a coefficient 0.5 for categories *1A_at_least_1Ch* and *2A_1Ch* and we determined a coefficient -1 for category *2A_at_least_3Ch* (all other coefficients will be zero in the order). To verify the null hypothesis $H_0: \mu_1 = \mu_3 = \mu_5 = \mu_8$ in the PROC LOGISTIC procedure, we apply the CONTRAST statement with the syntax below.

contrast 'HT' HT **1 0** -**1**, HT **0.5 0 0.5 0 0 0 0** -**1**, HT **0.3333 0 0.3333 0 0.3333 0 0** -**1**/ ESTIMATE=all alpha=**0.1**;

The result of the above statement is the first line in Table 3.

In the case of the EDUCATION variable, we assume that the marginal mean values match for the three categories of the variable *(Post_Secondary* - μ_2, *Upper_Secondary* - μ_4 *a Tertiary_2_3* - μ_5). Since we assume the agreement of the mean values of the logit of a very low work intensity in three categories, we will test the null hypothesis:

$$H_0: \mu_2 = \mu_4 = \mu_5$$

To correctly verify this null hypothesis, it is necessary to test two partial null hypotheses:

$$H_0: \mu_2 - \mu_4 = 0$$

$$H_0: 0{,}5 * \mu_2 + 0{,}5 * \mu_4 - \mu_5 = 0$$

From the first null hypothesis, we obtained a coefficient of 1 for the category of post-secondary education and a coefficient -1 for the category of upper secondary education. In the case of the second null hypothesis, we found a coefficient 0.5 for post-secondary and higher secondary education, and we determined a coefficient -1 for postgraduate and higher education 2nd and 3rd degree (all other coefficients will be zero in the order). To verify the null hypothesis in question in the PROC LOGISTIC procedure, we apply the CONTRAST statement with the syntax below.

contrast 'EDUCATION' EDUCATION **0 1 0 -1**, EDUCATION **0 0.5 0 0.5 -1**/ ESTIMATE=all
alpha=**0.1**;

The result of the above statement is the second line in Table 3.

Contrast Test Results			
Contrast	**DF**	**Wald Chi-Square**	**Pr > ChiSq**
HT	3	2.5863	0.4599
EDUCATION	2	1.1036	0.5759

Table 3: CONTRAST statement output
(Source: EU-SILC 2020, own processing in SAS Enterprise Guide)

Since the substance of the orders was based on the verification the assumption of the agreement of the marginal mean values of the logit for the target variable VLWI, the resulting p-values of both orders exceed the specified applied significance level of 0.05, and therefore we can confirm that persons with post-secondary, higher or tertiary education 2nd and 3rd degree, they don't have a significantly different odd at a significance level of 0.05 that they will be endangered by a very low work intensity. We also confirmed the agreement of the marginial mean values of the VLWI logit in the case of the four categories of the HT variable (*1A_at_least_1Ch*, *2A_1Ch*, *2A_at_least_3Ch* a *Other_with_Ch*). Based on these findings, we could merge the individual categories and create a new variable (in this case, the HT variable would consist of six categories instead of the nine categories and the EDUCATION variable would consist of three categories instead of the five categories).

Figure following on the next page
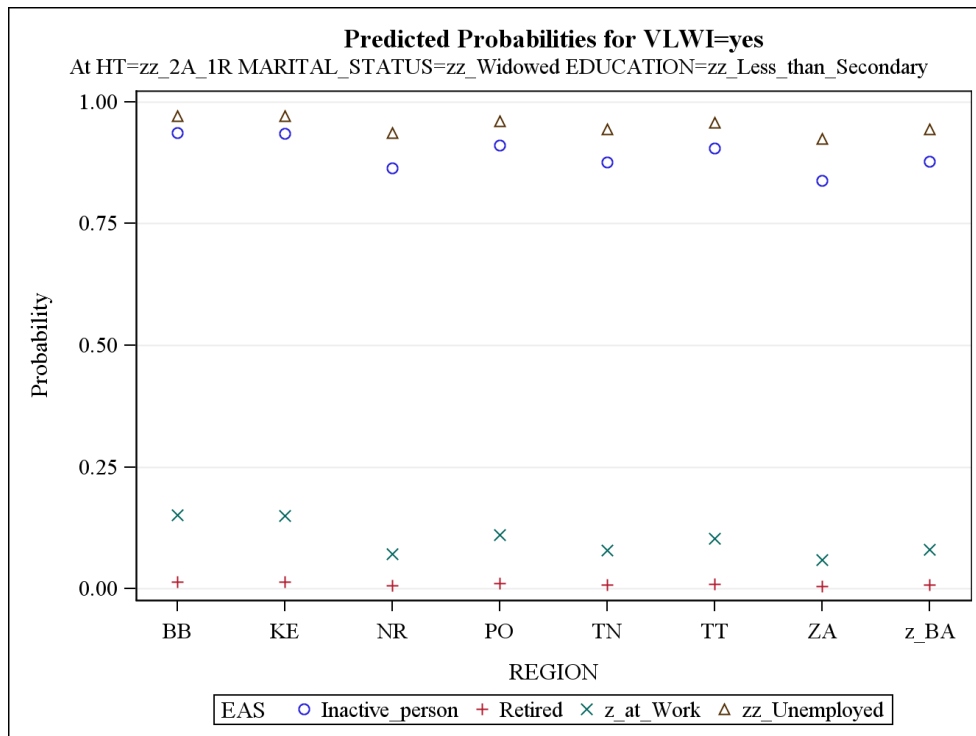
Figure 2: Estimation of the probability of very low work intensity (EAS and REGION))
(Source: EU-SILC 2020, own processing in SAS Enterprise Guide)

Based on previous outputs and interpretations, we found out which of the categories of individual factors are the most critical. In further analyses, which we present in the following section, we use the ESTIMATE statement to estimate the probability that a person will face a very low work intensity depending on the region and economic activity, while the other factors remain fixed at the reference level. In our case, we replaced the original reference categories with new levels for each factor, specifically we chose as the reference category for each factor the one that came out to us as the most critical based on the results in the previous section. For the HT variable we chose *2A_1R* as the reference category, for the MARITAL_STATUS variable we chose the *Widowed* category and for the EDUCATION variable we chose the *Less_than_Secondary* category as the new reference level (Figure 2). Figure 2 shows an estimate of the probability that a person will face a very low work intensity depending on the variables EAS and REGION, while the reference levels of other factors remain fixed. Based on the probability estimates in Figure 2, we can state that the highest probability that a person will face a very low work intensity is in the case of an unemployed person living in any region of Slovakia. It is similar in the case of an inactive person. Retired or employed people are least likely to be at risk of very low work intensity. We can consider the BB category as the high-risk category of the REGION factor, while we can consider the ZA as the low-risk category. By formulating the ESTIMATE statement, we estimate the probabilities that a person living in BB and ZA region will face a very low work intensity depending on economic activity. The principle of formulating the ESTIMATE statement is similar to the CONTRAST statement, with the difference that it is not possible to perform simultaneous testing in the ESTIMATE statement. In the statement, it is possible to use the *cl alpha* option, through which we can also obtain an interval estimate in the output. First, we estimate the probability that an unemployed person living in the Banská Bystrica Region will face a very low work (*BB (REGION) - μ_1, Unemployed (EAS) - μ_4*), which results in the following statement and the first row in Table 4.

estimate 'BB' intercept **1** REGION **1** EAS **0 0 0 1** / cl alpha=**0.1** exp;

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Subsequently, we estimate the probability that an unemployed person living in the Žilina Region will face a very low work intensity *ZA (REGION) - μ_7, Unemployed (EAS) - μ_4)*, which results in the following statement and the second row in Table 4.

estimate 'ZA' intercept **1** REGION **0 0 0 0 0 1** EAS **0 0 0 1** / cl alpha=**0.1** exp;

					Estimate		
Label	**Estimate**	**Standard Error**	**Lower**	**Upper**	**Exponentiated**	**Exponentiated Lower**	**Exponentiated Upper**
BB	3.5364	0.3611	2.9425	4.1304	34.3444	18.9637	62.1998
ZA	2.4949	0.3894	1.8544	3.1354	12.1201	6.3876	22.9972

Table 4: ESTIMATE statement output
(Source: EU-SILC 2020, own processing in SAS Enterprise Guide)

The resulting table provides an estimate logarithm of the odds (Exponentiated) and a point estimate of the odds (Exponentiated), but doesn't provide an estimate of the probability. If we want to calculate a point estimate of probability, it is necessary to use the following relation:

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

The resulting table also contains an interval estimate of the characteristics, but if we want to obtain an interval estimate of the probability, we must use the relation:

$$P\left(\frac{Lower\ Limit}{1 + Lower\ Limit} < \pi_i < \frac{Upper\ Limit}{1 + Upper\ Limit}\right) = 1 - \alpha$$

A point and interval estimate of the probability that an unemployed person living in the Banská Bystrica Region will face a very low work intensity will express:

$$\hat{\pi}_i = \frac{34.3444}{1 + 34.3444} = 0.9717$$
$$P\left(\frac{18.9637}{1 + 18.9637} < \pi_i < \frac{62.1998}{1 + 62.1998}\right) = 0.9$$
$$P(0.9499 < \pi_i < 0.9842) = 0.9$$

Based on the results, we can state that unemployed people living in the Banská Bystrica region have a 97.17% probability of facing very low work intensity, while other factors are fixed at the high-risk reference level (the value can also be seen in Figure 2). We are 90% confident that, the probability of a risk of very low work intensity in the case of an unemployed person living in the Banská Bystrica Region is higher than 94.99%, but at the same time lower than 98.42%. A point and interval estimate of the probability that an unemployed person living in the Žilina Region will face a very low work intensity will express:

$$\hat{\pi}_i = \frac{12.1201}{1 + 12.1201} = 0.9238$$
$$\left(\frac{6.3876}{1 + 6.3876} < \pi_i < \frac{22.9972}{1 + 22.9972}\right) = 0.9$$
$$P(0.8646 < \pi_i < 0.9583) = 0.9$$

Unemployed people living in the Žilina Region have a 92.38% probability of facing a very low work intensity, taking into account that other factors are fixed at the high-risk reference level (the value can also be seen in Figure 2). We are 90% confident that, the probability of a risk of very low work intensity in the case of an unemployed person living in the Žilina Region is higher than 86.46%, but at the same time lower than 95.83%. Furthermore, we estimate the probability that an employed person living in the Banská Bystrica Region will face a very low work intensity (*BB (REGION) - μ_1, at_Work (EAS) - μ_4*), resulting in the following statement and the first row in Table 5.

estimate 'BB' intercept **1** REGION **1** EAS **0 0 1** / cl alpha=**0.1** exp;

Subsequently, we estimate the probability that an employed person living in the Žilina Region will face a very low work (*ZA (REGION) - μ_7, at_Work (EAS) - μ_3*), which results in the following statement and the second row in Table 5.

estimate 'ZA' intercept **1** REGION **0 0 0 0 0 0 1** EAS **0 0 1** / cl alpha=**0.1** exp;

				Estimate			
Label	**Estimate**	**Standard Error**	**Lower**	**Upper**	**Exponentiated**	**Exponentiated Lower**	**Exponentiated Upper**
BB	-1.7259	0.3857	-2.3604	-1.0915	0.1780	0.09438	0.3357
ZA	-2.7675	0.4156	-3.4512	-2.0838	0.06282	0.03171	0.1245

Table 5: ESTIMATE statement output
(Source: EU-SILC 2020, own processing in SAS Enterprise Guide)

We express the point and interval estimation of probabilities:

$$\hat{\pi}_i = \frac{0.1780}{1 + 0.1780} = 0.1511$$
$$P(0.0862 < \pi_i < 0.2513) = 0.9$$

In the case of an employed person living in the Banská Bystrica region, if other factors are at high-risk level (the person lives in a family of two adults, one of person is retired, has less than a secondary education and is widowed), then the probability of face very low work intensity is 15.11% (Figure 2). The probability of endangering very low work intensity ranges from 8.62% to 25.13%.

$$\hat{\pi}_i = \frac{0.06282}{1 + 0.06282} = 0.0591$$
$$P(0.0307 < \pi_i < 0.1107) = 0.9$$

With 90% confidence, the probability of risk in the case of an employed person living in the Žilina Region is higher than 3.07%, but at the same time lower than 11.07%, if the other factors are fixed at the reference level. Based on this, we can conclude that the probability that this person will be endangered by a very low work intensity is 5.91% (Figure 2).

4. CONCLUSION
The aim of the paper was to point out the possibilities of using logistics models in the analysis of the effect of relevant factors on the very low work intensity of individual persons of Slovak households. As part of the analysis, we constructed a model that consisted of selected factors that, in our opinion, have an impact on the target variable.

Through adequate tests, we assessed the suitability of the created model and at the same time we assessed the effect of selected factors on the explained VLWI variable. In terms of analysis results, specifically based on the resulting values of the test chi-square statistics, we found that the largest effect on the target variable VLWI has the factor Status of economic activity, on the contrary, the lowest statistically significant influence had the factor Marital status. By analysing the marginal mean values of logit of the target variable, we found that the factors of Type of household and Education show that there is no significant difference in the odds of a person facing a very low work intensity between some pairs of categories. The resulting findings led us to assume that the marginal mean values of the logit match, and we used the CONTRAST statement to verify it. The results of the order confirmed the presumed assertion, on the basis of which we came to the conclusion that we can merge the most similar categories. Through further analyses, we identified which of the categories of individual factors are the most critical in terms of the risk of very low work intensity. Using the ESTIMATE statement, we estimated the probability that a person would face a very low work intensity depending on the Region of origin and Status of economic activity factors, while the other factors remained fixed at the reference level. In this analysis, we changed the original reference categories of factors and replaced them with new ones, specifically we chose as the new reference levels those categories that came out to us as the most critical. Based on the result, we can state that the highest probability of the risk of low work intensity is in the case of unemployed persons living in the Banská Bystrica region.

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APPENDIX

Factors	Categories	
	Name	**Explanation**
Status of economic activity (EAS)	**at_Work (reference c.)**	Employed person
	Unemployed	Unemployed person
	Retired	Retired person
	Inactive_person	Inactive person
Highest level of education (EDUCATION)	Less_than_Secondary	Less than primary education Primary education Lower secondary education
	Upper_Secondary	Upper secondary education
	Post_Secondary	Post-secondary education
	Tertiary_1	Bachelor´s or equivalent level of education
	Tertiary_2_3 (reference c.)	Master´s or equivalent level of education Doctoral or equivalent level of education
Type of household (HT)	1Adult	1 adult without dependent children
	2Adult_0Ch	2 adults without dependent children
	2A_1R	2 adults (at least 1 is retired) without dependent children
	Other_0Ch	Households without dependent children
	1A_at_least_1Ch	1 adult with at least 1 dependent child
	2A_1Ch	2 adults with at least 1 dependent child
	2A_2Ch (reference c.)	2 adults with at least 2 dependent children
	2A_at_least_3Ch	2 adults with at least 3 dependent children
	Other_with_Ch	Households with dependent children
Marital status (MARITAL_STATUS)	Never_married	Never married person
	Married (reference c.)	Married person
	Widowed	Widowed person
Region of origin (REGION)	**BA (reference c.)**	Bratislava region
	TT	Trnava region
	TN	Trenčín region
	NR	Nitra region
	ZA	Žilina region
	BB	Banská Bystrica region
	PO	Prešov region
	KE	Košice region

Table 6: Factors and their categories
(Source: own processing)

SUCCESSION PLANNING IN FAMILY BUSINESSES: THE ROLE OF LONG-TERM PLANS

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ABSTRACT
Today, many of the oldest businesses in Europe and around the world are family-owned and their survival is the result of their ability to change over time. The key objective of a family business is to keep the firm in the family by passing it on to the next generation. The transfer of a business (the succession process) is considered an extremely difficult part of the business life cycle. A lack of planning can be one of the main reasons why business transfers fail, because it is only during the planning process that participants usually realise how complex the succession process actually is. We assume that the formulation of a strategic plan can play an important role in the transfer of a business. At the same time, however, its benefits are determined by whether the family accepts the plan, implements it, and involves the next generation. The objective of this paper is to analyse whether family businesses have strategic plans and which factors influence their formulation. The assumptions have been verified in a questionnaire survey among 212 family business owners in the Czech Republic. We used frequency analysis and a Chi-square test to evaluate the responses. Person's adjusted residuals were used to describe the links between the answers. The owners' responses indicate that strategic planning is not typical for Czech family businesses. However, if we consider long-term planning as an intention to keep the business family-owned in future generations, then this can be confirmed in the data. The majority (84 %) of owners plan to hand the business over to the next generation. Planning in family businesses is correlated with a larger number of employees – both the total number of company employees and a larger number of family employees. The previous experience of the founder or a family member also proved to be an important factor in the making of plans.
Keywords: Czech Republic, frequency analysis, family business, strategic planning, succession process

1. INTRODUCTION
The development of family enterprise in the Czech Republic has come to a stage at which many company owners are preparing to end their involvement in the concern. They are, meanwhile, considering the issue of who will be a suitable person to continue the business, i.e. successors who will continue to develop the company in line with the goals pursued by the founders of family businesses. Research into this issue confirms that this is one of the most demanding organisational changes that must be confronted by every successful family business. Researchers studying family businesses, such as Berrone, Cruz & Gomez-Mejia (2012), agree that the aim of family business is to maintain the continuity of the family business across the generations.

This is a characteristic that differentiates these businesses from other concerns and demands that the family behaves in a way appropriate to the attainment of this goal (at the cost of lower short-term profits, for example). It is universally true that the ability to secure the growth of the company, i.e. to innovate the services it offers on a continual basis, to retain its customers and, if possible, to obtain additional customers, is important to the long-term success of any business. The members of the family are aware that the legacy of the family and, therefore, the prosperity of coming generations may be connected with the stability of the business, for which reason they generally have an interest in ensuring the continuity of the business across the generations (Miroshnychenko et al., 2021). In a stable environment, a family tends to invest more in the business in the expectation of maintaining cross-generational control than businesses that are pressured to achieve quarterly profits by dispersed ownership and company management (Miroshnychenko et al., 2021). Family businesses with a long-term orientation tend to be financially stronger and more effective. According to Lumpkin & Brigham (2011), a long-term orientation that provides the business with strategic advantages contributes to the financial prosperity of family businesses. These authors identified three dimensions of long-term orientation: futurity, continuity and perseverance. Futurity reflects the utility of a focus on the future, continuity represents the view that durability and constancy over time contribute towards the creation of value in the future, while perseverance emphasises the awareness at the present time required for the attainment of goals. Previous research indicates that the level of survival among family businesses is low. Ward (1987), for example, states that approximately 30 % of family businesses survive the first transfer of control and less than 10–15 % remain family businesses in the third generation. Although this generally accepted information is based, according to Stamm & Lubinski (2011), on just a single study in which the subject of the research was comprised of 200 regional production companies, the family must devote the necessary attention to preparing for the process of handing on the business and must prepare for it properly. Lumpkin & Brigham (2011) describe passing on the business as follows: "Succession is an event that might be greeted with delight or dread, depending on how it is anticipated." The success of a succession is influenced by factors that can be divided into hard and soft factors (Cesaroni & Sentuti, 2017). Hard factors include the transfer of ownership, reorganisation and restructuring, and mergers and acquisitions, i.e. issues associated with monetary, technical and legislative matters. Soft factors include the motivation of the successor, communication within the family, relationships between the family and the business, the preparation of a successor and his or her knowledge and skills, any unwillingness on the part of the existing owner to pass on the business, and shared decision-making. The success of the transfer of a functioning family business is generally decided by soft factors and the "entrepreneurial legacy". This involves passing on the enterprise behaviour and the tenacity and robustness of a family that creates a motivational environment and gives purpose to the enterprise. Jaskiewicz, Combs & Rau (2015) found that successful transgenerationally entrepreneurial families have this entrepreneurial legacy, which is passed on by means of the active engagement of the children in the business of the family and the discussion of issues associated with the enterprise within the family. This engagement goes beyond the framework of the ordinary transfer of a business and is based on strategic education, entrepreneurial bridging and strategic succession. A legacy passed on in this way then motivates the successor to preserve the business for future generations. De Massis, Chua & Chrisman (2008) found, on the basis of their research of the literature, that the successful transfer of a business and its successful continuation after this transfer are influenced not merely by the abilities of the successor and the successor's preparedness and motivation, but also by relationships with other members of the family, non-family employees, suppliers and customers. The quality of these relationships influences the level of trust in the new owner-manager of the enterprise.

The performance of the business and any possible changes caused by the new management are then also associated with the given factors. Changes in the business may lead to a shortage of funds to cover costs or restrict the extent of business activities. The reasons for this may include the redemption of the shares of other descendants, the engagement of professional managers for reasons of the inexperience of the successor, and changes to market conditions that have a negative effect on the motivation of the successor. This indicates that the events leading to the process of succession also have an influence on the success of the succession. If these events are unforeseen and the business has not prepared for them (death, illness, divorce, marriage, the birth of a child), then they may have a negative impact on the continuation of the business. The preparedness of the business, and therefore the clear demarcation of roles, may protect the business against possible losses resulting from any change to the family situation. The given factors also have an impact on the transfer of knowledge within the company, and thereby support its continuity. According to Cabrera-Suárez, Saá-Pérez & García-Almeida (2001), good relationships within the company are important to the transfer of knowledge from one generation to another. These authors state that it is important for the successor to gain the necessary knowledge and then integrate this knowledge into the management of the enterprise, while also taking his or her own approach to its management (or more precisely, for him or her to be allowed to take his or her own approach). The successor learns in this way to be a good strategic leader, thereby guaranteeing the continuity of the family business. The issue of succession is a key factor in strategic planning. The authors Matser & Lievens (2011) drew up a *Succession Scorecard* as a tool to help entrepreneurs assess the success of succession and achieve the successful transfer of their business. They identified ten key factors in their work leading to the successful (or unsuccessful) transfer of a business. Although motivation and family relationships are considered the key factors in the successful transfer of a business, it is also important to successful transfer to have a succession plan (Gilding, Gregory & Cosson, 2015). If the owners of a business do not have any previous experience with planning and planning is not a standard process in their business activity, then they can hardly be expected to be capable of preparing a plan for the transfer of the ownership and management of the company. For this reason, we consider in our research the issue of planning in family businesses and its relationship with the preparation of a successor to take over the business. There are many perspectives on the elaboration of plans in businesses, and not just family businesses. If we apply the definition formulated by Honig & Karlsson (2004), then a business plan is a "*written document that describes the current state and the presupposed future of an organization*". The formalisation of business plans is important according to, e.g., Delmar & Shane (2003). The opposite is stated by Honig & Karlsson (2004), who claim that plans tend to be of greater importance to large business entities. We believe, however, that the formalisation of preparations for succession in family businesses may help avoid conflict. It reduces the risk that members of the family and non-family employees will consider the selection of a successor unjust. Inadequate planning, frequently accompanied by conflict, increases the risk of the failure of the transfer of the business and future business operations (De Massis, Chua & Chrisman, 2008). According to Le Breton-Miller, Miller & Steier (2004) there is prevailing agreement among researchers that succession must be planned. "*Succession planning means making the preparations necessary to ensure the harmony of the family and the continuity of the enterprise through the next generation. These preparations must be thought of in terms of the future needs of both the business and the family*" (Lansberg, 1988). Porfírio, Felício & Carrilho (2020) found that it is not very clear in practice whether the elaboration of a formal plan is essential to success or whether an agreed procedure and an idea of how the succession is to proceed is more important. In certain cultures, the elaboration of such a plan may cast doubt on moral values, family principles or even respect for one's elders, and may then be seen as a certain challenge to the status quo.

The preparedness of a successor and his or her prior engagement in managerial activities may, then, be more important than a plan itself. The reason for this is not just a realisation of the firm's capabilities and competitive advantages, but also the chance of facing new challenges and contributing towards change within the business, for which reason less formal structures do not consider it so important to have a written plan. A plan generally exists in advance in more formal structures. Drawing up a plan in less formal structures may, however, be important in order that successors have specific instructions about what (and how and when) is expected of them. The results produced by Porfírio, Felício & Carrilho (2020) tend to confirm the ambiguity of this situation. They also found that the existence of a plan may have an influence on the motivation of successors, particularly if they have a higher education. As has already been said, motivation is an important factor that can prove decisive in the success of a succession. Highly motivated successors may be successful successors, frequently even if there is no succession plan or in the case of small companies. Previous research also indicates that the standard of formal education is important to the motivation of successors.

2. METHODOLOGY
The authors of this text posed the question, in relation to their research of the literature, as to whether strategic plans are drawn up in family businesses if the family's aim is to preserve the continuity of the business. The research also aimed to determine which factors influence the fact that strategic plans are drawn up in a business. Owners of Czech family businesses were invited to take part in the research. They had the chance of expressing an opinion on the questions as to whether they plan to pass their business on to members of the family in the future and whether they have clear plans regarding the future development of the business. In the case of succession (referred to below as the variable "plan to pass the business on to the family") respondents could choose from the following possibilities:
- *yes, and I know who I will pass the business on to;*
- *yes, but I do not know who I will pass the business on to;*
- *no, I do not plan to pass the business on to members of the family.*

In the case of the question regarding future planning (referred to below as the variable "drawing up of a plan"), the respondents could choose from the following possibilities:
- *we draw up strategic plans;*
- *we draw up an outlook for three years;*
- *we have a yearly plan;*
- *we have short-term plans;*
- *we do not have any plan.*

The responses obtained were also analysed in relation to other characteristics. The aspects we investigated included whether drawing up long-term plans is connected not merely to the preservation of the continuity of a family business, but also to the size of the business (by number of employees and number of family members employed), the previous experience of members of the family, and the preparation of a successor to take over the business. Relationships with the following variables were evaluated:
- the previous experience of the family;
  - question: *Did any member of the family work in the firm's main branch of activity before the establishment of the company? Yes/No*
- the previous managerial experience of the founder of the family business;
  - question: *Did the founder of the business have any experience in the management of another company before establishing his/her own business? Yes/No*

- ongoing preparation of a successor to take over the business;
    - question: *If you are planning to pass the leadership of the business on to members of the family, are you already preparing a successor to take over the business? Yes/No*
- total number of employees at the company;
    - 2 categories: *category 1: <5; category 2: 5 or more employees*
- number of company employees exclusively from the family;
    - 2 categories: *category 1: (0–2); category 2: >2 employees from the family*

We collected responses from 212 Czech family business owners. Small and medium-sized companies were included in the research. The collected data were analysed statistically according to the following steps. First, absolute and relative frequencies were used to analyse respondents' answers about the length of planning and the plan to transfer the business on to the next generation. We then used asymptotic significance to analyse the strength of links between the variables. Finally, the structure of the links was analysed. Differences between categories of variables (statements) were examined using a Chi-square $\chi 2$ test (test of independence). The chosen level of significance is 5 %. When the calculated asymptotic significance is less than this level, we therefore reject the null hypothesis that the variables are independent. The next step involved the calculation of adjusted residuals. If the absolute value of this residual is greater than 2.00 (i.e. less than -2 or greater than 2), we can conclude that the difference between the observed and expected frequencies is statistically significant at the 5% significance level (Rabušic et al., 2019; page 263). JASP and SPSS software were used for data analysis.

3. RESULTS AND DISCUSSION

The following table shows how many owners of family businesses stated that they draw up a plan, including the length of this plan, and how many of these owners are planning to pass the business on to the family in the future.

Drawing up of a plan	Absolute frequency	Relative frequency	Plan to pass the business on to the family	Absolute frequency	Relative frequency
Strategic plan	60	0.283	No	34	0.160
Three-year plan	32	0.151	Yes, I have a successor in mind	73	0.344
Annual plan	60	0.283	Yes, I don't have a successor in mind	105	0.495
Short-term planning	27	0.127			
No plan	33	0.156			
Total	*212*	*1.000*	*Total*	*212*	*1.000*

Table 1: Length of plans drawn up and plan to pass the business on to the family – frequency (Source: own processing)

Eighty four percent of all respondents plan to pass the business on to members of the family in the future, 50 % of respondents plan to keep the business as a family business, but do not yet know who they will pass it on to. The remaining 34 % of respondents already know their successor. The data does not, however, confirm whether long-term plans have been drawn up by the majority of family businesses. Strategic plans have been drawn up by 28.3 % (about 1/3 of family businesses) and another 15 % draw up at least three-year plans.

Other owners plan on a shorter horizon, most often for a period of one year (28.3 %). A proportion of owners do not plan at all (15.57 %). We also determined whether the fact that a company creates a certain type of plan is correlated with other factors:

- the prior experience of the family;
- the prior managerial experience of the founder of the family business;
- ongoing preparation of a successor to take over the business;
- the total number of employees at the firm;
- the number of employees from the family.

Analysis of the data showed that there is a relationship between a plan to pass the business on to a successor from the family and the elaboration of plans (Asymp. Sig. = 0.063). Further values of statistical significance are given in the following table (Table 2). Table 3 then contains an analysis of relationships between categories of variables on the basis of adjusted residuals. Responses relating to the creation of plans were, for the purposes of this analysis, merged into three categories (we plan x we do not plan), with the category "we draw up strategic plans" kept separate. Merely the responses "yes" and "no" were retained for a plan to pass the business on to the family.

Variable/Factor	**Elaboration of a plan** Asymp. Sig. (2-sided)	**Plan to pass the business on to the family** Asymp. Sig. (2-sided)
Total number of employees at the firm	**0.004**	**0.046**
Number of employees from the family	0.981	**0.009**
The prior experience of the family	**0.044**	0.630
The prior managerial experience of the founder of the family business	**0.001**	0.763
Ongoing preparation of a successor to take over the business	**0.010**	**0.000**

Table 2: The influence of selected factors on business planning
(Source: own processing)

Table following on the next page

	Ongoing preparation of successor to take over the business		Total number of company employees			Number of family employees	
Plan to pass the business on to the family	*Yes*	*No*	*<5*	*≥5*		*≤2*	*>2*
Yes	**104 (6.2)**	**74 (-6.2)**	**59 (-2.2)**	**119 (2.2)**		**96 (2.6)**	**82 (-2.6)**
No	**0 (-6.2)**	**34 (6.2)**	**18 (2.2)**	**16 (-2.2)**		**10 (-2.6)**	**24 (2.6)**
Creation of plans							
No, we do not make plans	12 (-1.6)	21 (1.6)	**20 (3.2)**	**13 (-3.2)**		16 (-0.2)	17 (0.2)
Yes, we make plans	53 (-1.5)	66 (1.5)	42 (-0.4)	77 (0.4)		60 (0.1)	59 (-0.1)
Strategic plans	**39 (2.9)**	**21 (-2.9)**	**15 (-2.2)**	**45 (2.2)**		30 (0.0)	30 (0.0)

	Prior experience of family		Prior managerial experience of founder of family business			Plan to pass the business on to the family	
Plan to pass the business on to the family	*Yes*	*No*	*Yes*	*No*		*Yes*	*No*
Yes	97 (0.5)	81 (-0.5)	73 (0.3)	105 (-0.3)		x	x
No	17 (-0.5)	17 (0.5)	13 (-0.3)	21 (0.3)		x	x
Drawing up of plans							
No, we do not draw up plans	14 (-1.4)	19 (1.4)	**7 (-2.5)**	**26 (2.5)**		27 (-0.4)	6 (0.4)
Yes, we draw up plans	60 (-1.1)	59 (1.1)	44 (-1.2)	75 (1.2)		95 (-1.9)	24 (1.9)
Strategic plans	**40 (2.4)**	**20 (-2.4)**	**60 (3.3)**	**25 (-3.3)**		**56 (2.3)**	**4 (-2.3)**

Clarification to the table: The first number in a cell shows the absolute frequency in the given category, while the second expresses the value of the adjusted residual. Cells in bold are those in which the relationship is statistically significant, i.e. where a frequency statistically significantly greater (or less) than expected was found.

Table 3: The influence of selected factors on a plan to pass the business on to a successor from the family evaluated on the basis of Pearson's adjusted residuals (Source: own processing)

Analysis of the relationships between the respondents' individual responses indicates that strategic plans are drawn up statistically significantly more often in family businesses with a larger number of employees. A strategic plan is also drawn up more often in family businesses in which someone in the family has had experience in the given field before the business was established or if the founder of the business has had some experience in a managerial position. The following findings were observed in analysis of the responses of the owners of family businesses in which no plans are drawn up:

- these are businesses that more frequently have fewer than 5 employees;
- the founder has no prior experience in a managerial position at another company;
- no statistically significant difference in frequencies was determined where members of the family had experience in another branch of enterprise;
- similarly, no influence on the creation of plans was demonstrated by the number of members of the family employed in the given business.

In contrast, if the owner is planning to pass the business on to a successor who is a member of the family, there is a greater chance both that the business has a larger total number of employees (>5) and that more than two members of the family are employees at the company. Any plan to pass the business on to the family in the future is also associated with whether a successor is already prepared to take over the company. If the owner wants to pass the company on in the future, then he or she often prepares a successor in advance. It can be said on the basis of analysis of the data that the prior experience of members of the family does not influence any plan to pass the company on to the family in the future. The fundamental goal of a family business is to preserve its continuity across generations of the family (e.g. Berrone, Cruz & Gomez-Mejia, 2012). Although researchers agree that this is an important goal for the owners of family businesses, our data do not show that long-term plans are generally drawn up by these businesses. Only a third of owners of Czech family businesses stated that they have a strategic plan. The data does indicate, however, that if a business has drawn up a strategic plan, the family plans more often to keep the business in the family in the future than is the case when either a plan is drawn up for a shorter period or no plan is drawn up at all. The non-existence of a strategic plan does not, however, mean that the current owner does not plan to pass the business on to the next generation. The investigated sample of family businesses shows that the preservation of its family character may be preserved in as many as 84 % of them. We can, then, confirm that the aim of the current owners of family businesses is to pass the business on to the next generation. We incline towards the view held by Porfírio, Felício & Carrilho (2020) that it is not unequivocal that a strategic plan being drawn up affects the continuity of a family business, as 74 % of family businesses (56 respondents) whose owners stated that they want to pass the business on to the family have not drawn up a strategic plan. Small businesses, in particular, are characterised by the fact that they have an informal structure, for which reason they do not generally have any formalised planning in place. The data analysis we performed also indicates that drawing up plans is correlated with a larger number of employees, i.e. with a growth in the size of the business. We can agree with Honig & Karlsson (2004) that formalised planning is implemented primarily in large concerns. The responses obtained indicate that the intention of the family to pass the business on to the next generation is influenced by the number of employees from the family, in addition to the size of the business. Another finding concerns the influence on planning of the prior experience of the family. The prior experience of the family in another branch of business and the experience of the founder in another managerial position before the foundation of the family business have an influence on the drawing up of plans, i.e. strategic plans are created more often in family firms in which the founder of the firm or other employees from the family have gained such experience in another company. The prior experience of members of the family may also point to the fact that there is a more formal structure in place at these businesses.

4. CONCLUSION

In summary, the results point to the fact that the family does plan long term and its strategic goal is to keep the business in the family, in spite of the fact that family businesses often have no strategic plan drawn up. Our findings also show that a successor is often coached to take over the family business. In the case of a successful succession, the family has managed to pass on the entrepreneurial legacy of the business to its successors rather than having a strategic plan formally drawn up (Jaskiewicz, Combs & Rau, 2015). This means that it has engaged its successor in the course of events within the family business in advance and has created a motivating environment for this successor. Engagement of this kind goes beyond the scope of the ordinary transfer of a non-family business.

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SOCIALLY RESPONSIBLE BUSINESS AS A GLOBAL SECURITY STRATEGY

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ABSTRACT
Coronavirus has taught us that we must respond to the crisis together and that only with joint efforts will we be able to respond quickly and effectively to the challenges ahead. Socially responsible business is the only possible business if we as a species want to survive. In addition to the introduction and conclusion, the paper deals with the concept of socially responsible business (CSR), the development of the concept of CSR. Also, the paper deals with the development of socially responsible business in the Republic of Croatia. As the third chapter, the paper deals with global goals, ie goals of sustainable development – what those goals are and what is the connection between goals and socially responsible business. Bearing in mind the current situation and the uncertainty in which the whole world finds itself, one chapter of the paper will be dedicated to the coronavirus, which the authors consider to be a global security challenge for socially responsible business and the fulfillment of global goals. Through numerous examples, the authors will prove how the crisis caused by the coronavirus has strengthened the activities of socially responsible business despite the economic crisis and the uncertainty arising from the crisis and point out the importance and necessity of changing the behavior of company managemen. The time for change is now.
Keywords: *coronavirus, global security strategy, goals of sustainable development, socially responsible business*

1. INTRODUCTION
Today, companies have a more important task than ever - to incorporate socially responsible business into their way of working. The current management of the business has been called into question due to the constant uncertainty in which the company finds itself. The concept of corporate social responsibility is applicable to companies of all sizes. Not only is it applicable, but societies expect this, which was seen during the COVID - 19 crisis. "The crisis affected the economy, but it also affected the organization of society, on the growth of demand, on the development of information technology and a higher level of education of citizens. The community is looking for increasing involvement of companies in issues related to the well-being of society and the environment" (Glavočević, Radman Peša; 2013). Companies are expected to constantly invest in human capital, the environment and the community. In addition, it is expected that technologies that do not pollute the environment will be used more and more, and that the company's management will take care of its employees, bearing in mind that lifelong learning is becoming an indispensable part of employees' lives.

2. SOCIALLY RESPONSIBLE BUSINESS AS A WAY OF ACTING
Corporate Social Responsibility (CSR) is the way on which an organization bases its business or the way it manages its business processes by taking responsibility for the implementation of its activities to the community, taking into account the interests of society, ethical values and the legislative framework in which it operates (Varićak, M., Petračić, A., Brajdić,A., 2012).

CSR is associated with almost all levels of organizational activity of the company. Refers to the operation of the company outside the legal framework in different parts of business processes that include a different production process that will not be contrary to environmental protection; educating employees as well as investing in the community in which the company operates. This way of doing business remains increasingly recognized and valued by organizations and becomes part of the corporate strategy of the company. CSR is a:" business concept in which companies on a voluntary basis, without legal force, try to adapt their business to new values in which profit stops to be the only measure of company success" (Filantropija, 2021). Where does this way of doing business relate to all the main issues that guide the company - what to produce, how are these products produced? Is it about the rational use of funds? What resources are used in production? What is the relationship with employees established? What are the working conditions like? What is the relationship between the company and the local community in which it operates are just some of the issues that socially responsible company is guided in its business, and such a way of doing business requires other knowledge and leadership willing to accept change and influence the future development of the company (Vrdoljak Raguž, I., Bazdovac, K., 2014). In the Communication, the Commission sets out a new definition of CSR as "the responsibility of companies for their impact on society"(EUR-Lex, 2006). In order for companies to be able to fulfill their social responsibility, they need to integrate social, environmental, ethical, human rights processes as well as consumer care into their business. In doing so, there are certain benefits for businesses, the EU economy and society as a whole. For the European Commission, business practices have a significant impact on the lives of citizens in the EU and around the world. This means not only in terms of the products and services they offer or the jobs and opportunities they create, but also in terms of working conditions, human rights, health, the environment, innovation, education and training. Public bodies, such as the EU, have an important role to play in encouraging companies to act in this way. To show that the EU is ready and willing to help businesses to act that way, in 2011 the European Commission adopted a renewed CSR strategy, which combines horizontal approaches to promoting CSR / RBC (RBC - responsible business conduct) with more concrete approaches for specific sectors and policy areas. The European Commission highlights important aspects of CSR in 3 segments: (European union, 2021)

1) **importance for companies** - CSR and RBC provide important benefits in terms of risk management, cost savings, access to capital, customer relations, human resource management, business sustainability, ability to innovate and potential earnings
2) **importance for the economy** - EU, CSR and RBC make companies more sustainable and innovative, which contributes to a more sustainable economy
3) **importance for society** - CSR and RBC offer a number of values on which a more cohesive society can be built as a basis for the transition to a sustainable economic system.

"The Commission promotes corporate social responsibility in the EU and encourages companies to agree to international guidelines and principles. EU policy is based on its renewed 2011 Corporate Social Responsibility Strategy, which aims to align European and global approaches to CSR. The strategy emphasizes the importance of increasing the visibility of CSR and disseminating good practices, by integrating CSR into education, training and research" (European union, 2011).

The EU's CSR strategy includes (European Commission, 2011):
1) Enhancing the visibility of CSR and disseminating good practices
2) Improving and tracking levels of trust in business
3) Improving self- and co-regulation processes
4) Enhancing market reward for CSR

5) Improving company disclosure of social and environmental information
6) Further integrating CSR into education, training and research
7) Emphasising the importance of national and sub-national CSR policies
8) Better aligning European and global approaches to CSR.

The first Conference on Corporate Social Responsibility in Croatia was held in 2004 under the name Agenda 2005. It was attended by more than 150 representatives of companies, business associations, the Government, professional organizations, academia, trade unions and non-governmental organizations. The cooperation between the Croatian Chamber of Economy (CCE) and the Croatian Business Council for Sustainable Development (HR PSOR), which was realized by signing the Cooperation Agreement in 2006, certainly contributed to the very beginnings of understanding the concept of corporate social responsibility and approaching the European Union. The cooperation was transformed into the CSR Index project[1], supported by the United Nations Development Program in the Republic of Croatia (UNDP Croatia), which aimed to develop a methodology for evaluating (benchmarking) socially responsible practices of members of the Croatian Chamber of Economy and the Croatian Business Council for Sustainable Development and designing an annual award to companies with best business practices regarding CSR (Croatian Chamber of Economy; Croatian Business Council for Sustainable Development, 2010). In addition to developing the methodology, the project also aimed to educate and bring closer the concept of CSR, company management and management and point out the importance of its integration into all business segments, which began in 2006, through the establishment of the CSR Association of the Croatian Chamber of Economy. In this way, the CSR Community has become an important stakeholder in the development of Croatian socially responsible business. The criteria for participation in the CSR Index is the recognition of companies based on the criteria of the Golden Kuna awarded by the Croatian Chamber of Economy based on financial indicators for the previous period. However, any interested economic operator can access the CSR Index questionnaire and participate in the process. The CSR Index methodology consists of completing a Questionnaire containing questions covering 7 thematic units to be assessed (Croatian Chamber of Economy; Croatian Business Council for Sustainable Development, 2010) The questionnaire was modeled on the Business in the Community CR Index (Business in the Community, 2021):
1) Economic sustainability,
2) Inclusion of socially responsible business in the business strategy,
3) Responsible policies and practices in the work environment,
4) Responsible environmental management policies and practices,
5) Socially responsible business in market relations,
6) Socially responsible relations with the community,
7) Responsible policies for diversity and protection of human rights.

Companies apply for tenders that are announced once a year by the Croatian Chamber of Economy and HR SPOR and they are classified into four categories:
1) small enterprises
2) medium-sized enterprises
3) large companies and
4) public enterprises

Depending on the category, the content of the Questionnaire is different.

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[1] The Responsible Business Tracker® is a measurement tool available to all Business in the Community (BITC) members. It enables an assessment of performance as a responsible business by tracking progress against BITC's Responsible Business Map™, which was built on the UN's Global Goals or Sustainable Development Goals (SDGs).

The large questionnaire contains 137 questions and is completed by large and medium-sized companies, while the small questionnaire contains 67 questions is tailored for small companies.

2.1. Sustainable development and sustainable development goals

Speaking of socially responsible business, one cannot fail to mention sustainable development. Sustainable development is: "a framework for shaping policies and strategies for continuous economic and social progress, without harming the environment and natural resources relevant to human activities in the future" (Odraz.hr, 2021). It is an idea that starts from the fact that resources are limited and that we must use them responsibly. It is a way of production and consumption taking into account the natural resources of the ecosystem within which these processes take place. It is a question of social responsibility that the processes of production and consumption do not jeopardize the ability to renew natural resources. The goal of sustainable development consists of 3 interconnected items (Pavić-Rogošić, 2010):

1) Economic goals
2) Environmental goals
3) Social goals

It is necessary to find a balance in order not to endanger future generations, without harming the environment and natural resources important for the future.
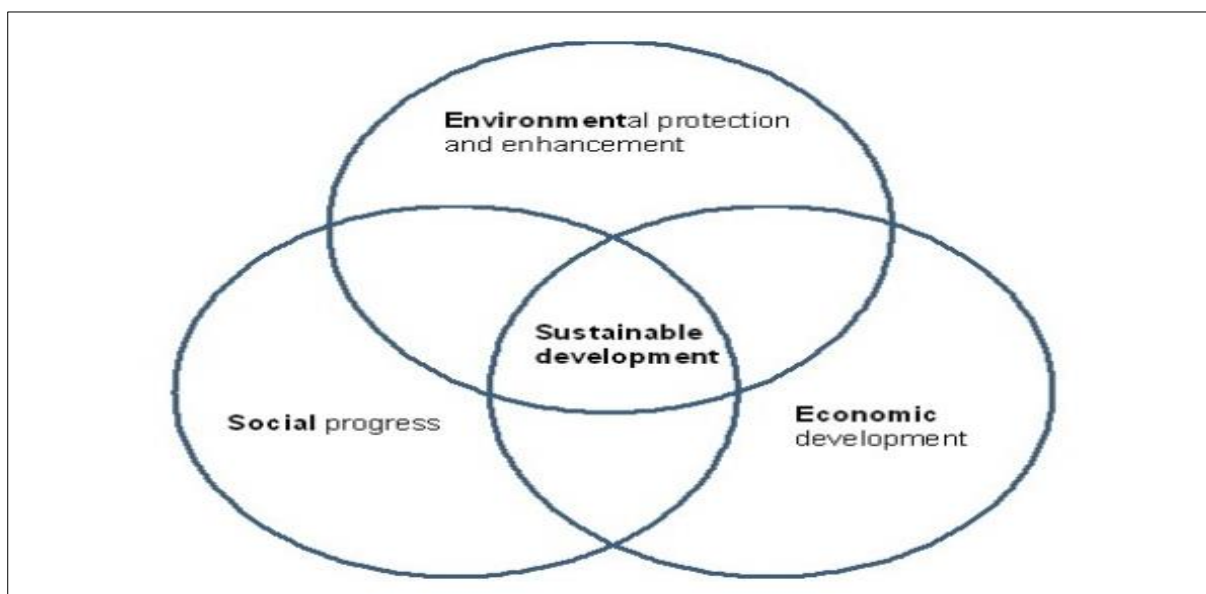
Picture 1: Components of Sustainable Development
(Source: Foundation for Democracy and Sustainable Development)

Agenda 2030 - Sustainable Development Goals, was adopted in 2015 at the United Nations Conference on Sustainable Development. The importance of goals lies in their universality. This means that they are universally applicable, connected and interdependent. Achieving one goal contributes to achieving other goals. (Pavić-Rogošić, Jelić Mück, Jagnjić, 2015). It can be seen from the picture that they represent an indivisible whole that enables the balanced realization of all three dimensions of sustainable development: economic, social and environmental. The Sustainable Development Goals, also called the Global Goals, are an extension of the Millennium Development Goals (MDGs) - the eight goals of the fight against poverty that the world is committed to achieving by 2015. The Millennium Development Goals adopted in 2000 covered a wide range of topics, but they were not achieved.

They were targeted at developing countries while the Sustainable Development Program was targeted at all countries. "Sustainable development goals include new thematic areas to show that the environment, the economy and society are intertwined, not competing." (Gudelj, 2019).The 2030 Agenda is a "global agreement setting out a universal, comprehensive agenda for all countries, including national policies."(Pavić-Rogošić, Jelić Mück, 2015) The global goals and the broader sustainability agenda go far beyond the Millennium Development Goals and address the root causes of poverty and the universal need for development for the benefit of all people. "In order to achieve the goals in their realization it will be necessary to include all resources, domestic and international, public and private. All countries will have to contribute, taking into account the level of development, the national context and their own capabilities" (Pavić-Rogošić, Jelić Mück, Jagnjić, 2015).

Picture 2: Sustainable Development Goals
(Source: Paris21)

"Public finances and development assistance will be most important for implementing the sustainable development goals. But the funds generated from the business sector through tax reforms and the discontinuation of illegal financial flows and corruption are also important." (Pavić-Rogošić, Jelić Mück, Jagnjić, 2015) In addition to the above socially responsible business is part of sustainable development and they are connected through different areas.

Picture following on the next page
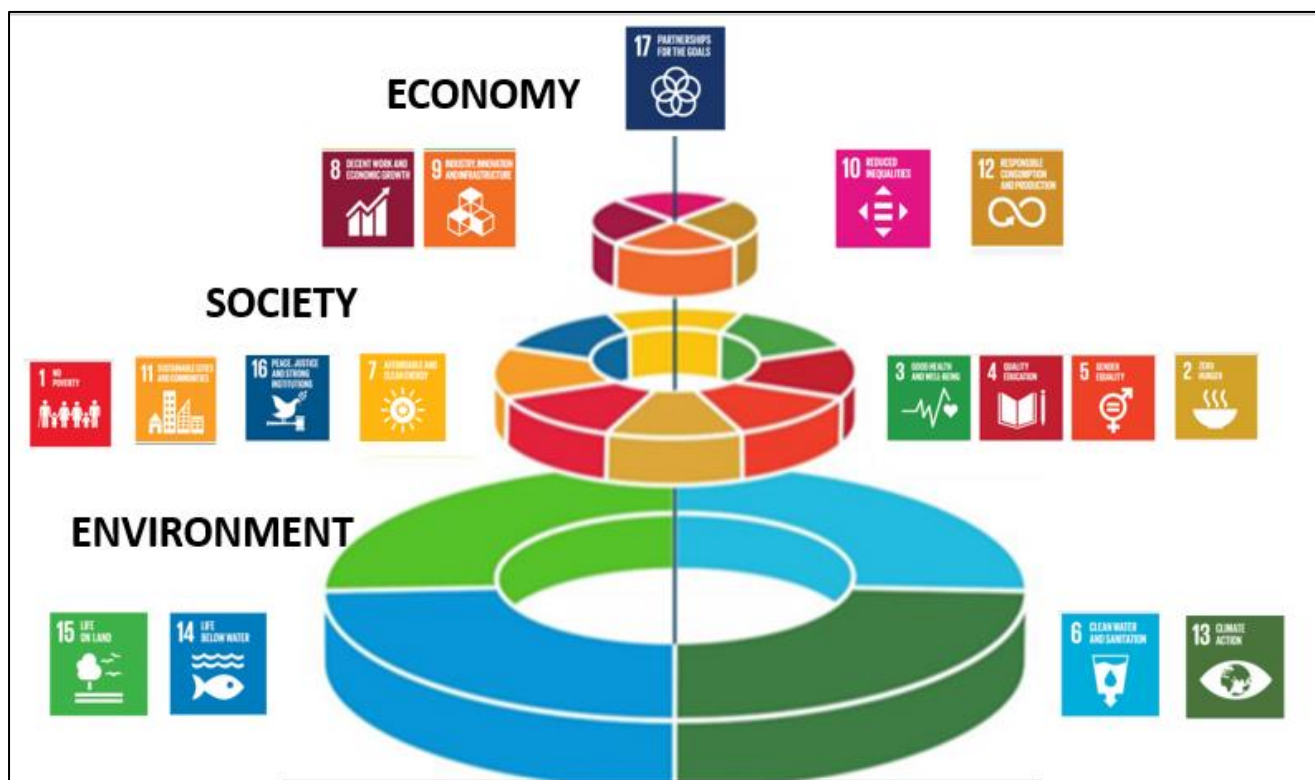
Picture 3: SDGs and Socially Responsible Business
(Source: Odraz)

From the image above we see how 3 dimensions are clearly presented: environmental, society and economy (Pavić-Rogošić, Jelić Mück, 2020).

1) The environmental dimension refers to the objectives related to access to drinking water; protection of climate, sea and forests and biodiversity in them.
It starts from the fact that lack of water, poor water quality and inadequate sewage have a negative impact on food security and the possibility of life choices in the poorer part of the world. It is estimated that by 2050, at least one in four people will live in a country with a drinking water shortage problem. The goal is to achieve universal and equal access to safe and cheap drinking water by the end of 2030 and to ensure equal access to sanitary and hygienic conditions. We are aware of changing weather patterns, rising sea levels and more extreme weather events. The average temperature on the planet is expected to rise during the 21st century, which would cross 3 degrees Celsius. For this reason, a turnaround is needed, society is increasingly turning to renewable energy sources in order to reduce CO_2 emissions. The most important agreement in this regard is the Paris Agreement adopted in 2015, according to which the signatory countries undertook to integrate measures to reduce climate change into national policies, strategies and plans (EUR-Lex, 2016). The goal is to prevent and significantly reduce all types of pollution of marine resources by the end of 2025, especially those activities that come from land. To this end, it is necessary to mention the initiatives of the European Union, which through the Cross-Border Cooperation Program seeks to contribute to achieving the goal. Through its projects, the Croatian Chamber of Economy also contributes to the preservation of biodiversity and sustainability of the Adriatic Sea. The environmental dimension also concerns the issue of deforestation and desertification, which are the result of human activity and contribute to climate change and affect human existence.

2) The social dimension refers to the goals that will be used to eradicate poverty, hunger and support sustainable agriculture; increase health care; ensure accessible and quality education; achieve gender equality; provide access to energy; create and promote sustainable cities as well as promote the rule of law at the national and international levels.

3) Economic dimension – The goals related to the economy are aimed at sustainable economic growth that requires the creation of social conditions that provide people with quality jobs that will encourage the development of the economy without adverse effects on the environment; achieve a higher level of economic productivity through diversification, technological improvements and innovations; infrastructure investment; strengthen and promote the social, economic and political inclusion of all and ultimately ensure sustainable forms of consumption and production. It is necessary to promote the responsible use of resources and energy efficiency, proper management of chemicals and all forms of waste throughout their life cycle, significantly reduce emissions to air, water and soil, in order to minimize negative impacts on human health and the environment.

In order for Croatia to keep up with the times in this respect as well, the Croatian Chamber of Economy, the Association for Corporate Social Responsibility, has created the HGK_COR AKCELERATOR platform which relies on the cooperation of the business and civil sector as well as state institutions operating in Croatia to achieve the goals of sustainable development. The platform is primarily aimed at informing and educating about the importance of sustainable development goals in building an economically prosperous, socially inclusive and environmentally sustainable society (Croatian Chamber of Economy, 2021).

3. CORONAVIRUS - A THREAT TO GLOBAL SECURITY AND A CHALLENGE TO CSR AND GLOBAL GOALS

Looking at the current state of the world, we are certainly talking about global security, which is threatened by climate change and environmental pollution and overexploitation of resources, but also the COVID-19 pandemic. The mentioned threats are in a way covered by global goals. Sustainable environment has advantages in energy-related areas, but other areas of environmental protection important for sustainable development have also been developed: "climate change mitigation (affects food production and bio-economy, quality of life, tourism, etc.), water resources management (drinking water, wastewater), air protection (health and quality of life) and control of other environmental protection conditions (rivers, sea, soil)" (Croatian Smart Specialisation Strategy 2014-2020, 2016). We are witnesses that threats are not limited by borders, that is, that they do not know them. No country, economy or family has been spared - be it infection, job loss or fear of insecurity. Achieving health care is a serious security issue that affects all rich and poor countries. According to the author, Roksandić and Mamić: "Human security refers to the establishment of effective protection of key human freedoms that are fundamental to human existence and the protection of the dignity of the individual. Achieving human security means protecting people from serious and widespread threats, both natural and social, and empowering individuals and communities to develop the capacity to make informed choices and actions" (Roksandić, Mamić, 2020). Since coronavirus is a healthcare concern, we can link it to global goal 3. In this way, it is the responsibility of each individual, company and state to help achieve these goals by addressing global goals, including this one. Those companies that recognize the importance of global goals will enable their own growth. Failure to act as a company option can have major consequences for the company itself as the 2030 Agenda has been signed by all 193 member states, which represents the future direction of the development of their public policies and the movement of the market itself.

Global goals apply to all sectors and every company should include sustainable development goals in its business. Because these are global goals, no company, local community, city or county can act on its own. The cooperation of all stakeholders is needed. The biggest challenge for the business sector is to change the mindset of the top of the company - that the focus should not be only on making a profit, but that their business should contribute to the development of their environment. Increasing attention is being paid to climate change and environmental concerns, as evidenced by national legislation and the conclusions reached at the European Council on the EU's climate and energy framework by 2030, where leaders have pledged to reduce greenhouse gas emissions by at least 2030. 40 percent compared to 1990. Such a policy will have the greatest impact on the energy sector and the companies operating in it, and innovative solutions and care for the environment should provide solutions to achieve these goals. Society is increasingly involved in the topic of climate change and the impact on people's lives. The reputation of companies will depend on their concern and their impact on the environment. We can say that the coronavirus was a test on a global scale about corporate social responsibility and changing the mindset of the company. It has caused a change in priorities globally. The main task of the state has become to take care of the health of its citizens. People's health and safety came first, and that affected economic growth.
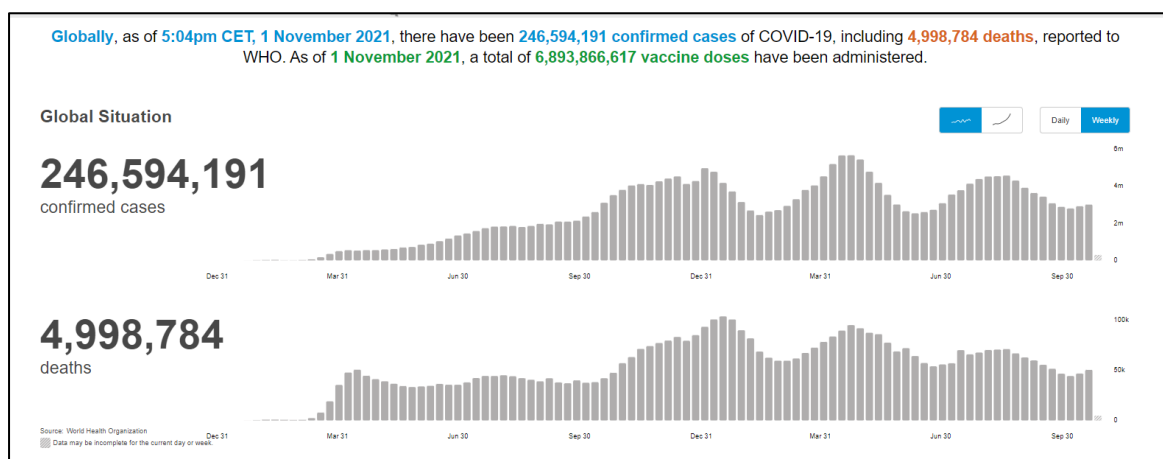
Picture 4: Statistical representation of the number of infected and died of coronavirus in the world
(Source: WHO)
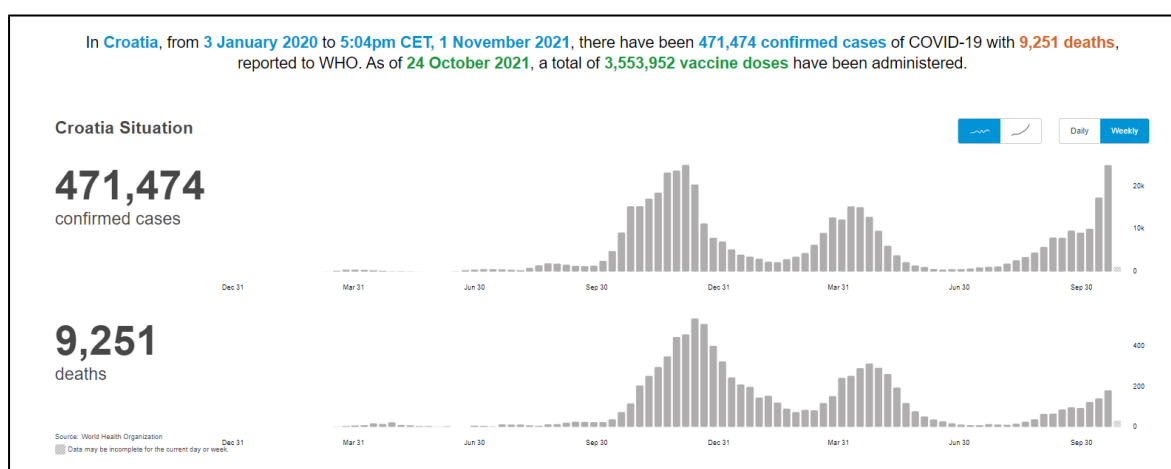
Picture 5: Statistical presentation of the number of infected and died of coronavirus in the Republic of Croatia
(Source: WHO)

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"States had to step up their efforts to ensure the health and safety of their citizens, which took a toll on economies around the world. With estimates suggesting that the virus could reduce global economic growth by up to 6 percent this year, it would be reasonable to assume that corporations will put climate action and global sustainability strategies in the background" (idop.hr, 2021). However, through examples, at the level of the world and Croatia, we will prove that this is not the case. Numerous companies that already dominate the health sector have become involved in vaccine development and drug innovation in the fight against COVID -19 by engaging in the production and supply chain, clinical trials and patient care. the world's vaccination companies have joined forces to develop a coronavirus vaccine. Together they have the greatest ability to produce vaccines in the world, working together to develop a high-tech vaccine (idop.hr, 2021). Also involved were companies from the textile industry and sports equipment production, which directed their knowledge and expertise to a completely new business segment, creating innovations from existing products to new ones (underwater masks in medical equipment - ventilated masks; clothing converted into medical supplies). Companies from the automotive industry have become involved in the production of respirators and fans. In addition to the production of equipment, it is certainly worth mentioning the donations that companies give as a contribution to the fight against COVID -19. Taking into account the numerous misinformation that appears in the media space and social media, it is important to mention that companies operating in this segment have become involved in the fight against the spread of misinformation. Numerous companies from various business segments have also been involved in providing assistance to staff directly affected by the coronavirus - healthcare professionals - by providing free accommodation but also food during the pandemic. Also, many companies have increased the salaries of their employees in recognition of their efforts and have offered them special working hours to make purchases. Croatia also has numerous examples of corporate social responsibility in response to the coronavirus, but also the earthquake that hit Zagreb and Petrinja and the surrounding area as a contribution to the market and the community. Thus, companies from the textile industry became involved in the production of masks, companies from the defense sector turned to innovation in their civilian program and began to create a protective mask that will provide complete biological protection against viruses and other biological threats (including comprehensive protection against COVID-19). Companies from the food industry have launched various donations and charitable activities in the fight against coronavirus. Banks have provided funding to hospitals to help them cope with the crisis and provide treatment for patients (idop.hr, 2021). Public companies donated part of their salaries as well as funds to purchase respirators. Given the great insecurity to do the job, some companies have guaranteed job preservation to their employees. Finally, as a positive example, we must not forget the unmentioned state as a stakeholder with great influence in CSR, which adopted measures to preserve jobs for companies affected by measures to combat coronavirus and those affected by the earthquake.

4. CONCLUSION

The coronavirus pandemic has shown that the issue of security is much broader than a narrow understanding and association to military supremacy. It also includes the security of resources, health and safety of life due to disasters such as earthquakes. It has shown even more that the responsibility is on all of us and that no one can remain indifferent. For this reason, the paper deals with the impact of coronavirus on setting the global priorities of each country and society as a whole. Coronavirus has proven that society as a whole can act very quickly and respond to crises, and that effective cooperation is a possible and achievable goal. By showing examples of corporate social responsibility in response to the coronavirus, but also the earthquake in Zagreb and Banovina, we proved that the world is ready to cooperate and that cooperation is necessary.

It is necessary to expand cooperation with all countries, especially developing countries, and to give them support in capacity building, as well as to strengthen the participation of local communities in improving governance. The world is closer than ever and every sphere of society has ways in which it can contribute to the betterment and protection of security which we have seen through the examples shown in the paper. Global problems require global responses and the fight against them. It is time to unite for the survival of the human race, for the future of new generations, and judging by the numerous examples of companies we can say that there is hope.

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IMMIGRANTS IN THE CROATIAN LABOR MARKET: DO THEY SUBSTITUTE NATIVES?

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ABSTRACT
In order to theoretically assess the potential impact of immigrants on different labor market outcomes in Croatia, it is important to compare the labor market profile of the natives and immigrants. The profile of immigrants will be analyzed by taking into account several possible definitions of immigrants that are addressed in the literature of migration economics. These definitions are based on different elements i.e. place of birth, citizenship and length of stay in the country. We give an additional insight into the labor market profiles of immigrants and investigate the possibility of "displacement effect", in which immigrants substitute natives on the labor market. Given the results, the existence of composition effect in Croatia regarding the labor market status between natives and immigrants cannot be expected although some differences are visible, mainly in the area of income distribution and the distribution of observed groups of population among different activities.
Keywords: immigrants, natives, labor market, Croatia

1. INTRODUCTION
The number of international migrants globally in 2019 was 272 million people, which represents 3.5% of the world population and a growth rate of 81.3% in comparison to 2000 (International Migration Organization, World Migration Report 2020). Among all international migrants, more than 60% are migrant workers while other categories include refugees, internally displaced persons and stateless persons, among others (International Migration Organization, World Migration Report 2020). While international migrations grow each year, academic and political debates heat up in order to address complex issues that arise from all the changes migrations create. These changes refer to demographic, cultural, labor, fiscal, health, political, environmental, religious, and many other contexts within source and destination countries. As part of the research in this paper, we focused on the changes that potentially affect the labor market due to the inclusion of migrants, i.e. whether the natives are replaced by migrants. The Republic of Croatia was chosen as the country of interest. The main aim of this paper is to compare the labor market profile of immigrants with the natives in the Republic of Croatia and assess the possible existence of a composition effect or the "accumulation" of migrants in certain groups depending on characteristics significant in the labor market which can affect changes for the natives concerning their labor market situation. The research questions that arose were as follows:
a) What is the size of migrants in Croatia when we analyze their integration into the labor market?
b) the extent to which the profile of migrants differs from the profile of the domicile population by analyzing the following labor market indicators:
   - employment, unemployment and activity rate
   - financial situation of households natives and migrants live in
   - labor market activity and status in employment
   - levels of education attainment
   - net monthly income/salary
   - most common activities in which natives and migrants are employed

c) Can the replacement of the domicile population with migrants be expected, given the analyzed characteristics?

Basically, the existence of a mismatch between natives and migrants from a descriptive aspect will be analyzed by using data from the 2015 Labor Force Survey. These data make it possible to examine specific characteristics of the labor market that general data obtained from the Census do not allow. Characteristics of migrants will be assessed according to different definitions of migrants, namely based on someone's citizenship and country of birth in order to give an additional insight into the labor market profiles of migrants according to different definitions that can be seen in the migration economics literature. The paper is structured as follows. Section 2 presents a literature review i.e. the theoretical background of composition effect. Section 3 outlines an analysis using Labor Force Survey 2015 for Croatian labor market and section 4 includes the discussion whether there is a composition effect in Croatia based on the data analysis.

2. LITERATURE REVIEW
The question of the net impact of migrants on different elements in the destination country is an intriguing issue, from not only an economic but also a political point of view. Bodvarsson, Simpson and Sparber (2015) divided the literature on migration theory into three periods - pre-1960 literature, 1960's core migration theory literature (with Sjaastadt and Becker as lead authors), and recent theoretical analyses. The third, most recent, research period is mostly based on the extension of the basic Sjaastadt's model in which we can, from methodological point of view, differ between: i. Static human capital model with endogenous migration, ii. Static human capital model with endogenous migration and endogenous wages and iii. Dynamic model with endogenous migration and physical capital accumulation. Contemporary issues about migrations worldwide is a well-researched topic. New insights on a socio-economic impact of migrants emerge with the growth of academic publications (Bekerman, Geisen 2012; Chiswick, Miller 2015; Fauri 2015; Panizzon, Zürcher, Fornalé 2015; White, MJ 2016) which focus, at least from the economic point of view, is most often on the adjustment of immigrants in the labor market. The likelihood of replacing the natives ("the displacement effect") with migrants is a common research question since it could reduce wages, have negative consequences on the income distribution, unemployment and living standards. Beside the displacement effect, other labor market indicators are also brought into the relationship with the overall immigration effect such as migrants' activity, human capital accumulation and the net fiscal effect in the destination country. The structure of immigrants is the most important factor in assessing the economic and social effects that immigrants have on a destination country. The number and structure of immigrants can influence many changes in demographic (age distribution, education structure), labor market (labor market participation, (un)employment, income distribution, economic structure) and budgetary (dependence on other source of income that the government and other institutions provide) variables. The small number of immigrants with a profile similar to that of the natives refers to a situation where there is unlikely to be any impact of immigrants on any of the above-mentioned variables. Beside the number and structure of immigrants, one unavoidable factor is a reason behind migration movements. By its most basic explanation, migrations represent an act of investing in human capital since the main hypothesis of migrations is that people migrate in order to maximize their utility while they achieve the highest possible return on human capital. Theoretically speaking, behind the motives of migration movements, lies the theory of human capital in which Sjaastad put fundamentals in the early 1960's (Sjaastad 1962). His basic hypothesis was that the person who migrates compares the source country and the destination country in the context of opportunities (benefits) and losses (costs) and selects the country in which the present value of earnings is

maximized. Over time, Sjaastad's model has been upgraded in order include various non-monetary benefits (Becker 1964), immigration policy differences, self-selection issue, labor market variables, the effect of networks in a destination country, households as a basis for migration decisions, etc. Although there has been a significant increase in the number of publications on migration in recent decades, there are still present many methodological issues in covering the impact of migrations. Primarily, this refers to the very definition of migrants as well as the availability but also the comparability of data. The definition of migrants is not uniform on an international level, both from a methodological and legal point of view. Data availability is a significant problem because many countries do not systematically collect data on migrations, making country comparability difficult, often impossible. Methodological problems of the migration phenomenon are a severe obstacle for conducting international research and gaining new knowledge about the impact of migration flows not only on the destination country, but also on the source country. According to the United Nations, a migrant is "any person who is moving or has moved across an international border or within a State away from his/her habitual place of residence, regardless of (1) the person's legal status; (2) whether the movement is voluntary or involuntary; (3) what the causes for the movement are; or (4) what the length of the stay is." (United Nations, 2021). Sources of migration data can be divided into three groups depending on the data collection method (Table 1).

Source of migration data	Example of source	Strengths	Limitations
Statistical	Censuses, household surveys, labor force surveys	Universal, cross-country comparability, socio-economic characteristics, detailed data on small population groups	Infrequent, very costly, lack of information on causes or consequences, few questions on migration, unreliable emigration data
Administrative	Visa, residence-, work-permit, border data collection system	Detailed and continuous data, small groups	Lack of comparable definitions, coverage and availability between countries, undocumented residents
Innovative	Big data (e.g. social media, online payment services), IOM's Displacement Tracking Matrix	Timely, real-time data, broad coverage, automatically collected	Biased, privacy and ethical issues

Table 1: Sources and characteristics of migration data
(Source: Migration Data Portal, Migration data sources, 2020)

3. THEORETICAL CONSIDERATIONS OF COMPOSITION EFFECT

The focus of this paper is on discovering the possible existence of the composition effect in the Croatian labor market. "The compositional effects reflect the possibility that immigrants may have different characteristics from natives, such as schooling levels. Increases in immigration may then affect the distribution of skills among the residents of a country, where immigrants are included in our definition of residents. In addition to composition effects, immigrants can, by changing relative factor supplies, affect native wage and employment outcomes and the return to capital investment." (Blau, Kahn, 2015, 794). The number and structure of immigrants in a country can affect changes in the distribution of various characteristics of a country's population – distribution curve can widen or flatten and this will affect the magnitude of the effect of specific migrant activities on native labor market outcomes. The most common myth about immigrants refers to the belief about their negative influence on wages, which will be reduced in the destination country due to their arrival. This is a basic hypothesis behind the neoclassical model. Assuming the equality between migrants and natives, the basic neoclassical model indicates a reduction in wages due to a shift in the supply curve (figure 1).
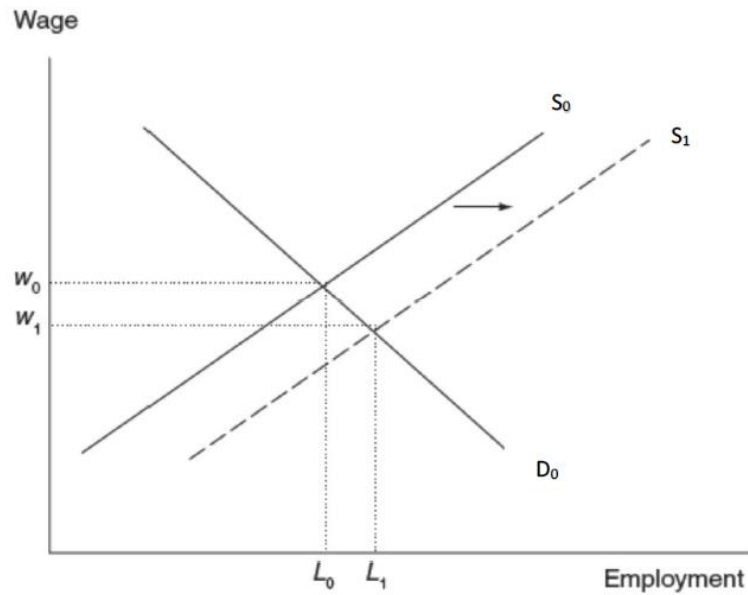
Figure 1: The effects of immigration when natives and immigrants are identical
(Source: Ottaviano, G.I.P., 2015, Routledge, p. 90.)

When the number of workers increases because of the influx of immigrants, supply curve moves rightwards from S0 to S1. The new equilibrium depicts higher employment L1 and lower wage W1. „Accordingly, if the labor market characteristics of immigrants and natives are the same, immigration increases overall employment but depresses the wage, as a lower wage is needed to convince firms to absorb the additional supply of labor. This is the direct "displacement effect" of immigration on native workers" (Ottaviano 2015, p. 90). Nevertheless, it can be expected that immigration has a positive impact on relevant labor market variables such as wages and overall employment levels if one questions the assumption under which natives and immigrants are identical.
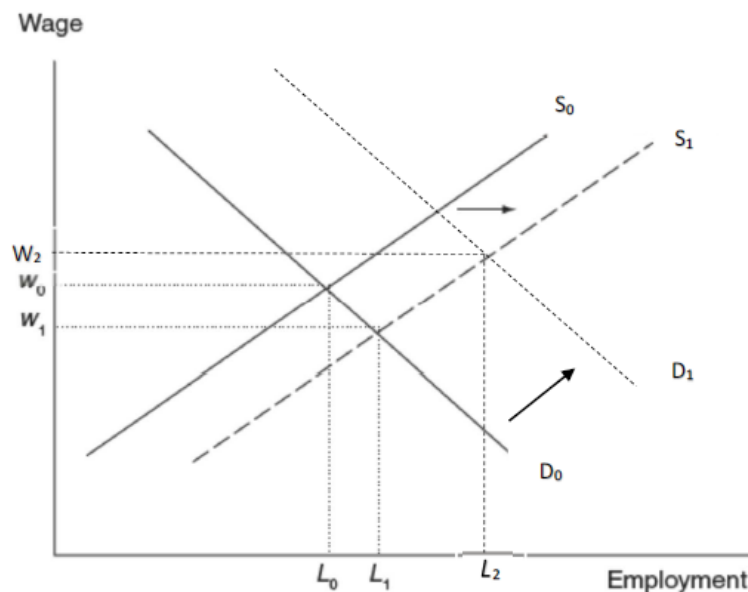
Figure 2: The effects of immigration when natives and immigrants are different
(Source: Ottaviano, G.I.P., 2015, Routledge, p. 91.)

Assuming that immigration boosts the productivity of natives, the demand curve shifts to the right (from D0 to D1) which may result in higher wages (W2) and a higher level of employment (L2). It is difficult to identify the specific impact of immigration solely by analyzing wages, given that wages can adjust over time due to various changes in the labor market, which can occur. These changes can be affected by number of migrants, characteristics of migrants in relation to natives, degree of natives' internal and external migrations, changes in economic structure, changes in demographic structure, business cycles, discrimination and spatial segregation, degree of assimilation of migrants, etc. In the context of the neoclassical theory and the existence of a composition effect, it is important to point out that the magnitude of the effect of immigrants on natives can go in either direction (both positive and negative) but to have a significant compositional effects, the net effect of migration should be quite large (Shioji 2001). This paper will descriptively examine the characteristics of the immigrants in relation to those of the natives in order to identify the possible impact (positive or negative) of immigrants on the results achieved by the natives in the Croatian labor market.

4. IMMIGRANTS IN CROATIA – AN ANALYSIS
4.1. Methodology

In the Republic of Croatia, among the statistical sources that can be used for analyzing characteristics and labor market activities between natives and migrants, the Census of Population, Households and Dwellings (hereinafter referred to as: Census) and the Labor Force Survey stand out. To begin with, it is important to determine who represents the immigrants and who the natives who are our subject of interest. According to the Census, a migrant is a person who participates in the process of spatial mobility of the population (immigrant, emigrant). The statistical definition of an international migrant is based on the concept of usual place of residence. According to this concept, immigrants from abroad (and emigrants) are considered to be persons who have changed their usual country of residence for a period that is, or is expected to be, at least one year long. Therefore, the methodological criteria relevant to the definition of a migrant in Croatia are based on the usual country of residence (country of birth) and length of stay. Other than these criteria, other possible criteria can be used according to which a migrant is defined: citizenship, purpose of arrival and immigration status of parents. Depending on the statistical coverage of a migrant, it is quite possible to obtain different data on the number of migrants, their characteristics and ultimately on their impact. The definition, i.e. the statistical coverage of immigrants, can differ between countries. There is still no consensus on a single definition of immigrants. "At the international level, no universally accepted definition for "migrant" exists. (…) An umbrella term, not defined under international law, reflecting the common lay understanding of a person who moves away from his or her place of usual residence, whether within a country or across an international border, temporarily or permanently, and for a variety of reasons." (International Organization for Migration, 2019). Determining the criteria and deciding on the inclusion of individuals in immigrant groups for research purposes is a very subjective issue. Taking into account the possibility of using different definitions for migrants as well as using different sources of data on migrants and the availability of data, the analysis was conducted using the Labor Force Survey from 2015, due to the LFS (raw) data availability for the author, and given that it covers a much broader set of labor market characteristics. For the purpose of this research and the definition of immigrant in Croatia, we adhered to the criteria of country of birth and citizenship i.e. immigrants are defined according to two criteria: 1) persons whose place of birth is not the Republic of Croatia, irrelevant of their citizenship, and 2) persons whose place of birth is not the Republic of Croatia and who do not have Croatian citizenship.

The characteristics of both groups of migrants are compared with those of the natives, i.e. persons whose place of birth is the Republic of Croatia. For all groups, the length of stay in Croatia is longer than one year. In addition to the analysis of labor market characteristics between the two groups of immigrants and natives, by using raw data from the Labor Force Survey, an analysis of the size of immigrants was made between the official data of Census 2011 and the Labor Force Survey. This serves as an additional verification of the Survey as a data source. The 2011 Census included two questionnaires - a census (questionnaire for individuals) and a questionnaire for households and dwellings. Questions that are relevant for analyzing the differences between natives and migrants, are questions related to the place of birth and residence of the mother at the time of birth, immigration data (source country, year and reason for immigration) and citizenship. The Census contains specific questions related to the labor market status connected to the performance and/or job search, position in employment, occupation, activities, place of work, main sources of livelihood, and means of travel to work. In the 2011 Census, the concept of someone's usual residence is a place in which a person spends most of his/her daily time, provided also that he/she must live in that place for at least one year. In addition, the person should have an intention to stay for at least one year if they came to their usual place of residence during the year preceding the time of enumeration. In the context of this paper, persons who meet these criteria belong to the total population. According to the methodological explanations of the 2011 Census, the place of birth is considered the place where the person's mother lived at the time of the person's birth, while "relocation is considered to be a change of residence. A person is considered to have moved to the specific settlement of the Census if at some period of his life he was a resident of another settlement of the Republic of Croatia or a foreign country where he resided for at least a year." (Državni zavod za statatistiku, 2011). The Labor Force Survey, unlike the Census, is a continuous survey conducted on a weekly basis with quarterly processing and includes a representative random sample of selected households. All members of all selected private households living permanently in these housing units are surveyed. In 2015 33,171 people were surveyed in 14,199 households. The Labor Force Survey contains 101 questions among which there are questions related to place of birth, citizenship, year of the arrival in Croatia and a place of residence a year ago. These are all important for determining a person who would belong to the group of "migrants".

4.2. Research Results

As explained in the methodological part, the first part of the research results gives a comparison of the size of immigrants between two different data sources - Census and Labor Force Survey, followed by an overview of labor market characteristics of three different groups of workers using only Labor Force Survey data. The table 2 shows the sample size of the LFS 2015 as well as the sample sizes of natives and two categories of immigrants used for the analysis.

Category	Total	% of sample
All	38206	
Natives	34473	90.23
Born in another country	3733	9.77
Having other country's citizenship	89	0.23
Born in another country and having other country's citizenship	79	0.21
Living in Croatia shorter than a year	46	0.12
Living in Croatia shorter than a year and having other country's citizenship	3	0.01

Table 2: Sample – Labor Force Survey 2015
(Source: Author's calculations based on LFS 2015 data)

Category of "natives" includes individuals from the sample who are born in the Republic of Croatia, while the category of immigrants can be obtained using different definitions. Those who were born in another country and lived in Croatia at the time of the Survey include 3,733 people, which is 9.77% of the total sample. Other subsamples may include i. Persons who have another country's citizenship, ii. Persons who were born in another country and have another country's citizenship, iii. Persons who have been in Croatia for less than a year and iv. Persons who have been in Croatia for less than a year and have another country's citizenship. Given the size of the subsamples, in order to validly compare the natives and immigrants, the categories "natives", "born in another country" and "born in another country and having other country's citizenship" were taken. The size of other subsamples is not reliable and valid. The following table shows the population size and subsamples from the 2011 Census to indicate that the ratios are relatively similar which further confirms the representativeness of the LFS sample.

Category	Total	% of sample
All	4284889	
Natives	3692499	86.17
Born in another country	584947	13.65
Having other country's citizenship	22527	0.53

Table 3: Sample – Census 2011
(Source: Author's calculations based on Census 2011 data)

According to the Census 2011, persons not born in Croatia were born in the following countries: Bosnia and Herzegovina (70%), Serbia (9.02%), Germany (5.84%), Kosovo (3.48%), Slovenia (3.39%) and Macedonia (1.74%). For comparison with the Census 2011, according to the LFS 2015, 10.7% of respondents were born in EU28 member states, 88.1% were born in non-EU28 European countries. It is an aggregated variable due to the protection of data of individuals, so it was not possible to distinguish which countries are in question, but the ratios of the Census and the LFS are compatible. The LFS data analysis begins with the characteristics of households, followed by the analysis of individual attributes of subsamples - natives, migrants born in another country (here in after: migrants) and migrants born in another country and having another country's citizenship. Household characteristics differ between the observed three groups, with the highest average number of persons in the household among migrants without Croatian citizenship (4.01), while among migrants is the lowest (3.22). The highest share of married people is also among migrants without Croatian citizenship (79.31%) while the lowest is among the natives (55.49%). Negative (mostly poor and poor) financial situation of the household is most often assessed by the natives (53%) as opposed to the migrants without Croatian citizenship (30%) while 55% of migrants assess negatively their financial situation of the household (figure 3).

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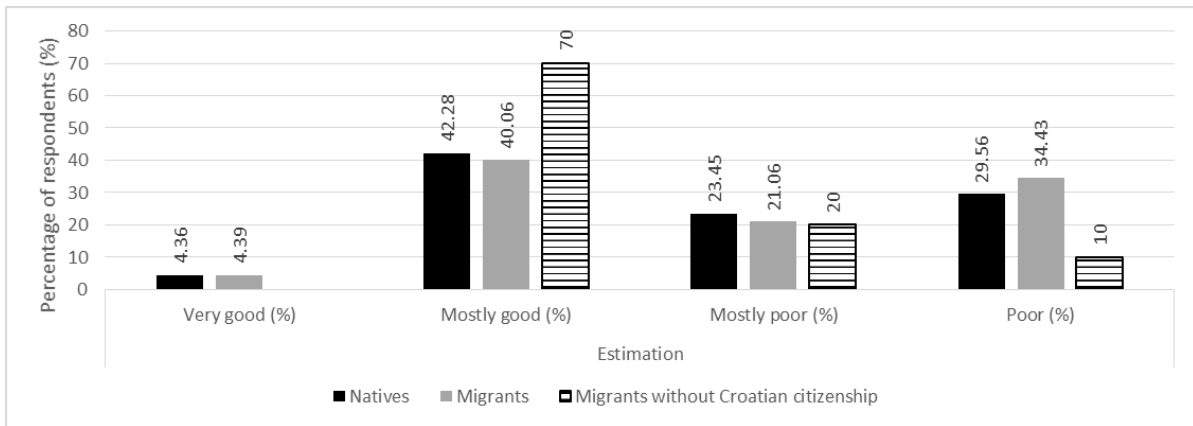
*Figure 3: Subjective estimation of the household financial situation
(Source: Author's calculations based on LFS 2015 data)*

Labor market indicators (figure 4) are most efficient among the natives - higher employment rate and higher participation rate compared to the migrants, while the unemployment rate is lowest among the migrants without Croatian citizenship, which is expected given their activity in the labor market (figure 5).
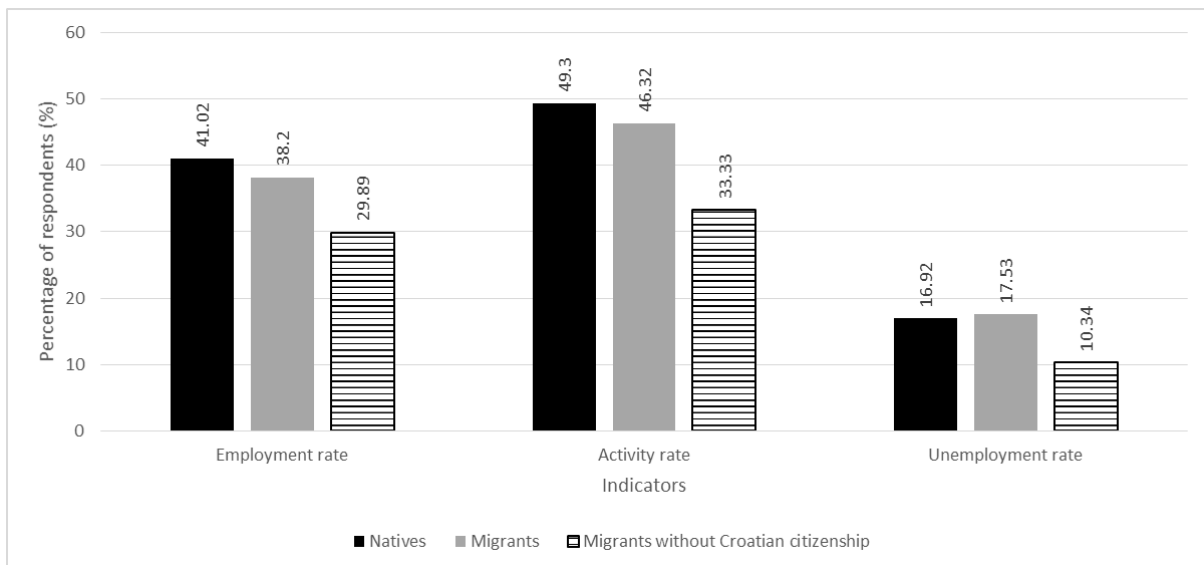
*Figure 4: Labor market indicators
(Source: Author's calculations based on LFS 2015 data)*

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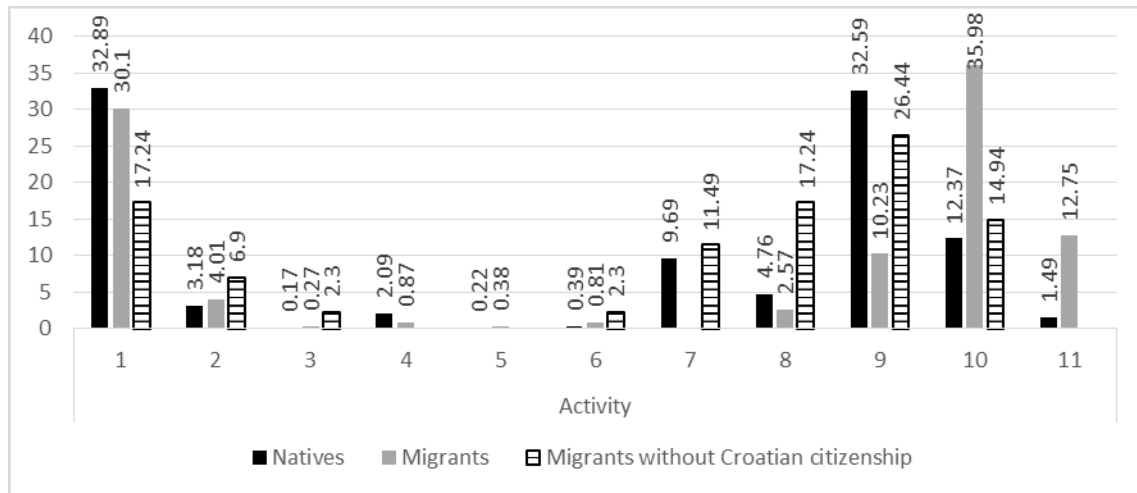
Figure 5: Labor market activity
(Source: Author's calculations based on LFS 2015 data)
Legend: 1 - working/employed by employer regardless of ownership sector; 2 - working in own enterprise or craft; 3 - freelance activity; 4 - working on farm (own or rented); 5- working for payment in cash, kind or as agreed; 6 - working as unpaid family worker on family farm, family business or craft; 7 - school pupil or student; 8 - housewife, househusband; 9 – pensioner; 10 - do not work, but able to work; 11 - unable to work.

While analyzing the group of the natives, categories of employees and pensioners are singled out, while in the case of migrants, employees, those who do not work but are able to work, and those who are not able to work are generally singled out. Among the smaller group of migrants whom do not have Croatian citizenship, pensioners, housewives and employees stand out. The following figure 6 shows the observed categories depending on their highest attained level of education.

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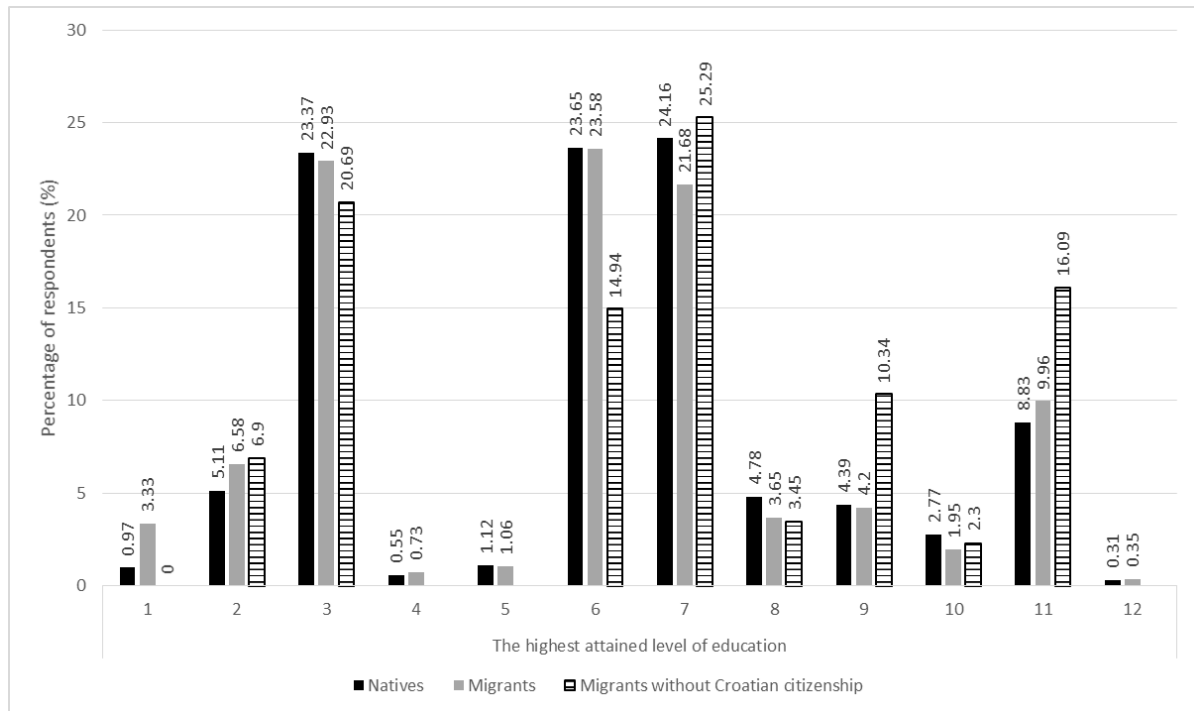
Figure 6: The highest attained level of education
(Source: Author's calculations based on LFS 2015 data)
Legend: 1 – no school; 2 – uncompleted basic school; 3 – lower secondary school; 4 –
industrial and crafts schools, vocational schools for skilled and highly-skilled workers (1
year); 5 - industrial and crafts schools, vocational schools for skilled and highly-skilled (2
years); 6 - industrial and crafts schools, vocational schools for skilled and highly-skilled
workers; 7 - technical and related secondary schools (4 or more); 8 – grammar school; 9 –
short-term professional study (2 - 2.5 years); 10 - undergraduate professional study and
undergraduate university study (3-4 years); 11 - university graduate study, integrated
undergraduate and graduate university study, specialist professional graduate study and
postgraduate specialist study, masters of science and masters specialists; 12 – doctorate.

Among persons with a higher level of education, migrants without Croatian citizenship stand out in particular, with a higher share of those with a completed second level of study and short professional studies. Migrants who do not have Croatian citizenship also record the highest share of those who attended a regular school or program from the regular education system in the past four weeks (10.34%) as opposed to the natives (8.69%) or the migrants regardless (2.79%). Of those who were at work for at least one hour last week (the highest share for the natives is 92.43% and the lowest for migrants without Croatian citizenship is 88.46%), the following figure indicates which is their status in the main activity or their position in employment.

Figure following on the next page

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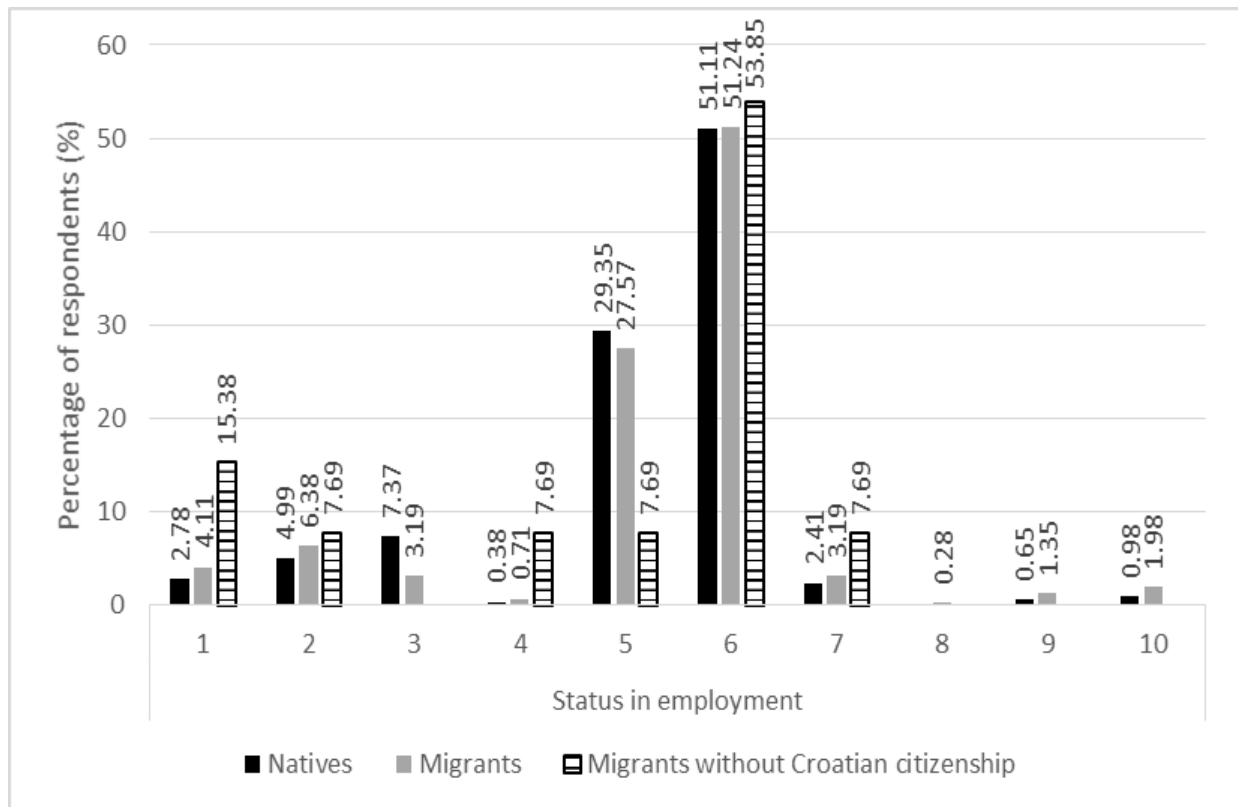
Figure 7: Status in employment
(Source: Author's calculations based on LFS 2015 data)
Legend: 1 - working in own enterprise; 2 - working in own craft; 3 - farmer on own farm; 4 –
working in freelance activity; 5 - employed in the state firm, institution, organisation; 6 -
employed in the private sector; 7 – unpaid family worker on farm, family business or craft; 8 -
working on contract (authors); 9 - working under contract (professionals, students etc.); 10 -
working for payment in cash, kind or as agreed.

Regarding the manner of performing work in terms of contract duration, between 77% and 79% of respondents perform work indefinitely in all of the three observed groups while variations exist in other forms of contracts. The highest percentage of seasonal contracts is among migrants who do not have Croatian citizenship (11% compared to 2% with the other two groups) while the natives have the highest share in temporary contracts (16.5% compared to 11% of migrants without Croatian citizenship and 15.4 % for migrants). When asked about the usual net monthly salary or earnings at the main job, in all three categories about 25% of respondents did not answer and a relatively small sample of migrants without Croatian citizenship prevents valid conclusions regarding their salary. Nevertheless, it is interesting to note differences especially in the left part of salary distribution where it is observed that the probability of earning the minimum wage is higher among migrants without Croatian citizenship and the lowest among the natives.

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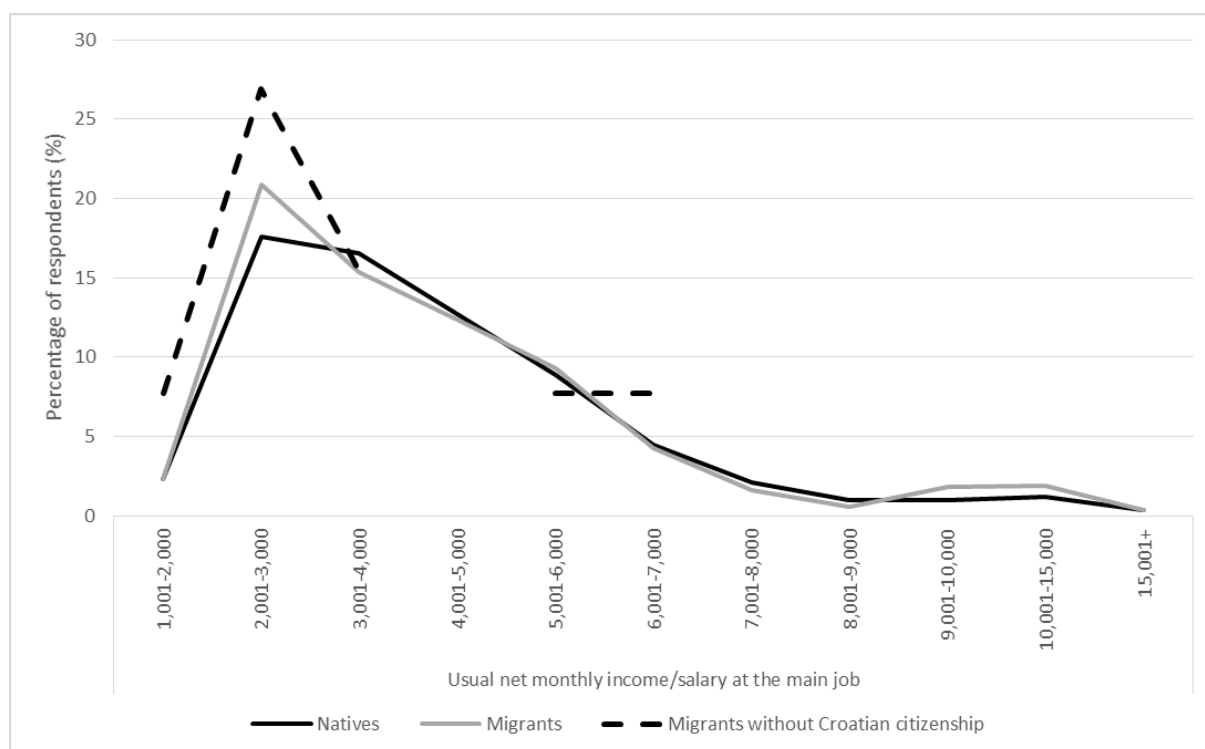
Figure 8: Usual net monthly income/salary at the main job (in kunas)
(Source: Author's calculations based on LFS 2015 data)

The following table shows the concentration of the observed groups by activities that they are mostly involved in or the first five activities in which the highest shares of respondents were observed.

Group	Activities
Natives	Wholesale and retail trade except the repair of motor vehicles and motorcycles (G.46)
	Public administration and defense; compulsory social security (0.84)
	Administrative and support service activities and other business support service activities (N.82)
	Education (P.85)
	Accommodation activities (I.55)
Migrants	Wholesale and retail trade except the repair of motor vehicles and motorcycles (G.46)
	Crop and livestock production, hunting and related service activities (A.01)
	Education (P.85)
	Building construction (F.41)
	Public administration and defense; compulsory social security (O.84)
Migrants without Croatian citizenship	Wholesale and retail trade except the repair of motor vehicles and motorcycles (G.46)
	Accommodation activities (I.55)
	Food and beverage service activities (I.56)
	Human health activities (Q.86)
	Building construction (F.41)

Table 4: The five most common activities in which certain categories of the population are employed
(Source: Author's calculations based on LFS 2015 data)

Dissatisfaction with the main job and the desire to change or find additional work is most pronounced among migrants without Croatian citizenship with 15.4% of respondents wanting to change their main job as opposed to slightly more than 8% in the other two groups. Among same group, more than 7.5 % (as opposed to about 2% in the other two groups) want to find additional work.

5. DISCUSSION: IS THERE A COMPOSITION EFFECT IN CROATIA?

In order to have a composition effect, immigrant should have different characteristics from natives which affects earnings, labor market status or human capital differentials between them. If the composition effect is visible, immigrants segregate in a certain group which has significantly different characteristics thank those of natives. In that case, it can change the structure of an overall population, consisting of all persons residing in a country. The descriptive statistics in this research reveals that there are some minor differences between migrants and natives, as well as a potential segregation (crowding) of immigrants who do not have Croatian citizenship in groups with a specific profile (higher level of education, lower activity rates because of the higher shares of retirees and pupils/students). It should be emphasized, however, that the sample of individuals who were not born in Croatia and do not have Croatian citizenship is relatively small (0.23% of the total sample of respondents in LFS 2015), which makes the generalization less valid but the comparison of natives and migrants has a scientific validity. A significant composition effect in Croatia cannot be expected. Immigrants in Croatia are a relatively homogeneous group. These people have Croatian citizenship in vast majority; speak the same or similar language, given that the largest number come from neighboring countries. Household characteristics (size, financial situation assessment), education profile or labor market indicators (activity rate, employment rate, unemployment rate do not indicate major differences compared to the natives which means that, from an economic point of view, they are very successfully assimilated. The elements that indicated a somewhat more pronounced difference concern the specific activities, which results in a certain amount of compensation. Within the group of immigrants, those who do not work but are able to work stand out, while among the natives, retirees stand out. The peak is somewhat more pronounced in the left part of the distribution of net monthly salaries / wages for migrants, either looking at all migrants or only those who do not have Croatian citizenship, which is expected given the most common activities in which they are employed pay lower, often minimum wages such as building construction or accommodation activities. In the context of the models presented in the third chapter, in Croatia natives and immigrants are very similar although not identical. Immigrants` size and the fact that they are quite homogeneous group, does not affect labor market supply and demand in Croatia. Taking into account what we know about the characteristics of immigrants, other factors will affect the labor supply and demand for labor i.e. changes in economic structure, changes in demographic structure, business cycles, discrimination and spatial segregation. In summary, it can be said that the immigrants in Croatia do not have significantly different characteristics from the natives in terms of labor market activities, except that a higher probability of employment in lower paid activities can be expected, which ultimately affects their total earnings, which is consistent with previous research in other labor markets (Dell'Aringa, Lucifora, Pagani, 2015; Nanos, Schluter, 2014). However, there is still no difference in the assessment of the financial situation of the households, with more than 50% of immigrants, but also natives, assess the financial situation as poor. The absence of the composition effect in Croatia is in line with current scientific knowledge. There is a strong scientific consensus that a large concentration of immigrants with significantly different characteristics from natives is needed in order to have a stronger visible impact (either positive or negative) on the structure of natives, no matter of the nature of variables being analyzed (economic, sociological, demographic or environmental).

Most studies do not find a statistically significant impact on wages, income distribution or other economic indicators, which calls into question the assumptions and conclusions of the basic neoclassical model and shatters the myth of the negative economic effects of immigrants on the natives. "The economic impact of migration has been intensively studied but is still often driven by ill-informed perceptions, which, in turn, can lead to public antagonism towards migration. These negative views risk jeopardizing efforts to adapt migration policies to the new economic and demographic challenges facing many countries." (OECD, Migration Policy Debate, 2014).

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THE IMPACT OF THE COVID 19 PANDEMIC AND GOVERNMENT MEASURES ON THE EMPLOYEES OF THE SERVICE SECTOR IN THE REPUBLIC OF CROATIA

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ABSTRACT
This paper aimed to determine the influence of the COVID-19 pandemic on the employees in the service sector in Croatia. Ever since the pandemic started, employees in the service sector struggled with great uncertainty and imposed business restrictions, resulting in significant financial and job losses. In addition, employees of this sector are affected by the physical and psychological consequences of the crisis. In order to determine the impact of the pandemic on the service sector, a survey was conducted. The results showed the attitude of employees in the service sector on government measures to combat the spread of viruses and employees and their jobs. According to the survey results, the respondents do not have confidence in the Government response to the crisis. The majority of respondents stated that the Government did not provide them with all the necessary assistance during the crisis to meet their basic living needs, nor did they agree that the Government provided them with full access to health services during the pandemic. The survey showed that the impact of the pandemic affected not only the material and physicall condition of the respondents but also the psychological.
Keywords: Pandemic, COVID–19, Crisis, Service Sector

1. INTRODUCTION
A pandemic caused by a new coronavirus called COVID-19 affected the entire world in the first quarter of 2020, leaving long-lasting consequences on the global economy and each individual. According to the first official reports, the virus first appeared in the Chinese city of Wuhan in December 2019. By the end of July 2021, the COVID-19 virus had infected over 195 million people, according to a Worldometer report, of whom just over 4 million had died. Job insecurity, unemployment and health risks have emerged as the most severe consequences of the crisis globally. No country has been spared the crisis that followed. The vast majority of the world's population has faced many restrictions since the declaration of the pandemic, including limited movement outside its place of residence, the mandatory wearing of protective or medical masks, ban on physical contact with other people, limited right to work, travel, socialize and education. Many international and domestic flights were cancelled. In just a few weeks, destinations that make a living from mass tourism have become tourist-free destinations with empty tourist accommodation capacities. In addition, all major social and entertainment events have been cancelled. The socio-economic consequences of the pandemic highlighted that the COVID-19 pandemic hardest hit the hospitality sector in the entire service sector, and employees in this sector faced great uncertainty and the possibility of losing they income and jobs.

The latter is crucial if we consider that tourism is one of the strategically most important economic sectors of the Republic of Croatia (Vujić, V., 2010). The coronavirus pandemic brought uncertainty and insecurity to the citizens of the Republic of Croatia in many aspects, and the measures taken to prevent the spread of the epidemic included limited freedom of movement. Many people were completely prevented from contacting their loved ones in hospitals and elderly nursing homes during this period. Socializing was forbidden even on open playgrounds, gathering at private parties, socializing at home, and many people were concerned about the quality of life and the future to come. As a result, many employees have faced the physical and psychological consequences caused by a pandemic such as loneliness, depression, and anxiety. The aim of this paper is to examine the impact of the crisis caused by the COVID-19 virus on the service sector in the Republic of Croatia. Furthermore, the paper will analyze how the crisis impacts the entire service sector, emphasizing employees' opinions related to the government's measures to combat the virus and help employees in this sector (Bilić, A. i Mokrović, D., 2021). This paper aims to determine whether the government's measures related to the control of the COVID-19 virus affect the feeling of security/insecurity or certainty/uncertainty of employees in service sector. Furthermore, the authors tend to determinate the extent to which these factors are present in respondents of different ages, genders and education and how they, given the above characteristics, experience and interpret specific measures adopted by the Government of the Republic of Croatia. Data on respondents' attitudes were collected through a questionnaire.

2. THE CRISIS CAUSED BY COVID-19 VIRUS

The health crisis caused by the COVID-19 virus in a short time has affected the whole world and caused a historically unique and never before experienced impact on all spheres of human life. This impact did not spare the economy, which was hit by a crisis of unimaginable proportions with an unpredictable duration. No economic crisis so far (the Great Depression 1929-1930, the Great Recession 2008-2009) has occurred so quickly and with such a sharp and comprehensive decline in economic activity that it has affected the whole world.

2.1. The emergence of the virus and the global crisis

On December 8, 2019, the first case of atypical pneumonia was officially reported in the Chinese city of Wuhan, Hubei Province. Patients developed fever, cough, and difficulty breathing with a positive lung finding, proven by radiological examination. The first disease cases were reported in early December and were epidemiologically linked to the stay of infected people at the city's Huanan Seafood Wholesale Market, a wholesale marine animal market. In addition to them, the market also sold chickens, pigs, dogs, frogs, bats, mice, snakes and other exotic animals. In January 2020, Chinese scientists determined the cause of hitherto unknown pneumonia from which a surprisingly large number of people died in the city of Wuhan. In airway cells, they detected genes of the positive chain of an RNA virus from the coronavirus family, which belongs to subgroup B (beta coronavirus). It was a new virus, but it bore many similarities to the coronavirus that caused the SARS pandemic between 2002-2004. The new virus spread to almost all continents from southern China in just a few weeks. All the world's reputable media reported on the virus in the breaking news daily. In early January 2020, Chinese health authorities officially announced the discovery of a new coronavirus linked to cases of viral pneumonia in Wuhan. In order to combat and prevent the spread of the epidemic, the Chinese authorities, in addition to closing the market, took several measures, including the introduction of quarantine in Wuhan and other Chinese cities such as Beijing and Shanghai, restricting international air transport, but also within China itself, and restriction of other forms of public transport and implementation of measures of mass disinfection of public areas and spaces.

Despite this, the epidemic spread very quickly to other Chinese provinces, but also outside China. All of the above has resulted in the creation of global panic and fear among the population. On January 30, 2020, the World Health Organization (WHO) declared the emerging epidemic a public health threat of international importance precisely because of the speed of its spread and the large number of unknowns associated with it. On February 11, 2020, the WHO officially confirmed that it was a new coronavirus SARS-CoV-2 and the disease it caused was named COVID-19. As a result, the WHO declared the COVID-19 pandemic on March 11, 2020.

2.2. COVID - 19 pandemic in the Republic of Croatia

The coronavirus arrived in the Republic of Croatia on 25 February 2020. The first case was confirmed in Zagreb. A 26-year-old man staying in the Italian city of Milan from 19 to 21 February 2020 fell ill. After the test showed that he was positive for the virus, he was hospitalized at the University Hospital for Infectious Diseases of Dr Fran Mihaljević in Zagreb. On 20 February 2020, the Government of the Republic of Croatia established the Civil Protection Headquarters of the Republic of Croatia (abbreviated headquarters) and the Minister of the Interior, Davor Božinović, was appointed Chief. The headquarters was established with the aim of coordinating all services in the event of a coronavirus in the Republic of Croatia. According to the provisions of Article 21 of the Civil Protection System Act, the Civil Protection Headquarters is a professional, operational and coordinating body for the implementation of civil protection measures and activities in major accidents and disasters, and is established at the state, regional and local government levels. The headquarters performs tasks related to collecting and processing early warning information on the possibility of a significant accident or catastrophe, develops a plan of action of the civil protection system in its area, manages the response of the civil protection system, informs the public and proposes termination measures and activities in the civil protection system. At the proposal of the Minister of the Interior, the Government of the Republic of Croatia establishes and appoints by decision the Civil Protection Headquarters of the Republic of Croatia, which consists of leading persons from central state administration bodies, operational forces of the civil protection system. On Wednesday, 11 March 2020, Croatian Minister of Health Vili Beroš passed a Decision declaring an epidemic of COVID-19 disease caused by the SARS-CoV-2 virus. This decision declared an epidemic in the entire Republic of Croatia on 11 March 2020. On the same day, the World Health Organization declared the previous epidemic a pandemic. On 19 March 2020, more than 100 cases of infection were recorded. The number of patients doubled to 200 in just two days, and as of 27 March, more than 500 cases had been confirmed. On 2 April, more than 1,000 cases were reported. Concerns about the virus began as soon as its uncontrolled transmission from China began. Airports in Croatia are prepared in advance by implementing passive precautions. The Croatian Ministry of Health warned people who wished to travel to China to avoid sick people, animals (both living and dead), open markets, not to eat raw or undercooked animals, wash their hands often, and inform their doctor about their travel plans to China. On 17 March 2020, Croatian Caritas made available equipment for emergency and humanitarian care to the National Civil Protection Headquarters. Due to large daily migrations of the population between Istria and Italy, the Government of the Republic of Croatia adopted a decision on 11 March 2020 to close kindergartens, primary and secondary schools and colleges in the Istrian County order to prevent the spread of the disease. Therefore, on Monday, 16 March 2020, all educational institutions in the Republic of Croatia were closed. For students from the fifth to the eighth grade of primary school and all secondary school students, classes were held online, and for lower grades, classes were held via public television on the HRT 3 program. According to the University of Oxford, at the beginning of 2020, Croatia was the country with the strictest restrictions and measures to reduce the infection with the new coronavirus (situation at the end of March 2020).

In Croatia, by mid-July 2020, the death rate among the infected was about 1.2 per thousand (120 deaths per about 100 thousand infected population). However, in the following part of the year, the situation changed. By January 2021, with slightly more than 1,000 registered deaths per million inhabitants related to the coronavirus pandemic (a total of 4,403 registered deaths by the first week of 2021), Croatia recorded data similar to most other EU countries. By 8th August 2020, 155 coronavirus-related deaths had been confirmed in Croatia, while by the same date in the Apulia region of southern Italy - which has an area and population comparable to Croatia and not far from the epicentre in northern Italy - had been confirmed. There were 553 coronavirus-related deaths.

3. SECTOR OF SERVICE ACTIVITIES

"Nowadays, service activities are contained in almost all products and work processes. The service is partially produced, sold and used in the interaction between the user and the service provider. Without their active participation, services cannot be created and provided. Service activities are among the critical elements of overall social and economic development." Ružić, D. (2007) points out that "in the entire structure of the Croatian economy, the activity of tourism and catering today is undoubtedly one of the most attractive and strategically most important economic sectors." According to OECD Studies, employment in service industries is much higher than, for example, in industry. The growth of service activities is reflected in changes in lifestyle and work, reduced working hours and increased leisure time, a higher share of women in the structure of employees, longer life expectancy, more concern for the environment, and increased demand for various services (Mijoković, M., 2018). Today, service activities participate with more than 60% of the gross domestic product of the world economy. According to the World Development Report, the importance of services in the social product is overgrowing in all highly developed countries and somewhat weaker in developing countries. Today, almost all developing countries are making additional efforts to accelerate the development of their services, not only classic ones but also those based on new technologies (Vujić, V., 2010). The share of the primary and secondary sectors (material production) is decreasing, and the importance of the tertiary sector (services sector) is growing. In many countries, more than half of all employees work in the tertiary sector (Mandura, A., 2018). A study examining the impact of COVID-19 on the global hospitality industry, using data from OpenTable and other sources, found that guest numbers in many countries were literally reduced to zero as governments around the world introduced recommendations for social distancing, movement restrictions and quarantine. The pandemic has led to an unprecedented loss of employment and income for millions of people around the world.

3.1. The global impact of the pandemic on the service sector

During the pandemic, some restaurants offered a food delivery service to the doorstep; the others closed their doors due to the impossibility of organizing such service. Countries under strict quarantine in the spring of 2020 are; Australia, the United Kingdom, and United States such as Washington, California, New Mexico, New York, and Minnesota. As of May 15, approximately half of all U.S. states have maintained a ban on restaurant operations (Lazarus, J., Ratzan,S., Palayew, A., Billari, F., Binagwaho, A., Kimball, S., Larson, H., Melegaro, A., Rabin, K., White, T. i El-Mohandes, A., 2020). This has brought most restaurants into a liquidity crisis and possibly permanent closures if the pandemic continues (Dube, K., Nhamo G. i Chikodzi D., 2020). The estimates of The National Restaurant Association of America, in April 2020, regarding the required amounts to cover the maintenance costs of this sector were about $242 billion. Due to lower operating capacity, most small family restaurants have laid off entire staff or more than 80% of their staff as a cost-limiting measure (De Witte, H., Vander Elst, T. De Cuyper, N., 2015; Demirović Bajrami, D., Terzić, A., Petrović, M., Radovanović,

M., Tretiakova, T., Hadoud, A., 2020). The Private Sector Job Quality Index estimates that due to the crisis caused by the COVID-19 virus in this industry, about 10.8 million employees in bars and restaurants will lose their jobs in the future (Čavrak., V., 2020).

4. EMPIRICAL RESEARCH ON THE IMPACT OF THE COVID-19 PANDEMIC ON THE SERVICE SECTOR

An anonymous online survey was conducted. The survey was intended for all adults (18+ to 60+) who were (or still are in the time when survey was conducted) employed in service activities in the Republic of Croatia during the pandemic. The survey sought to find out the attitudes of service workers about the impact of the COVID-19 pandemic crisis on the service sector: to examine employees' attitudes about the usefulness of measures taken by the Government to prevent the spread of viruses during the pandemic, explore the extent to which employees had confidence in Government decisions and to show the extent to which the pandemic affected employees' perceptions of job (in)security and working conditions.

4.1. Research Methodology

The snowball method was used. Snowball sampling (Baltar, F. Brunet, I., 2012) is a practical methodology in qualitative and descriptive research, especially in those studies where few respondents or a high level of trust (difficult to access / difficult to include population) is needed to establish contact. Often, this technique is associated with studying vulnerable or stigmatized populations who are reluctant to participate in studies using traditional research methods. Virtual snowball sampling not only facilitates access to the "hard-to-reach" population but can also expand sample size and study scope and reduce costs and time. The research is conducted by sending the survey to the selected person/organization via social network or mobile application, with a request that, after the respondent completes the survey, forward it to all those who consider it relevant to fill it. In this case, the survey was sent to those persons who were employed in service sectors. The survey was distributed via Facebook and the mobile application WhatsApp on July 9, 2021. The submission of the survey was completed on August 1, 2021. A total of 200 respondents completed the survey.

4.1.1. Development of Survey Questionarie

The survey contained a total of 16 questions. For a better visibility, it was divided into four parts. In the first part of the survey, basic (demographic) information about the respondents were collected. Respondents were asked about their age, gender, marital status, education and the service activity in which they are employed. The second part of the survey consisted of six questions related to employees' perception in the service sector about the government's measures to help employees and companies affected by the COVID-19 pandemic. The third part of the survey included six questions related to employees' perception about job (in)security. The survey questions were structured and closed-ended with the possibility of choosing multiple-choice answers (e.g. "yes", "no", and "I do not know"). In other questions, the respondents were asked to express their agreement with a particular statement on the Likert five-point scale where the value of "1" referred to the statement "I completely disagree", and the value "5" referred to the statement "I completely agree". The survey received a total of 200 responses. Of the respondents, 158 were women, or 79%, while men were 42 and 21%, respectively. Respondents mainly were married and had completed high school. All respondents are persons who work or have worked in the service sector, and the sample is representative.

4.1.2. Validation of the questionnaire
In order to check the psychometric characteristics of the scale, exploratory factor analysis on common factors (orthogonal rotation of Varimax) and reliability analysis on the whole sample were performed. In order to determine the suitability of the data for the factor analysis, the necessary conditions were examined. First, the variables analyzed by factor analysis must be quantitative, which is met in this study, bearing in mind that these are numerical variables. Second, the Kaiser-Meyer-Olkin measure and Bartlett's test were applied to examine the adequacy of the data. Finally, the suitability of the data for performing the factor analysis procedures was obtained by examining the correlation matrix. The Kaiser-Meyer-Olkin measure is the following criterion by which the suitability of the data for the application of factor analysis can be examined. The Kaiser-Meyer-Olkin measure in our case is 0.824; it can be stated that the data of the variables used are suitable for conducting factor analysis. The P-value of Bartlett's test is <0.001, meaning a significant correlation between the original variables. Factor analysis showed a five-factor solution. The percentage of variance explained by the five-factor solution was 70.36%. The reliability of the questionnaire was satisfactory; Cronbach's alpha was 0.89. Factor analysis showed a five-factor solution.

Factors are, depending on the issues related to each factor, grouped as follows:
1) job security,
2) government measures and support during the pandemic,

Factor	Question	Correlation Coeficient
Factor 1: Job security	I am concerned about the possible closure of the organization I work for due to the pandemic caused by the COVID-19 virus.	0,82
	I am concerned about the possible job losses in the organization where I work due to the pandemic caused by COVID-19.	0,91
	I am concerned about preserving my job in the organization I currently work for due to the pandemic caused by the COVID-19 virus.	0,92
	I feel insecure when I think about work and my future.	0,89
	If you do not work for the organization you worked for at the beginning of the pandemic caused by the COVID-19 virus, do you think that the pandemic has affected the loss of your job?	0,73
	Are you afraid you won't keep your job if you do not get vaccinated?	0,54
Factor 2: Government measures and support during the pandemic	The government gave everyone access to free, reliable testing for the COVID-19 virus if someone had noticable symptoms.	0,73
	The government has set up an expert team to fight the pandemic composed of experts from the health sector, medicine and other experts (e.g. economists and business people) to professionally and responsibly adopt prescribed measures and manage the national response to the COVID-19 virus pandemic.	0,62
	The government has ensured that we always have full access to the health services we need during a pandemic caused by the COVID-19 virus.	0,66
	During the pandemic caused by the COVID-19 virus, the government enabled vulnerable groups to be exempt from wearing the masks (according to the Croatian Institute of Public Health, some people were exempted from the obligation to wear masks (asthmatics, allergy sufferers, ...).	0,63
	The government has made sure that employees in the service sector have the personal protective equipment that protects them from the COVID-19 virus.	0,88
	The government has provided all necessary assistance to people whose pandemic caused by the COVID-19 virus has caused consequences such as loneliness, depression and anxiety.	0,71

Table 1: Factor analysis results
(Source: Survey results)

5. THE SURVEY RESULTS

Graph 1 shows the distribution of respondents by age. Respondents were of different ages ranging from 18 to 60+ years. The most significant number of respondents, 33%, belonged to the group of 30-39 years, which totalled 66 respondents. The second group of respondents by size was the age group of 40-49 years. Its share in the total share was 30% which made a total of 60 respondents. The third-largest group referred to respondents aged 18-25 years and included a share of 27%, which was 54 respondents. Finally, 9% belonged to persons from the group of 50-59 years, which consisted of 18 respondents. The smallest number of respondents, only 1%, belonged to the oldest group, 60+. Of this group, only two respondents completed the survey.
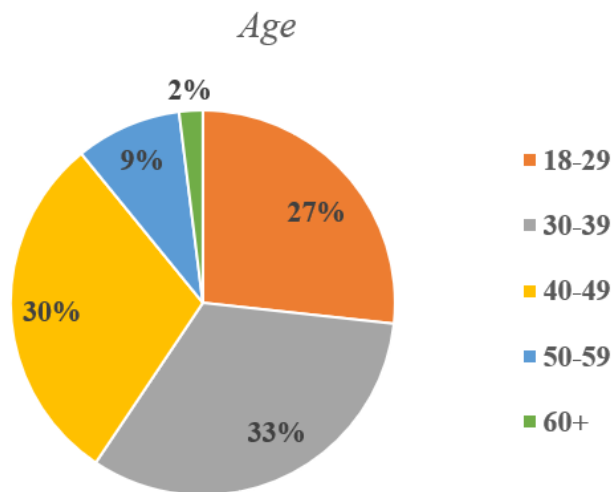
Graph 1: Distribution of respondents by age groups
(Source: Survey results)

Graph 2 shows the gender distribution in the sample. Out of 200 respondents, 158 of them were women, i.e. they accounted for 79%, while 42 or 21% were men which is not surprising because women are more willing to fill out online surveys (Smith, G. (2008).
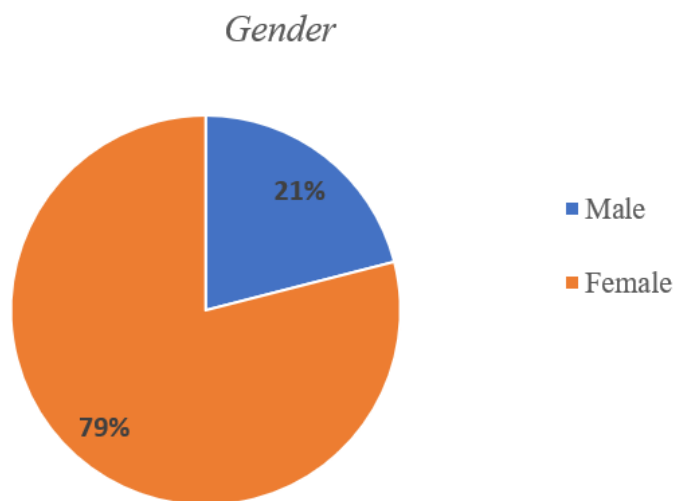
Graph 2: Distribution of respondents by gender
(Source: Survey results)

Graph 3, the distribution of marital status (status) in the sample, shows that most respondents are married, 67% (134) respondents, respectively, while 33% (66) respondents said they live alone.
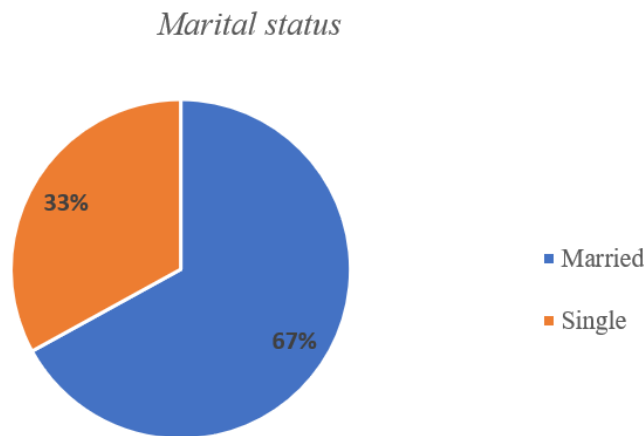
Graph 3: Distribution of respondents by marital status
(Source: Survey results)

In the distribution of completed education in the sample, shown in Graph 4, it can be seen that the most significant number of respondents, 51%, or 102 respondents, stated that they had completed high school. The share of respondents with a university degree is 22.5%, which makes 45 respondents, those with a university degree 44 respondents (22%). Only 2% of the respondents stated that they had completed the Postgraduate Specialist University Study, and 1.5% of respondents stated that they had a doctorate. One person (0.5%) has not completed primary school, while one (0.5%) has completed only primary school. None of the respondents stated that they had a scientific master's degree.
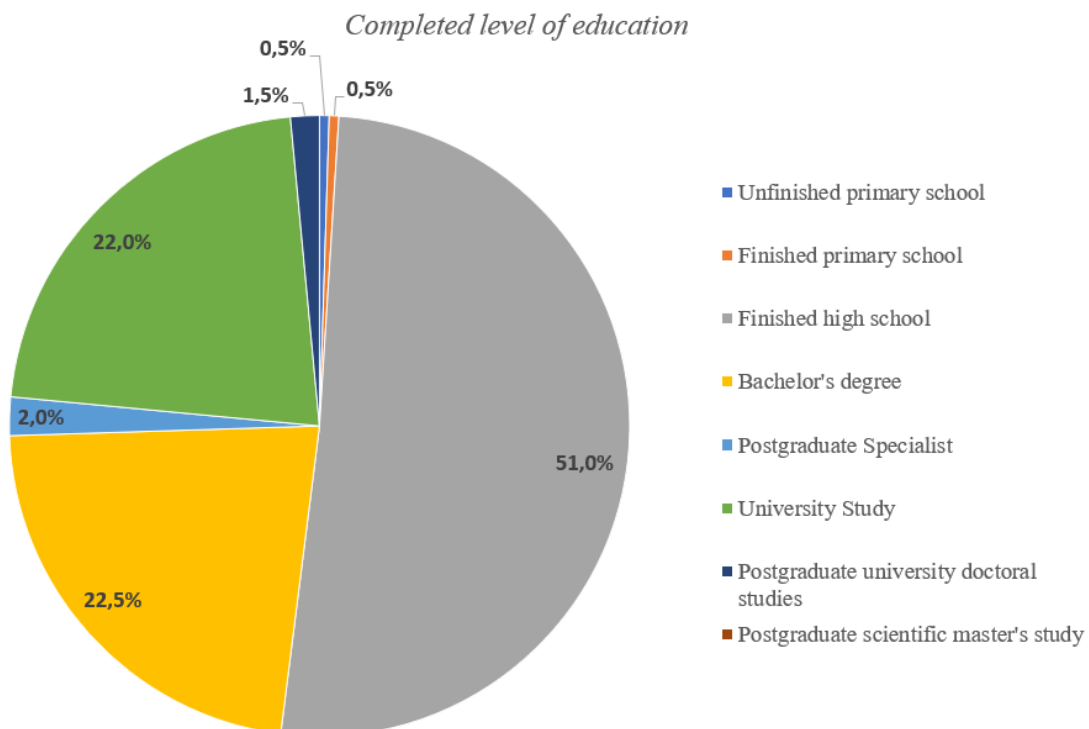
Graph 4: Distribution of respondents according to the completed level of education
(Source: Survey results)

The distribution of respondents' perceptions of Government financial assistance is shown in Graph 5. It can be seen that the most significant number, 39.5% and 79 respondents, disagree with the statement that the Government provided all necessary assistance during the COVID-19 pandemic to cover basic costs related to food and housing needs. 17.5% or 35 respondents disagree with this statement, 19.5% neither agree nor disagree, making 39 respondents. On the other hand, 16.5% or 33 respondents agree, and the smallest number of respondents, 7%, fully agree, 14 respondents.
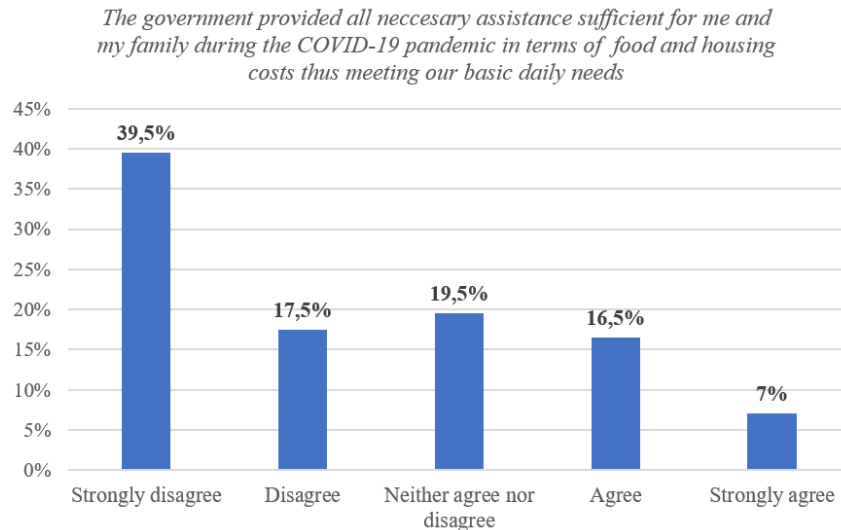
*Graph 5: Distribution of respondents' perceptions of Government financial assistance
(Source: Survey results)*

Graph 6 shows the distribution of respondents' perceptions of the availability of COVID-19 virus testing. Again, 34%, i.e. 68 respondents, agree with the statement that the Government provided everyone with access to free and reliable testing if someone had clearly expressed symptoms. A total of 25% completely disagree with this statement, i.e. 50 respondents. On the other hand, 16% and 32 respondents agree, 14% and 28 respondents are undecided, and 11% and 22 respondents do not agree with the statement.
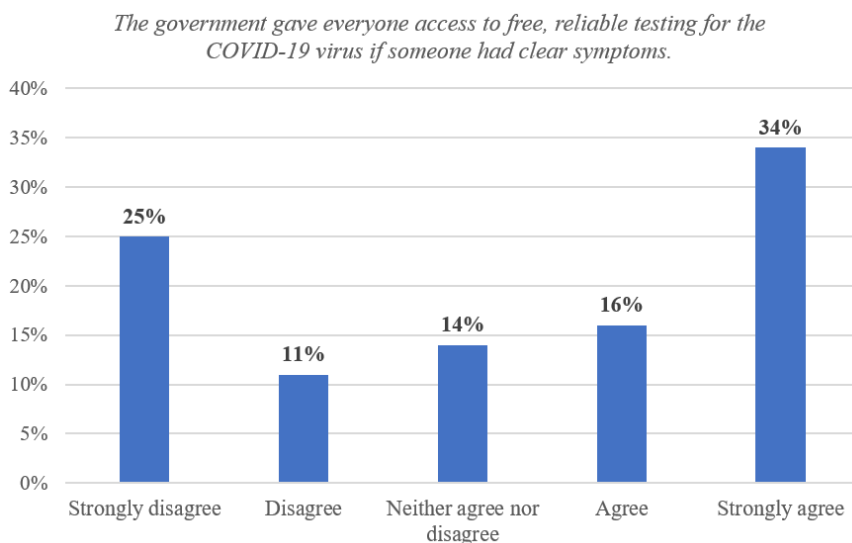
*Graph 6: Distribution of respondents' perception of the availability of COVID-19 virus testing
(Source: Survey results)*

Graph 7 shows the distribution of employees on the Government's expert team. The graph shows that most respondents are hesitant to claim that the Government has established an expert team composed of experts to professionally and responsibly adopt the prescribed measures and manage the national response to the pandemic caused by the COVID-19 virus. A total of 27% said so, which is 54 respondents. 20% or 40 respondents disagree entirely with this statement, while 16.5% do not agree, making 33 respondents. A total of 19% agree, making 38 respondents, 17.5% agree, or 35 respondents.

The government has set up an expert team to combat the pandemic, consisting of experts from the health, medicine and other sectors (eg economists and business people) to professionally and responsibly adopt prescribed measures and manage national.
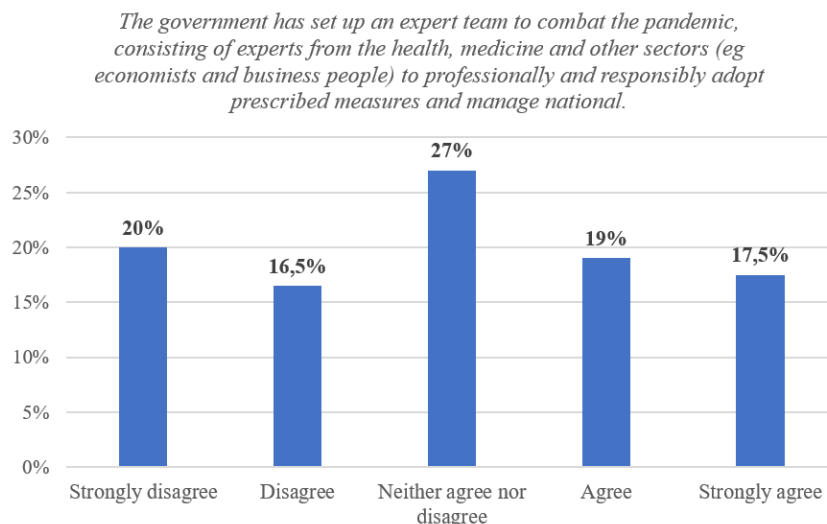
Graph 7: Distribution of respondents' perception of the Government's expert teams
(Source: Survey results)

Graph 8 shows the distribution of employees' perceptions of access to health services, shows that the largest group of respondents, 31% and 62 respondents, completely disagree with the statement that the Government took care to ensure unhindered access to health services during the COVID-19 pandemic. Furthermore, 23.5% of them or 47 respondents do not have an opinion on this issue. 21%, i.e. 42 respondents, do not agree with the statement. 16.5% of them agree, which is 33 respondents, and the least number of respondents fully agree with the statement; only 8%, or 16 respondents.

The government has ensured that we always have full access to the health services we need during a pandemic caused by the COVID-19 virus
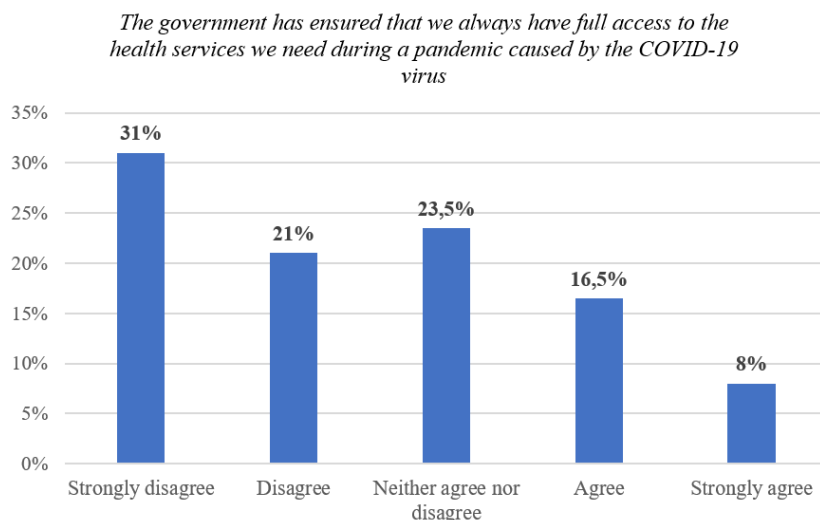
Graph 8: Distribution of respondents' perceptions of access to health services
(Source: Survey results)

Graph 9 shows the distribution of respondents' perceptions of the Government's provision on impunity for not wearing masks for vulnerable groups. A total of 30.5%, or 61 respondents, neither agree nor disagree with the claim that during the COVID-19 pandemic, the Government allowed unpunished masks not to be worn by vulnerable groups such as asthmatics and allergy sufferers. A total of 23.5% completely disagree with the statement, which makes 47 respondents, and 20% or 40 respondents completely agree. 13.5% or 27 respondents disagree, and 12.5% or 25 respondents disagree.

During the pandemic caused by the COVID-19 virus, the government enabled vulnerable groups to be exempt from wearing the masks (according to the Croatian Institute of Public Health, some people were exempted from the obligation to wear masks (asthmatics)
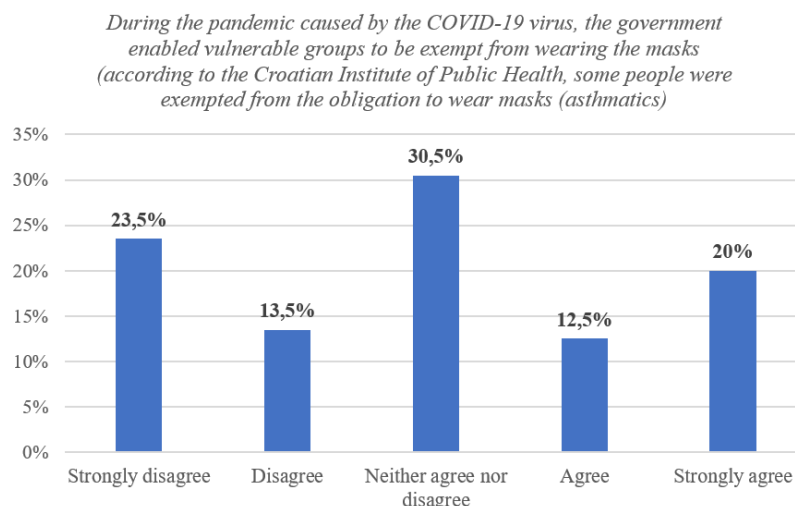
Graph 9: Distribution of respondents' perceptions of the Government's provision for the exclusion of wearing a mask
(Source: Survey results)

Graph 10, which graphically shows the distribution of respondents' perceptions of the supply of personal protective equipment, shows that 40% of respondents (80 of them) completely disagree with the statement that the Government took care to provide personal protective equipment to employees in the service sector. 20% or 40 respondents are undecided, and 18% of respondents and 36 disagree with the statement. 13.5% or 27 respondents agree with the statement, and only 8.5% or 17 respondents agree.

During the pandemic caused by the COVID-19 virus, the government enabled vulnerable groups to be exempt from wearing the masks (according to the Croatian Institute of Public Health, some people were exempted from the obligation to wear masks (asthmatics)
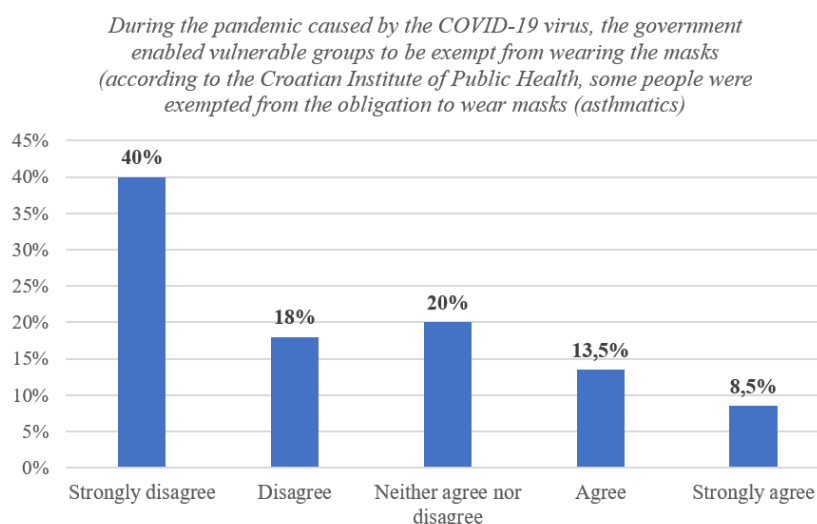
Graph 10: Distribution of respondents' perceptions of the provision of personal protective equipment
(Source: Survey results)

Graph 11 shows that a total of 49% and 98 respondents, respectively, do not fully agree with the statement that the Government has provided all necessary assistance to persons affected by the COVID-19 pandemic, such as loneliness, depression and anxiety. Furthermore, 21% of them, i.e. 42 respondents, are undecided, and 20.5%, i.e. 41 respondents, do not agree with the statement. A total of 7% (14 respondents) agree with the above statement, while only 2.5% of them agree, which makes five respondents.
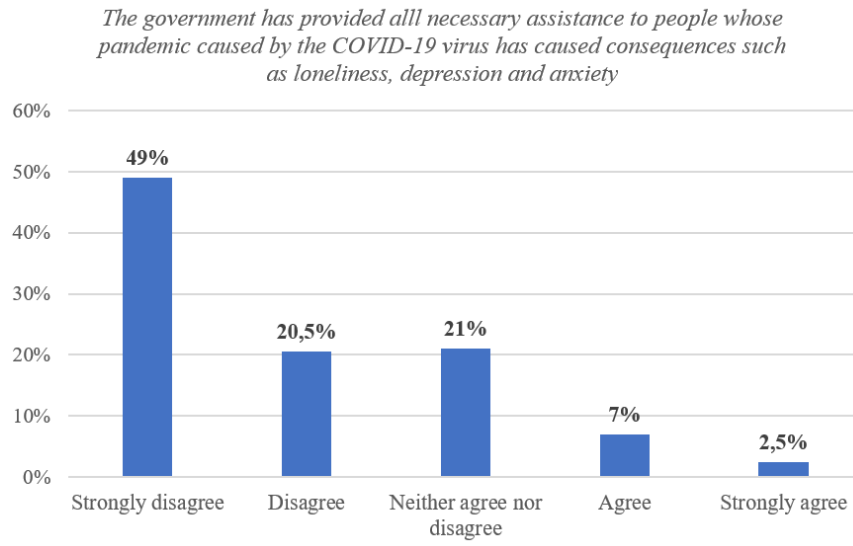
Graph 11: Distribution of respondents' perceptions of Government assistance to persons with psychological consequences due to the COVID-19 pandemic
(Source: Survey results)

Graph 12 shows that a total of 34.5%, or 69 respondents, fell entirely concerned about the possible closure of the organization in which they work due to the pandemic caused by the COVID-19 virus. On the other hand, 20.5% or 41 respondents are undecided—the exact number of those who agree and disagree entirely - 36 respondents, or 18%. A total of 9% or 18 respondents disagree.
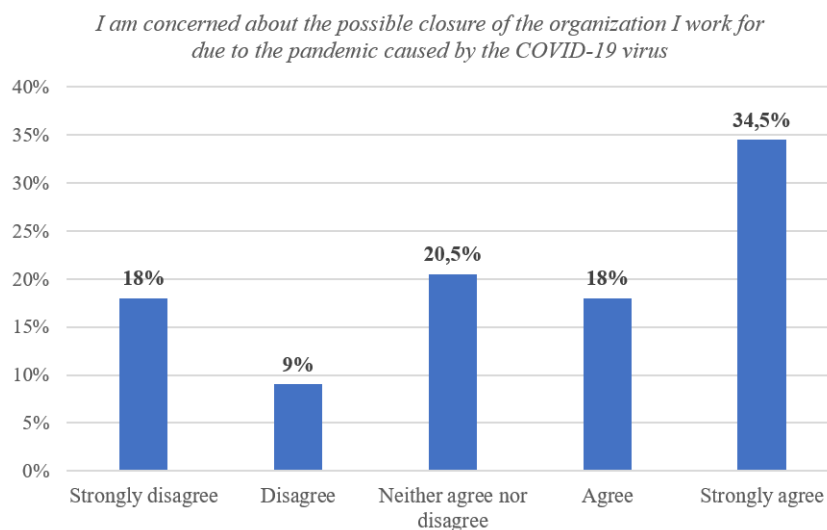
Graph 12: Distribution of respondents' perceptions of the possible closure of their organizations
(Source: Survey results)

Graph 13 shows a graphical representation of the distribution of respondents' perceptions of possible job losses in their organizations. A total of 36% (72 respondents) fully agree with the statement that there are concerns about possible job losses in the organization in which they work due to the pandemic caused by the COVID-19 virus. 23% of them, i.e. 46 respondents, are undecided. A total of 18% of them agree with this statement (36 respondents). 16% of them, i.e. 32 respondents, disagree entirely. Only 7% or 14 respondents disagree.
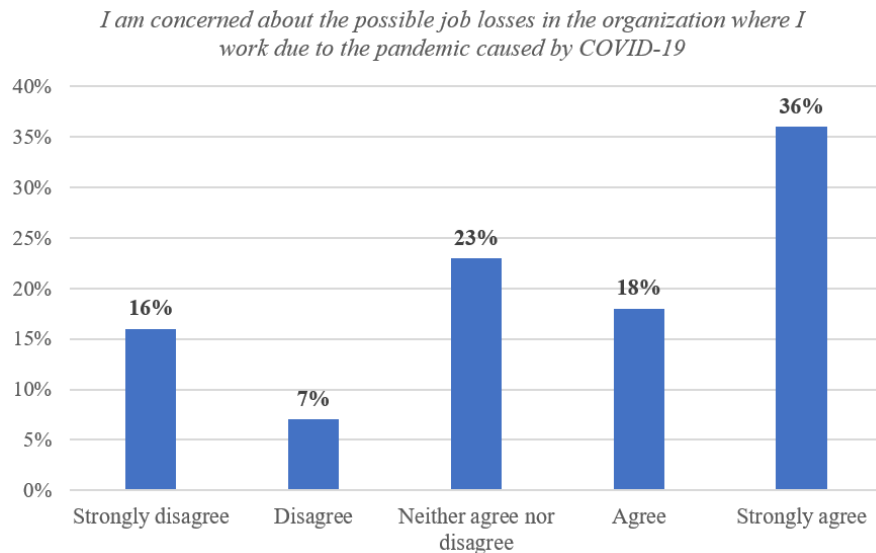
Graph 13: Distribution of respondents' perceptions of possible job losses in organizations
(Source: Survey results)

Graph 14 shows a graphical presentation of the respondents' perception of preserving their workplace. A total of 35.5% (71 respondents) are concerned about preserving their job in the organization due to the pandemic. A total of 24.5% (49 respondents) neither agree nor disagree. 18%, i.e. 36 respondents, disagree entirely. A total of 15.5% (31 respondents) agree with the above statement, while the smallest number of respondents, 13 of them, disagree (6.5%).
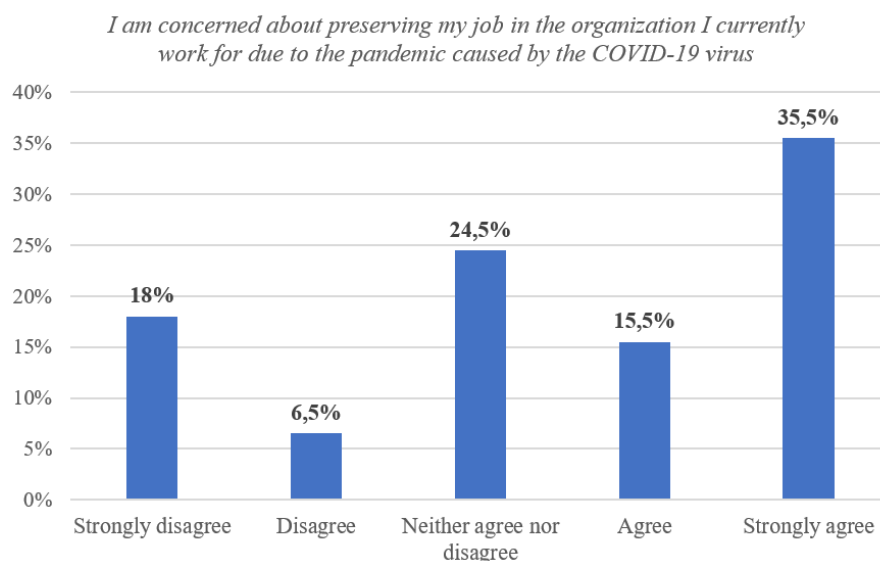
Graph 14: Distribution of respondents' perceptions of preserving their workplace
(Source: Survey results)

Graph 15 shows the respondents' attitudes about the job and work insecurity. A total of 40.5% (81) of them fully agree with the statement that they feel insecure when thinking about work and their future. A total of 22.5%, i.e. 45 respondents, neither agree nor disagree. 16.5% or 33 respondents agree, while 14.5% or 29 respondents disagree entirely. Only 6% or 12 respondents disagree.

If you do not work for the organization you worked for at the beginning of the pandemic caused by the COVID-19 virus, do you think that the pandemic has affected the loss of your job?
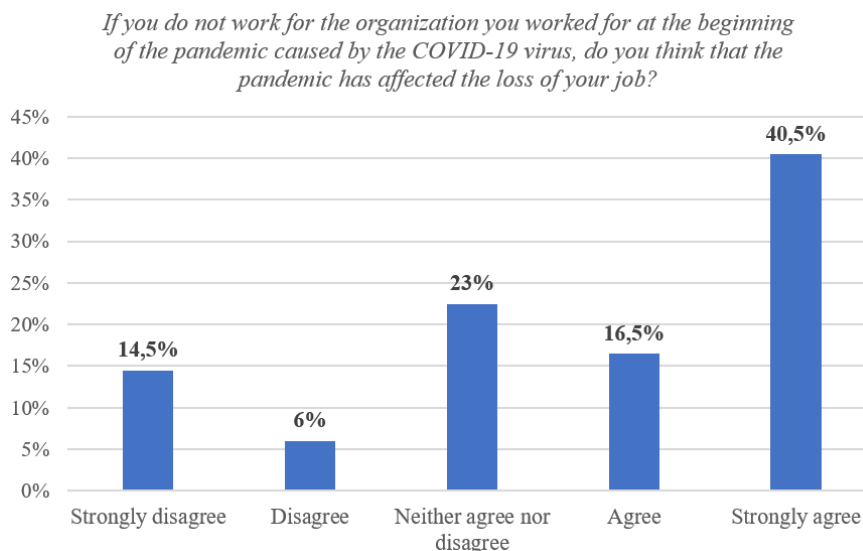
Graph 15: Distribution of respondents' perceptions of job and work insecurity
(Source: Survey results)

Graph 16 shows the opinion of 144 respondents on the reason for job loss during the COVID-19 pandemic. When asked whether they believe that the crisis caused by the COVID-19 pandemic affected the loss of their job (if they lost their job), 35.42% or 51 respondents said they did not fully agree with this statement. 30.55% of them, i.e. 44 respondents, agree. 18.05%, i.e. 26 respondents, are undecided. 9.72% agree, which makes 14 respondents, and 6.25% disagree, which makes nine respondents.

If you do not work for the organization you worked for at the beginning of the pandemic caused by the COVID-19 virus, do you think that the pandemic has affected the loss of your job?
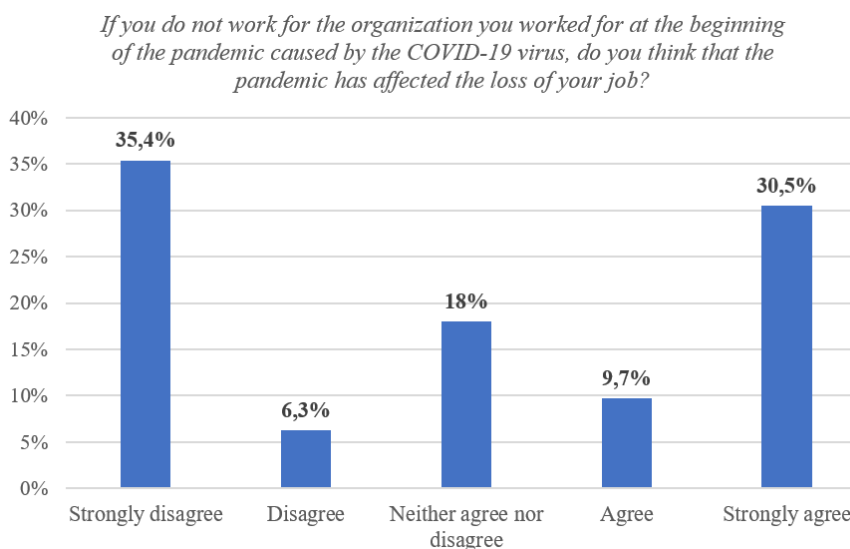
Graph 16: Distribution of respondents' views on the reason for job loss during the COVID-19 pandemic
(Source: Survey results)

6. CONCLUSION

The analysis of the results obtained by the primary research conclude that the pandemic caused by the COVID-19 virus greatly affected the service sector in the Republic of Croatia. Employees in the service sector felt insecure and worried during the pandemic (which is still ongoing!) for their current job and their future in general. The impact of the pandemic inevitably affected not only the material condition of the respondents but also the psychological state. Employees do not trust the Government and its measures to preserve jobs. The financial support offered was insufficient to maintain the quality of life and living standards. Consequently, the state should work harder on psychological and financial support to make it easier for its citizens to cope with the ongoing crisis.

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A SOCIOLOGICAL RESEARCH OF THE ATTORNEY'S PROFESSION IN THE CONTEXT OF THE MOBILIZATION OF LAW, LEGAL RISKS AND TRUST

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ABSTRACT
This research is oriented at studying the attorneys community. The success of entrepreneur's activities is often predetermined not only by their efficiency in business, but also by the quality of attorney's work. They mobilize the law in relation to entrepreneurs due to the fact that they have a higher professional status. The need to turn to attorneys is also connected with the fact that entrepreneurs face legal risks throughout their activities. Methods/Statistical analysis: The methodological basis of the study is the theory of structural functionalism, the theory of everyday life and the theory of trust. Overcoming risks from the standpoint of the theory of structural functionalism is possible only with the help of professionals, including lawyers. From the standpoint of the theory of everyday life in the process of overcoming risk, the involvement of the professional community is based on trust. A focused interview with entrepreneurs (30 people) in June 2021 was used as an empirical study. Conducted an expert survey of 15 attorneys. Within the framework of the presented article, the attorneys community was analyzed as having characteristics - indicators of the «true profession», which act as the basis of trust. Research of entrepreneurs has shown that, in general, their trust is based on the professionalism of attorneys, on their ministry to society, sometimes even altruistic. It is worth considering that the attorneys community itself is quite strict about the «purity» of professional identity. The novelty of the research is the use of a sociological approach to the profession of a attorney, which allows us to say that attorneys are the group that successfully mobilizes the law in relation to entrepreneurs, participates in the process of reducing or eliminating legal risks, causes trust as a basis for cooperation. The results obtained in the study allow us to supplement the ideas about the legal community. The results of the research can be used in further work on the sociology of law, legal sociology, sociology of professions.
Keywords: attorneys, attorneys community, mobilization of law, legal risks, trust, professional identity, entrepreneurship

1. INTRODUCTION

Attorneys rarely become the object of sociologist's research. The reason for this is that this professional group is difficult to access for empirical research. If theoretical research can be carried out, then an expert survey, a focus group, and even more so a questionnaire survey is not easy for a researcher «from the outside» who isn't related to this activity. Apparently, this explains the fact that there are few studies of the attorneys community in the scientific literature. Thus, among the most well-known works on the study of the attorneys community is the report of empirical data by A. Kazuna, E. Khodzhaeva, A. Yakovleva «The Attorneys Society of Russia», collected with the support of the Federal Chamber of Attorneys of Russia and the Institute of Attorneys of the Kutafin Moscow State Law University (Kazun, Khodjaeva, Yakovlev 2015). As for the defense of candidate's dissertations, there are only three of them in sociology on this issue: the work of A.V. Hakobyan «Managing the process of forming the

professional identity of Attorneys as a socio-professional group: socio-technological aspects»
(Akopyan 2009), A.P.Kazun «Social and economic factors of independent activity of attorneys
in modern Russia» (Kazun 2018), Y.M.Basov «Social functions and status of the advocacy bar
in Russian society» (Basov 2011). It can be noted that the research of the attorneys community
as a socio-professional group has theoretical and practical interest. It's difficult to cover all
aspects of the activities of the attorneys community that are of scientific interest, so we will
cover only some. The purpose of this article is present some implicit characteristics of
representatives of the attorneys community, which are often not touched upon by researchers
at all. In order to reflect these aspects of the activity of attorneys in social practice, let's look at
the example of their interaction with entrepreneurs.

2. MATERIALS AND METHODS
In this work are used general scientific (analysis, synthesis) and special scientific methods
(structural and functional, theory of everyday life). For example, the structural and functional
approach makes possible to justify the need to involve attorneys to overcome legal risks. The
use of the ideas of the theory of everyday life is productive to justify the formation of trust in
attorneys in the process of interaction with entrepreneurs. Empirical methods have also been
applied to substantiate the idea of the necessity and possibility of entrepreneurs contacting
attorneys. A focused interview with entrepreneurs (30 people) was conducted in June 2021. An
expert survey was also conducted among 15 attorneys.

3. RESULTS AND DISCUSSION
3.1. Mobilization of law: the role of attorneys
For the sustainable development of the Russian economy, small and medium-sized businesses
play an important role, because it's thanks to them that favorable conditions are created for the
stability of society, the expansion of the consumer market, the introduction of innovative
technologies, the operational saturation of the market with demanded goods and services, the
creation of new jobs, and the receipt of revenues to the budget. Therefore, supporting
entrepreneurs in Russia is a strategic task of state policy. Let's pay attention to the fact that the
development of entrepreneurship is determined by a set of factors, which in general can be
represented by two large groups: exogenous and endogenous. In the most general form:
exogenous factors include state support for entrepreneurship, as well as support for
entrepreneurs in legal aspects. The motivation and personal characteristics of entrepreneurs can
be named as key endogenous factors. Without affecting all the factors presented, we will focus
on the legal support of entrepreneurs. It's worth noting that legal support can be interpreted in
broad and limited aspects. The first aspect is the creation of a legal environment, legal
conditions for the functioning of the business, its ability to grow and develop in market
conditions. The second aspect can be considered in the context of assisting entrepreneurs in
protecting their rights, property, and in observing the rule of law. This aspect that will be the
subject of research. Attorneys belong to the group of specialists who can provide legal
assistance to entrepreneurs on a professional basis. From the point of view of the sociology of
law, the human rights activity of attorneys in relation to entrepreneurs is an example of the
mobilization of law. For the first time the term «mobilization of law» was introduced by D.
Black (Black 1973, 1976, 1979). Sociologist K. Titaev, revealing the features of the term,
indicates that the law doesn't work until someone makes it work. Thus, there is a «mobilization
of law». This may be the mobilization of the right in relation to oneself, another, for one's own
good, for the common good. The mobilization of the right may be voluntary, it may be forced
(Titaev 2021). The use of the term «mobilization of law» is not widespread, but at the same
time, it makes it possible to understand why attorneys can be more successful human rights
defenders of entrepreneurs than they themselves in case of need.

Let's consider some arguments about the possibility of mobilizing the right of entrepreneurs from attorneys. Firstly, D. Black believed that individuals have unequal opportunities in the mobilization of law - the lower the individual's education, social status, the less he can mobilize the right, and therefore translate the situation into a legally normalized one. The social status of attorneys in human rights activities during the mobilization of the right is always higher than that of an entrepreneur. Therefore, the mobilization of the law by attorneys in relation to entrepreneurs, from our point of view, is more real and reasoned. Secondly, attorneys have a greater awareness of offenses. D. Black pointed out that awareness of offenses includes the amount of information about violations of the law that the legal system has in its jurisdiction (Black 1973:130). Thirdly, when mobilizing the right, the availability of law matters (Black 1973:137). The availability of law is the expected costs (for example, payment for legal services) that an entrepreneur will incur if it is necessary to protect his rights. The analysis of these arguments shows that the mobilization of the right of entrepreneurs by attorneys is quite real. In this sense, it is difficult not to agree with the opinion of A.M. Verkeev that the legal system turns out to be mobilized by people, since it cannot function independently (Verkeev 2018). At the same time, there are also internal reasons that allow entrepreneurs to turn to attorneys. One of these is trust.

3.2. Trust in lawyers

The appeal to the help of attorneys for entrepreneurs is primarily connected with overcoming the legal risks that have arisen and resolving certain issues. All kinds of legal risks inevitably accompany the activities of an entrepreneur, even if the latter is exceptionally rational in his actions. Although, in fairness, it should be noted N. Luhmann's opinion that modern behavior in general cannot be written into the scheme «rational or irrational» (Luhman 1994). So, speaking about the conditions of interaction between entrepreneurs and attorneys, in fact, we come to the question of overcoming legal risks in the activities of an entrepreneur. From the standpoint of structural functionalism, this overcoming of legal risks is possible with the involvement of the professional community. From the point of view of T. Parsons, the «core» of adaptive ability, which can be observed in relation to the social structure of society, is formed by professionals. T. Parsons identified several criteria for a professional role, including the availability of higher education, experience, motivation to work for the benefit of the entire social system (Parsons 1961, 1968). The theory of everyday life complements the ideas of structural functionalism in terms of attracting professionals to overcome legal risks. Here we can see that the involvement of the professional community to overcome legal risks is based on trust. Briefly touching on the concept of «trust», we note that it's the basis of all social relations. Niklas Luhmann in the book «Trust and Power» pointed out that the growth and uncertainty of people in the future, arising from the complexity of modern societies, the appearance of their opacity, lead to the fact that trust becomes a necessary condition for social development (Luhman 1979). Within the framework of the theory of everyday life, the study of P.Shtompka's trust is relevant. He believes that with the uncertainty and uncontrollability of the future, there is a problem of trust. In other words, the need for trust arises in the absence of confidence in full control over future events that are predetermined by human actions. Expectations regarding the actions of other people, according to P. Shtompke, can vary and be of three types. The first type is focused on hope or disappointment. The second type involves either faith or doubt. Both types of expectations regarding the actions of other people are focused on passivity, contemplation, distancing. The third type of expectation regarding other people's actions is trust. This type differs in that a person, realizing the uncertainty and the presence of risk, counts on any action. P. Shtompka offers a rather original approach to trust, interpreting it in the form of a bet that is made in relation to future unforeseen actions of other people (Sztompka 1999). This approach to trust allows us to present trust as a combination of two dimensions.

The first dimension is that there are certain expectations regarding unspecified actions in some future unforeseen situation. The second dimension orients us to the fact that this is the degree of conviction, the depth of confidence that such actions will be taken, which can be defined as a bet. Assuming that these components are key in the process of trust, we will determine what the special expectations of entrepreneurs from attorneys and their confidence in the actions of attorneys are based on. We use the terminology of P. Shtompki. The «culture of trust» as a rather multi-layered and multi-valued concept includes the fact that the professional community should, to one degree or another, have indicators of the «true profession» (R.Pavalko's term). Let's consider whether the advocacy community has indicators of the «true profession» guided by the work of R. Pavalko (Pavalko 1971:89).

The first indicator: *the basis of practice on theoretical knowledge*. It can be stated with full confidence that the practical skills of attorney, as T. Parsons pointed out [15], are completely based on mandatory, rigidly formalized, highly specialized and highly intellectual theoretical training in official educational institutions. The quality of training and professional competence are subject to mandatory official verification.

The second indicator, which can be considered as a continuation of the first, is that *practice requires a long specialized period of preparation*. With regard to the profession of attorney, this period consists not only of a long period of formalized theoretical training, which is traditional for many professions. Entry into the advocacy community is impossible without the applicant demonstrating practical professional skills and abilities confirming readiness to perform the role of attorney. And the peculiarity of the profession of attorney is such that it requires a long and meticulous construction of the professional subculture of the community of advocacy, its values and norms, the development of various options for a professional role.

The third indicator determines the special place of the professional community of lawyers in the life of society: *professional competence should be correlated with the central values of society*. By standing up for the protection of the rights of citizens, all members of society without exception, attorneys are thereby oriented in their actions to preserve and support the central values of society. This is what serves as the basis for the formation of trust.

The fourth indicator is that *professionals should be focused on serving society*. In general, the activity of attorneys correlates with Article 48 of the Constitution of the Russian Federation, which guarantees every citizen (regardless of gender, race, nationality, language, origin, property and official status, place of residence, attitude to religion, beliefs, membership in public associations, as well as other circumstances) the right to receive qualified legal assistance. B. Barber (Barber 1963), U. Good (Goode 1972) argue that every professional has an intrinsic altruistic ministry as a necessary quality. Sharing their point of view, we can note that attorneys, like no other professional group, are directly confronted with the need to choose a focus on priority ministry to society over personal gain. Ministry to society is invariably associated with the need to guide ethical principles in their daily practice. Although real practice shows (research by A. P. Korzun and A. A.Yakovleva), that the professional advocacy community is heterogeneous, and numerous groups and subgroups can be distinguished in it according to a variety of criteria, for example, by professional specialization or ethical principles (Korzun, Yakovlev 2014). But at the same time, professional attorneys are characterized by the priority of ethical standards. It's impossible not to agree with the statement of R.Pavalko, who says that for the effective professional activity of the advocacy community, the public's trust in this group and its perception as focused on ministry public ideals is crucial (Pavalko 1971).

From December 2020 to April 2021 the authors conducted a research using the method of a mass questionnaire survey on a regional sample. 354 attorneys of the Novosibirsk region took part in the questionnaire survey, the total number of attorneys of the region at the time of the study was 1177. 58.3% of respondents indicated that the Institute of advocacy acts as a guarantor of the rights and freedoms of citizens. 43.8% believe that advocacy contributes to the improvement of existing processes in the field of law. 47.9% believe that the bar protects society and organizations in the face of state bodies and other entities. 28.1% of respondents support the idea that the institution of the bar as an opposition to state bodies harmonizes relations between society and the state.

The fifth indicator of the «true profession» - *long-term professional involvement in work* is essential for the formation of trust. The length of time during which an individual retains interest in the profession is related to the feelings that arise in a member of the professional community in relation to his profession. It is possible to distinguish a spectrum of diverse feelings that are located between two extreme manifestations. One extreme manifestation is characteristic of a group of the most professional members of the advocacy community who perceive their work as a vocation, a mission. At the other end of the spectrum there is a group of individuals who are attracted and held in the profession not by a vocation, but by a special social status, opportunities for obtaining material and social benefits. Between these extremes there are a great many professionals with their own set of feelings and interests, but most members of the community tend to realize their profession as a mission.

The sixth indicator: *professionals have a high degree of autonomy*. According to R. Pavalko, autonomy is expressed in two different, but interrelated aspects. On the one hand, with a high degree of autonomy, the activities of its own members are controlled due to the professional organization of the community. On the other hand, the social closeness of the group is maintained by controlling access to the profession. It can be concluded that attorneys fully comply with the requirement of this indicator. The control over the advocacy activity is carried out both by the law and by the Bar Chamber. At the same time, joining the ranks of the advocacy community is a very long way of professional growth, which begins with getting an education. It's difficult not to agree with O.V. Luksh's opinion that individuals who are *in* the profession often have a negative attitude to the need for control and even to the very possibility of control of their activities by those who are *outside* the profession (Luksha 2003).

The seventh indicator of the «true profession»: professional community is a significant criterion for the formation of professional identity. The professional group is united by a sense of identity, professional culture, the presence of a set of values and norms. It forms certain «communal» characteristics. The indicators of the «true profession» considered by us in relation to the professional group of attorneys are ideal characteristics. But at the same time, it's possible to observe a greater degree of compliance with these indicators, which makes it possible to trust this professional group of entrepreneurs.

Let's test these ideas in an empirical study of entrepreneurs. One of the first was the question of what is the basis of trust when contacting attorneys. Respondents indicated: «professionalism and positive experience in solving similar problems» (Y., 54 years old), «reputation, reviews, the presence of positive practice in solving a specific issue» (V.,32 years old), «recommendations, company history, how many years on the market» (S., 53 years old), «the status of attorney as such, and positive feedback from other clients» (A., 37 years old), «it is sometimes difficult for the principal to assess the level of qualification, therefore the main criteria are: honesty, experience, integrity» (S., 33 years old).

As you can see, respondents point to indicators of professionalism as the basis of trust. It can also be noted here that the reputation and history of the company indirectly reflect such an indicator as professional identity. The first and second indicators of the «true profession» focus on specialized training. The participants of the focused interview noted that «professional knowledge of attorneys is important for them, as well as the ability to apply this knowledge in practice.» One of the respondents said that «even if there is a negative result in solving any particular issue, it still doesn't affect the reputation. Because in general, the general professional knowledge and experience of attorney are still important. Most of them don't have this knowledge» (V., 32 years old). Speaking of specialized training, let us turn to the study of A.P. Karun and A.A. Yakovlev. They describe the portrait of attorney, indicating that 28% of respondents acquired the status of attorney after graduation, about 20% joined the bar after working in commercial structures (Report 2019:46-47). Among the attorneys who are members of the Association of Lawyers of Russia (ALR), about twenty percent previously worked in law enforcement agencies and the judicial system, and among non-members of the ALR, their share is one third. More than half of the respondents surveyed from among the members of the Association of Lawyers of Russia believe that modern attorneys very often have professional experience in law enforcement. Thus, members of the advocacy community have a fairly long special training. Following the indicators highlighted above, respondents were asked whether attorneys can be focused on serving society and act altruistically. Entrepreneurs believe that «in general, of course, everything is rational in the activities of attorneys, but still sometimes they can act quite altruistically. I had experience with 9 attorneys. All turned out to be very different, but including one attorneys agreed to conduct business for symbolic money. Everything was based on a great interest and desire to help a person. And we won the trial» (Yu., 54 years old). One of the entrepreneurs clarified: «Since anyone can be altruistic, attorney is no exception. But attorneys works for money, and, therefore, will more often seek to increase their number. Even when performing some altruistic actions, he can be guided by selfish motives» (A., 37 years old). Answering a similar question, one of the attorneys in an expert interview said that «we can work almost for free with a client on a professional interest, sometimes even on a high-profile case. But often the role of a attorneys is to carry out a preventive function. The client must be warned about the entry of the subject of law into a state where there is a threat of legally adverse consequences for him» (A., 31 years old). Her colleague supported this point of view: «Yes, attorneys can do their work on an altruistic basis. I share the point of view that I met earlier in the biography of an American attorney: he left a large law corporation with a large fee for a simple office that helped the very poor, mostly African-Americans. The motive for this was that in a large company he didn't feel satisfied with work, he just earned money, and in a small company he felt that he was doing a serious thing - he was seeking justice» (S., 33 years old). Y.M.Basov's research shows that attorneys perceive their profession in the context of «defenders» of social justice. They value in their colleagues such qualities as honesty, integrity, high personal culture, a sense of justice, integrity. Attorney perceive themselves as professionals with deep knowledge of the laws and the practice of their application. This is manifested in solidarity with the law, efficiency, love for one's profession, objectivity, knowledge of legislative innovations (Basov 2011). Free legal aid can be considered as an example of altruism. Analyzing the activity of attorneys in the context of the presented indicator, it is worth supplementing this issue with data from the Federal Chamber of Attorneys from the report for 2017-2019 at the IX All-Russian Congress of Attorneys (Table 1, 2) (Report 2019).

Table following on the next page

Table 1: State system of free legal aid on a voluntary basis

Year	Number of attorneys	Number of socially unprotected citizens
2017	11711	38570
2018	11163	49272

As we can see, with a slight reduction in the number of attorneys, free legal assistance on a voluntary basis has been provided to a larger number of socially unprotected citizens.

Table 2: Non-state system of free legal aid

Year	Number of attorneys	Number of socially unprotected citizens
2017	2619	14764
2018	3759	17197

A similar pattern is observed in the provision of free legal assistance by attorneys of the non-state system. 61 non-governmental centers of free legal aid have been established by chambers of advocates and legal entities (as of 2018). In 2017, the Council of the Federal Chamber of Attorneys decided that 2 times a year the Russian Bar will hold All-Russian Days of Free Legal Aid organized by the Chamber of the Russian Federation free of charge. This event is held under the name « Attorneys for Citizens» on the Day of the Russian Advocacy (June 1) and on the Lawyer's Day (November 20). Thus, it can be noted that the activity of advocacy corresponds to the third and fourth indicators of the «true profession». The sixth indicator that professionals have a high degree of autonomy was only partially confirmed in a focused interview. Most of the participants said that attorney, like any other lawyer, receives professional education quite freely and therefore the advocacy community is not closed. But as for control, it is certainly present. Here again, we can cite the data provided by the Federal Chamber of Attorneys (FPA), which also confirm the respondents' opinions on both openness and control over activities. Thus, the FPA report indicates that the total number of attorneys over the past two years (2017-2019) increased by 2,287 and reached 80,778 people. As of January 1, 2019, 26719 legal entities have been established and operate in Russia, including 3077 bar associations, 880 law offices, 22675 law offices, 87 legal consultations. The report also indicates that for 2 years (2017-2019), about twenty five thousand complaints were received about the action or inaction of attorneys in the performance of professional duties to the chambers of advocates and about seven hundred complaints to the territorial bodies of the Ministry of Justice of Russia. The Chambers of Advocates responded to these complaints and as a result, penalties in the form of remarks and warnings were applied to 5,475 attorneys. It is significant that 746 attorneys have lost their status. Thus, based on empirical data, we can say that trust in attorneys may well be justified by the fact that representatives of the legal community have characteristics - indicators of the «true profession».

4. CONCLUSION
The advocacy community is one of the little-studied professional groups. At the same time, it's important to study it not only from the point of view of legal specifics, but also social. The sociological approach to the profession of attorney is relevant, allows us to say that attorneys are the group that successfully mobilizes the law in relation to entrepreneurs, participates in the process of reducing or eliminating legal risks, inspires trust as a basis for cooperation. The structural-functional approach and the theory of everyday life allows us to identify the implicit characteristics of the group. The empirical study is based on testing the idea that the advocacy community has the characteristics of a «true profession». The article presented only some aspects that reveal the veil of advocacy.

A more in-depth study of this profession, which is difficult to study, including an understanding of what underlies their self-satisfaction (see the work (Ilinykh, Udaltsova 2016). Studies of professional identity in conjunction with ethical aspects can also be interesting within the framework of sociology.

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RESPONSIBILITY OF THE CONTROL FUNCTION AS A COMPANIES PERFORMANCE AND ECONOMIC VALUE ADDED FACTOR

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ABSTRACT
The global business environment in which a company operates requires constant involvement and adjustment of management in running business processes in order to maintain its competitive position in the market. Rapid technological advancement requires the controlling function to adapt quickly and responsibly, leading to great pressure on competitiveness. The controlling function deals with the fundamental problems of the company's business in practice and is therefore considered a powerful and effective management model. Therefore, this paper aims to investigate the organization and development of the controlling function in Croatian companies and prove the extreme importance of the development of the controlling function in order to achieve long-term competitiveness of companies. Empirical testing on a sample of 125 companies will seek to demonstrate the extent to which the development of the controlling function contributes to business success and the creation of economic added value of the companies.
Keywords: *Controlling, development of controlling function, business success, economic added value*

1. INTRODUCTION
The basic goals of the company's business are the realization of profitable, liquid and long-term sustainable business. Controlling as a business function refers to the entire business of the company and a large part of its business planning and analysis. Controlling in the service of management plans, coordinates and analyzes the achievement of goals for the long-term creation of added value of the companies with the coordination of all relevant factors in the companies. Controlling by analyzing the past and present must absolutely be focused on the future, ie achieving a positive business result. Therefore, this research seeks to prove the importance of the controlling function for creating economic value added of the companies and their profitability, which leads to achieving long-term competitive advantage in the market.

2. THEORETICAL OVERVIEW
It is proved that the globalization of markets and the creation of a single international economic space actualizes the need to create in the enterprise management system such accounting, financial reporting and control, which would be built on the basis of the same principles and rules. It is determined that in modern conditions of activity management, international standards are an effective tool for increasing transparency and clarity of information that reveals the activities of business entities, creates a reliable basis for recognizing expenses, provides an opportunity to objectively disclose the financial risks of the enterprise and compare the results of activities (Kotsupatriy et al, 2020). Taking into account that detailed analysis has a direct impact on the effectiveness of the company it is necessary to develop and implement a set of indicators that allow a practical evaluation of the maintenance function in any firm (Herrera, 2019) and control function is one of them.

According to Nurhayati et al (2021) the practice of accounting conservatism, determination of capital structure, and firm performance are important elements in influencing firm value, either directly or through moderation. Firm performance as a reflection of company's policy plays an important role as a variable that can moderate this influence. As shown on the example of internal audit function (IAF) quality done on the operational efficiency of Chinese firms (Chen et al, 2020) it has been shown that the quality of control is positively associated with firm operational efficiency. The authors show that IAF competence improves firm operational efficiency, but also that the relationship between IAF independence and firm operational efficiency is insignificant. Additionally, they find that IAF quality can only significantly improve firm operational efficiency in the presence of effective corporate governance at the firm level and strong institutions at the province level. Using path analysis, the authors find that an IAF can improve firm operational efficiency directly or indirectly by promoting firm internal control quality (Chen et al, 2020). Second research (Mirrezaei, 2020) shows that effective risk control is as significant as maximising the return of investment for investors; therefore, it is essential to examine patterns and tools of the effective risk control for investors. Research done on 112 companies listed in Indonesia Stock Exchange in period 2011-2015. (Arniati et al, 2019) indicates that the model of earnings quality monitoring is constructed from the interaction of many variables. Corporate governance mechanism consists of variables such as ownership structure (managerial ownership and institutional ownership), commissioner board structure, audit committee structure, internal audit function, and internal control activity. According to the same source, partially, commissioner board structure, internal audit function, and internal control activity have a significant effect on earnings quality. The efficacy of control functions as multidimensional phenomena of management functions and functions of accounting to ensure product quality and its impact on profitability have substantiated a need for the Control for business entities in order to improve product quality, which affects the maximisation of profits (Marchuk and Fabiianska, 2019). In the context of internal auditing, when there is no obvious correlation between auditors activities and financial performance, it is critical to identify areas where value is added as well as the drivers that enable this, in the evaluation of the effectiveness of the internal auditing function – IAF (D'Onza et al, 2015). The control should be implemented primarily in the interests of the organization, its owners and employees. Control of the organizations implementation of management solutions is a system of observation, inspection, evaluation and correction of the situation on the basis of the developed criteria indicators (Osadchy and Akhmetshin, 2015). In this case, financial control is an integral part of the financial management process. This is due to the very essence of finance and existence of a control function. The control function has to create and use a system of financial control over compliance with cost proportions in the process of formation and expenditure of funds and cash (Osadchy and Akhmetshin, 2015).

3. METHODOLOGY
3.1. Goals and hypotheses of the research
Creating added value for businesses has been called into question by market globalization and increasing competitiveness. Therefore, it is extremely important to organize the controlling function in business systems to achieve profitability in a global environment. By conducting this research, the focus is on proving the extent to which controlling ensures the profitability and economic value added of the companies. The aim of this paper is to determine the importance of the controlling function as a factor in creating economic value added of the companies to achieve a long-term competitive position in the global market. Based on the goal of the research, the following hypotheses were set:
- H1 – There is a significant statistical correlation between the organization of the controlling function and the creation of Economic Value Added of the company

- H2 – There is a significant statistical correlation between the organization of the controlling function and the realization of profit
- H3 – There is a significant statistical correlation between the organization of the controlling function and the Return on Sale indicator

3.2. Method of the research

The following variables were defined by setting research hypotheses:

a) Independent variable (VAR X = Controlling) obtained by the weighted arithmetic mean of the responses obtained by the survey. In the questionnaire for questions with offered answers of intensities, the Likert scale with five intensities of agreement or disagreement was used, where the intensities were as follows: 1 - I absolutely disagree; 2 - I do not agree; 3 - I neither agree nor disagree; 4 - I agree; 5 - I absolutely agree. For individual questions from the survey questionnaire, scaled answers were offered as follows: 1 - never; 2 - rarely; 3 - sometimes; 4 - often; 5 - very often.

b) Dependent variables were obtained by calculation from the financial statements of Croatian companies as at December 12, 2020 and as follows:

- VAR Y_1 = EVA
- VAR Y_2 = Profit/S
- VAR Y_3 = ROS

As the Likert scale was used in the survey questionnaire to obtain the independent variable VAR X, the internal consistency of the measuring instrument was first checked, and the obtained Alpha Cronbach's coefficient (0.789) shows the acceptable reliability of the measuring instrument. Proof of the set research hypotheses was carried out by a regression model to examine the significant statistical correlation of the organization of the controlling function with the creation of economic value added of the companies, profit generation and Return on Sale.

3.3. Results of the research

The empirical research was conducted on a sample of 125 respondents working in Croatian companies and observed according to the size of companies; mostly small companies (49) followed by medium-sized companies (41) large companies (27), and micro companies, (8) which is presented in Graph 1.
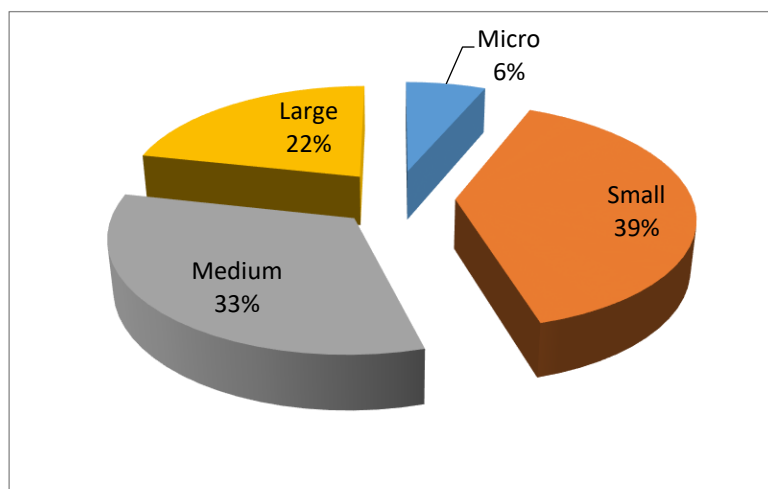
Graph 1: Display of the size of the enterprise from the sample
(Source: Author's own research)

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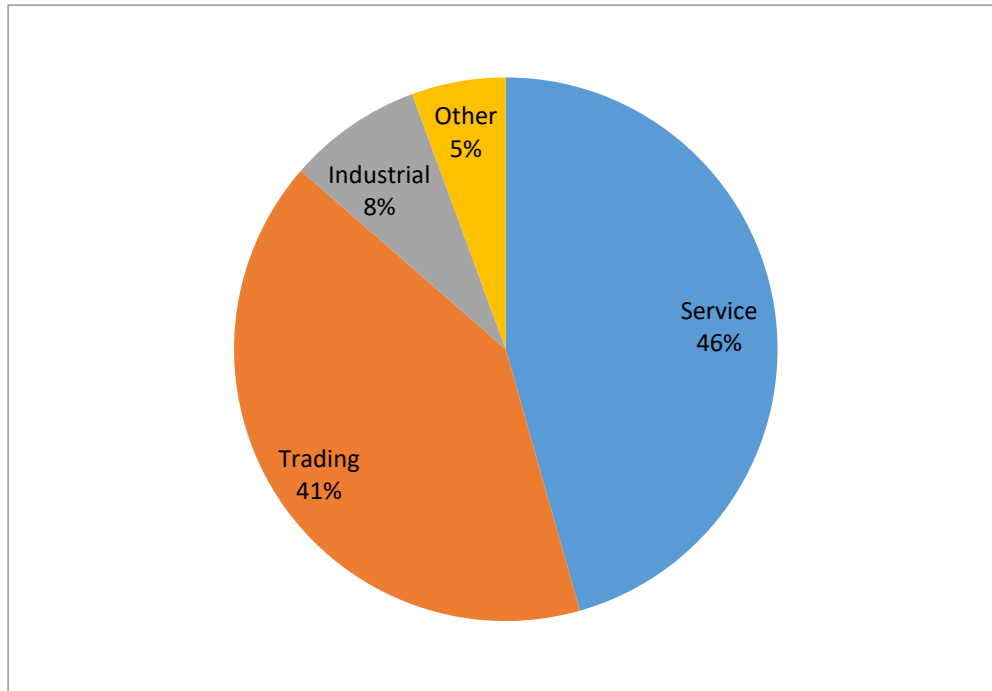
Graph 2: Overview of the activities of the sample companies
(Source: Author's own research)

Graph 2 shows the structure of companies observed according to the activity to which they belong: service companies (57), trade companies (51), companies engaged in industrial activities (10) and other activities (7).

Statistics		Controlling	EVA	Profit_S	ROS
N	Valid	125	125	125	125
	Missing	0	0	0	0
Mean		4,2253	,2672	3,7349	5,5698
Median		4,1400	,3500	3,2200	3,7800
Mode		5,00	,33	,01	1,55[a]
Std. Deviation		1,36666	3,30600	3,93519	8,80727
Variance		1,868	10,930	15,486	77,568
Percentiles	25	3,2150	,1600	,1500	1,5400
	50	4,1400	,3500	3,2200	3,7800
	75	5,2900	,5700	4,8500	6,4050

a. Multiple modes exist. The smallest value is shown

Table 1: Descriptive statistics of regression model variables
(Source: Author's own research)

From the descriptive analysis of the regression model variables shown in Table 1, it can be seen that there are differences that are normal given and that the dependent variables are indicators obtained by calculation from the financial statements of the enterprise. Before determining the correlation of the observed variables from the set research hypotheses, the problem of multicorrelation was removed. The obtained VIF values for the regression model are EVA 1,013; Profit/S 1,012; ROS 1,003 and with a tolerance index less than 0.2 it is concluded that there is no problem of multicorrelation present.

Model Summary[b]

Model	Change Statistics					Durbin-Watson
	R Square Change	F Change	df1	df2	Sig. F Change	
1	,334[a]	4,310	1	123	,040	1,942

a. Predictors: (Constant), Controlling

b. Dependent Variable: EVA

Table 2: Regression model Controlling and EVA
(Source: Author's own research)

Table 2 shows the results of statistical significance of the correlation coefficient and frequency regression of the controlling function (VAR X) and the creation of economic value added of the companies (VAR Y_1). The correlation coefficient (r = 0,334; p < 0,001) shows a moderately strong statistical correlation between the implementation of controlling and the creation of economic added value of companies. The coefficient of determination shows a relatively good representativeness of the model, the F ratio is higher than the theoretical value because the samples are not from the same economic activity, based on a given level of significance 0.05 and the number of degrees of freedom ($F_{1, 123}$ = 4,310) controlling significantly contributes to the creation of economic value added of the companies. Durbin-Watson has a value close to 2 which indicates that there is no auto correlation of relation errors, thus confirming the first research hypothesis.

Model Summary[b]

Model	Change Statistics					Durbin-Watson
	R Square Change	F Change	df1	df2	Sig. F Change	
1	,335[a]	4,409	1	123	,038	1,699

a. Predictors: (Constant), Controlling

b. Dependent Variable: Profit_S

Table 3: Regression model Controlling and Profit
(Source: Author's own research)

From the correlation coefficient, regression model Controlling and Profit (r = 0,335; p < 0,001), a satisfactory level of significance shows a moderately strong statistical correlation between the implementation of the controlling function and the realization of profit. The coefficient of determination shows a relatively good representativeness of the model, the F ratio is higher than the theoretical value because the samples are not from the same economic activity, based on this given the level of significance 0.05 and the number of degrees of freedom ($F_{1, 123}$ = 4,409) the development of the controlling function contributes significantly to profit generation. Durbin-Watson indicates that there are no auto correlations of relation errors and concludes that hypothesis H2 is confirmed.

Model Summary[b]

Model	Change Statistics					Durbin-Watson
	R Square Change	F Change	df1	df2	Sig. F Change	
1	,204[a]	,447	1	123	,505	1,770

a. Predictors: (Constant), Controlling

b. Dependent Variable: ROS

Table 4: Regression model Controlling and ROS
(Source: Author's own research)

In Table 4, from the correlation coefficient of 0,204 of the organization of the controlling function in the companies and the indicator Return on Sale, a relatively weak statistical correlation can be seen. Given the significance level of 0.05 and the previously obtained inflation variation factor, the F ratio is less than the theoretical value which means good representativeness of the sample, it is concluded that the development of the controlling function contributes to better realization of Return on Sale and the third hypothesis is confirmed. Durbin-Watson indicates errors the absence of auto correlation of relation.

4. CONCLUSION

The implementation of this research was intended to prove the importance of the controlling function for the creation of economic value added of companies and profits, which leads to the achievement of long-term competitive advantage in the market. The research was conducted on an empirical sample of 125 respondents from Croatian companies and statistical analysis of data by regression models, from the correlation coefficients confirmed the research hypotheses. The organization of the controlling function significantly contributes to the creation of economic value added of the companies (0,334) and profit making (0,335) which leads to a long-term competitive position in the market in a global environment. The correlation coefficient of the controlling and realization function Return on Sale (0,204) shows a smaller but significant statistical correlation. The application of controlling in business contributes to a number of advantages in long-term planning procedures, security through the reduction of business risk, and increased efficiency and effectiveness. The basic goals of the company's business are the realization of profitable, liquid and long-term competitive business. Therefore, the importance of the implementation of controlling in the business of any organization is unquestionable, which leads to a long-term competitive advantage in the global market.

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THE IMPACT OF COVID-19 ON UNEMPLOYMENT LEVEL IN EUROPEAN UNION

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ABSTRACT
Covid-19 has negatively affected the economies of almost all countries around the world including the impact on their main economic indicators such as GDP, unemployment level, inflation rate etc. The purpose of this article is to investigate the impact of Covid-19 on unemployment level in European Union. In the article, firstly the impact of Covid-19 on general unemployment level in European Union and its impact on unemployment level by sex and age have been revealed based on statistical data by years. Moreover, the impact of the pandemic on people's unemployment expectations over the next 12 months, labor market transition from unemployment to inactivity and the number of persons available to work but not seeking have been mentioned. Then the factors that can cause the unemployment level to be increased during the pandemic have been determined in order to define the particular reasons of unemployment in European Union. Based on multiple regression analysis, it is justified that unemployment level is positively related with the number of active covid cases and the number of business closures, but negatively related with the households' major purchases which represent consumer demand.
Keywords: *Covid-19 pandemic, European Union, labor market, unemployment level*

1. INTRODUCTION
After the first Covid-19 case was identified in Wuhan, China, in December 2019, the disease has spread worldwide, leading to an ongoing pandemic. Almost all countries around the world announced some restrictions in order to prevent or mitigate its spread. These restrictions and the health problems of the people itself directly affected and still affects global economy. Many economists and international organizations estimated the impact of Covid-19 on global economy and forecasted its future effects as well (Parag Verma et al., 2021; Lucian Liviu et al., 2020; Barro et al., 2020; Correia et al., 2020; IMF, 2020; Jordà et al., 2020; McKibbin and Fernando, 2020; OECD, 2020; Saez and Zucman, 2020; UNCTAD, 2020). According to International Monetary Fund, the global economy dropped by 4.4% in 2020 and the organization described this decline as the worst since the Great Depression of the 1930s (International Monetary Fund, 2021). Covid-19 has also significantly affected the labor market (Davidescu A.A. et al., 2021). As we can see from the picture below, unemployment rate which is one of the main economic indicators has been increased across major economies in the world in 2020, so many people have lost their jobs or seen their incomes fall.

Picture following on the next page

World economies struggling with rising unemployment
Yearly unemployment rate change, 2019 and 2020 compared

Country	2019	2020
Brazil	11.9%	13.4%
Italy	9.9%	11%
Canada	5.7%	9.7%
United States	3.7%	8.9%
France	8.5%	8.9%
United Kingdom	3.8%	5.4%
Germany	3.1%	4.3%
Japan	2.4%	3.3%
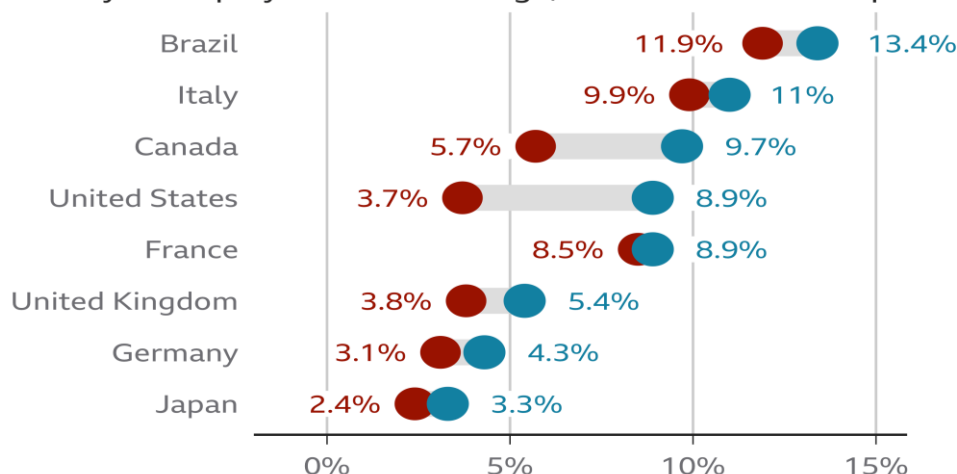
Picture 1: Unemployment rates of some countries in 2019 and 2020
(Source: International Monetary Fund)

Therefore, it is necessary to investigate the effects of Covid-19 on labor market and to predict its future impact for the post-pandemic period. In this case, the governments can also use the relevant results both in the post-pandemic period and in other unexpected periods, similar to Covid-19 pandemic in the future. Taking into account these factors, the purpose of this research is to investigate the impact of the disease on unemployment level in European Union including determination of the impact of the pandemic on employees by age and sex and particular reasons of unemployment during the pandemic.

2. LITERATURE REVIEW
Although the pandemic continues, economists around the world have determined the effects of Covid-19 on unemployment level from very different aspects in various countries and have received interesting results as written below:
- Analyzing at macroeconomic level, it is defined that the COVID-19 pandemic induced an increase in the number of unemployed on the Romanian labor market. However, respondents of a survey prepared by the authors claimed that they obtained better results and maintained a similar income, but the health crisis also influenced the mentality of employees. Respondents also noted that in the event of a change of job, it would be very important for the new employer to ensure the conditions for preventing and combating COVID-19, as well as complex health insurance (Radulescu CV et al., 2021)
- In Australia, young people were significantly affected by COVID-19 compared to the elderly. In particular, young women are exposed to economic impact, especially those women in their 20s who want to work more than others (Churcill, 2021).
- The current COVID-19 pandemic has had a strong impact on the labor market from three main perspectives: the number of jobs (through unemployment and underemployment), the quality of work (through wages or access to social protection) and the effects on specific groups, with a greater degree of vulnerability to unfavorable labor market outcomes. Empirical results for forecasting the unemployment rate for 2020–2023 using the Box-Jenkins methodology based on ARIMA models showed an upward trend in the unemployment rate in 2020, followed by a slow and continuous decline until the end of 2023 with a high probability for the forecast to be above the central projection (Davidescu AA et al., 2021).

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- According to a high-quality study conducted with a relevant sample of Flemish (Belgian) employees, about 21% of them are afraid of losing their jobs due to the crisis, 14% are worried that they will lose their jobs in the near future. This fear is greater in vulnerable groups such as migrants. In addition, it is observed that many respondents believe that they will look at the labor market differently and will have different work-related priorities in the future (Lippens L. et al., 2021).
- The most affected economic agents during the pandemic include the youngest workers (15-29 years old), the oldest (over 60 years old), those with low incomes, small firms (6-50 workers), firms large (51-250 workers), workers in the construction industry and hospitality-focused service sectors in Mexico (Hoehn-Velasco et al., 2021).
- The COVID-19 pandemic in India has had an uneven impact on women in many ways. In terms of economic opportunity, it has been seen that more women have lost jobs compared to men and fewer have been able to join the workforce (Mitra S. et al., 2021).
- In an article on the impact of Covid-19 on the health care labor market in the United States, it is revealed that lower paid workers experienced greater vulnerability and a slower recovery during the pandemic (Bhandari N. et al. ., 2021)
- The pandemic has generally had more severe effects on the workforce of urban adults than their rural counterparts, according to additional data from the current US Population Survey. Urban adults were more often unpaid for non-working hours, unable to work and unable to look for work because of COVID-19. However, rural workers were less likely to work remotely than urban workers. These differences persist even when analyzing the socioeconomic characteristics of adults and factors at the macroeconomic level (Brooks M.M. et al., 2021)
- In addition to the effects of Covid-19 on employment and wages, there is a predictable increase in work effort, not only due to the reasons of health security at work, but also due to the effects on the balance between professional life, training and promotion opportunities, etc. (Xose Picatoste et al., 2021).
- Latin America is also facing an unprecedented crisis in its labor market due to the COVID-19 pandemic. This is reflected in a drastic contraction in labor, hours worked and income (Maurizio R. et al., 2021).

3. THE IMPACT OF COVID-19 ON UNEMPLOYMENT LEVEL IN EUROPEAN UNION

3.1. The effect of the pandemic on general unemployment level

As other countries in the world, EU member countries also observed an increase in unemployment level during the pandemic. We can see in the graph below the unemployment level of European Union (27 countries) in 2013-2020.
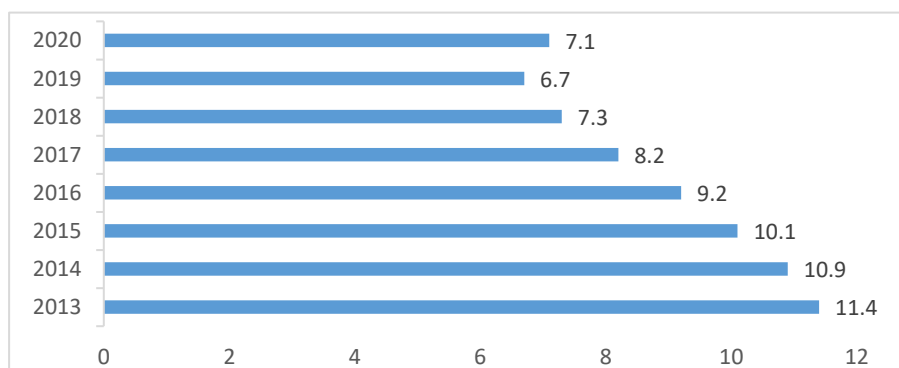
Graph 1: EU unemployment level by year
(Source: Eurostat)

There was a fall in unemployment level every year until 2020, but EU had 6% increase in unemployment level in 2020 due to the pandemic. Moreover, people's unemployment expectations over the next 12 months have been increased approximately 3 times in 2020, labor market transition from unemployment to inactivity has been increased from 26.2% to 34,5% in the 2nd quarter of 2020, and the number of persons available to work but not seeking has been increased by 26% in 2020 in comparision with the previous year (Eurostat).

3.2. The impact of Covid-19 on unemployment by sex and age

3.2.1. The effect of the pandemic on unemployment level of women and men
Many economists have completed several researchs in which the impact of Covid-19 on women and men employees has been investigated. Using the official data, it has been revealed that men employees are more affected than women employees during the pandemic in European Union in terms of unemployment level. Thus, the unemployment level of men has been increased by 6%, and the unemployment level of women has been increased by 4% in 2020 in comparision with 2019.
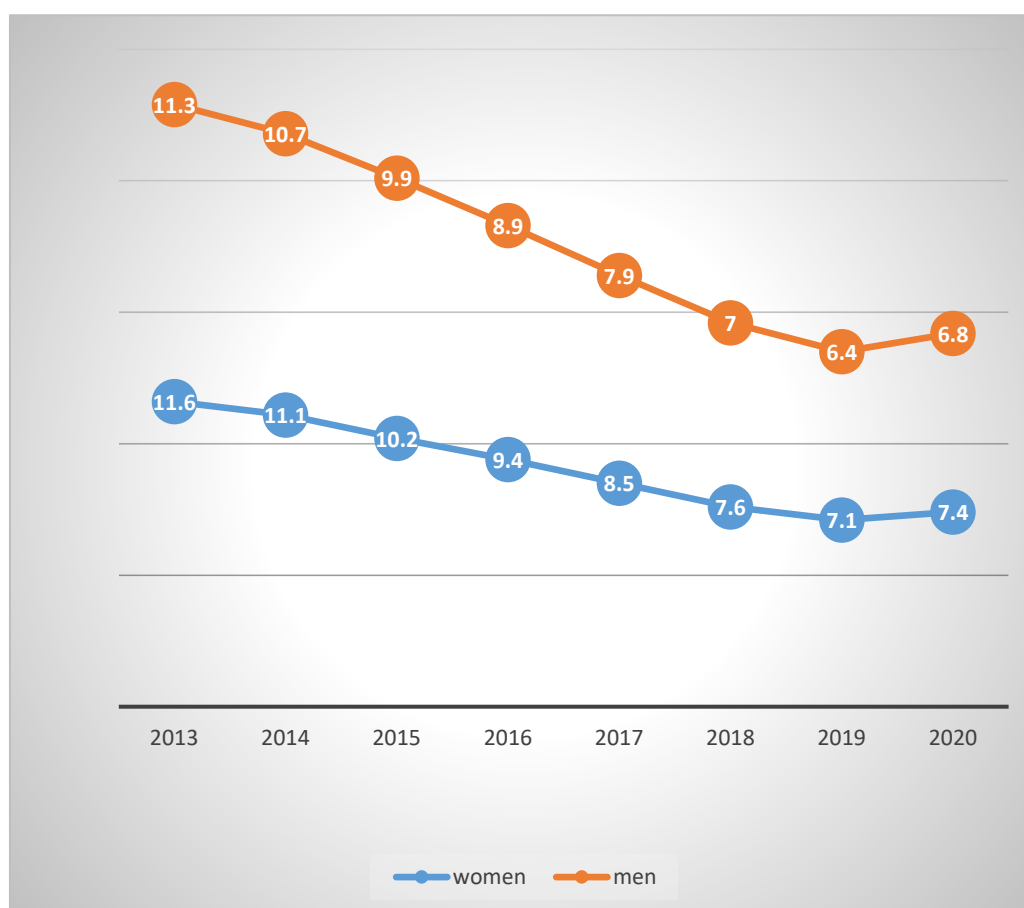
Graph 2: Annual unemployment level by sex in European Union
(Source: Eurostat)

3.2.2. The impact of Covid-19 on unemployment level by age
According to data provided by Eurostat, the most vulnerable age group of employees has been the youngest employees in European Union during the pandemic. Thus, the unemployment level for those under 24 years old has been increased from 15.3% to 17.1%, in other words by 12%, while the unemployment level for the people aged between 25-54 has been increased from 6.2% to 6.6% or by 6%, and surprisingly, the unemployment level of the persons who are more than 55 years old has not been affected during the pandemic in European Union.
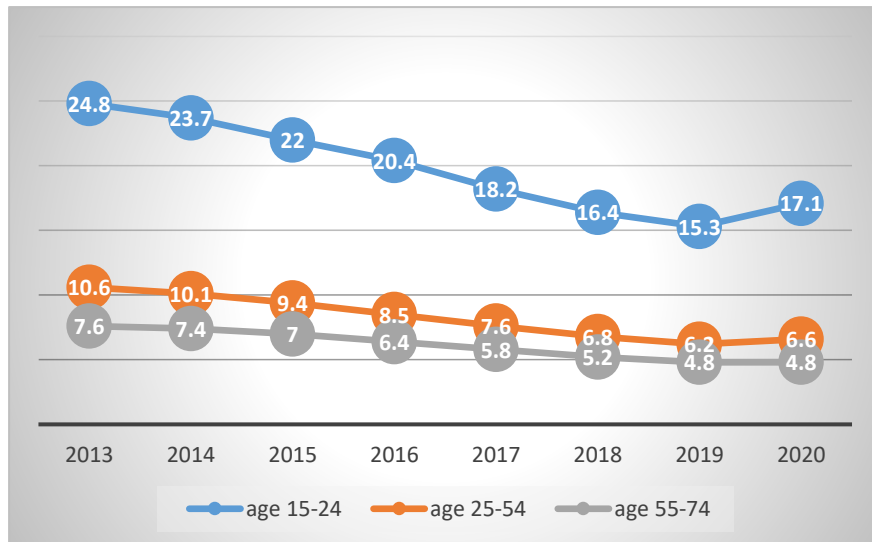
Graph 3: Annual unemployment level by age in European Union
(Source: Eurostat)

4. THE PARTICULAR REASONS OF UNEMPLOYMENT DURING THE PANDEMIC

After understanding the significant impact of Covid-19 on unemployment level, it is possible to determine the particular reasons or the most important reason of unemployment level. Based on multiple regression analysis, it has been determined that the unemployment level is positively related with the number of active covid cases and the number of business closures, but negatively related with the households' major purchases which represent consumer demand, and these correlations are statistically significant. So, when the number of active Covid cases and the number of business closures are increased, the unemployment level is also increased, however when people's ability to make major purchases is dropped, the unemployment level is increased most probably because of restrictions of the employees caused by a fall in consumer demand.

Regression Statistics	
Multiple R	0.91749852
R Square	0.8300484
Adjusted R Square	0.664607
Standard Error	3.12854211
Observations	25

ANOVA

	df	SS	MS	F	Significance F
Regression	3	31.7984	10.599	1.08293	0.0396511
Residual	11	107.665	9.7877		
Total	14	139.464			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	4.2918554	1.918515	2.237070	0.046941	0.0692306	8.51448
Active covid cases	0.361876	0.00528	0.874145	0.040072	-0.0070106	0.01624
Business closures	0.632405	0.01020	0.619973	0.054790	-0.0161271	0.028775
Consumption	-0.1618794	0.03913	-1.581014	0.0142180	-0.1480239	0.024265

Table 1: The table has been prepared by the author based on data provided by Eurostat
(Source: Eurostat)

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Multiple regression model: Y = 4.29 + 0.36X1 + 0.63X2 – 0.16X3

As we can see from the table, the correlation between the number of business closures and unemployment level is stronger than the correlation between the number of active covid cases and unemployment level which illustrates that the main factor that affect the unemployment level during the pandemic is government policy, not the number of active covid cases or disease itself. However, there is a positive relationship between the number of active covid cases and the number of business closures which shows that when the number of active covid cases is increased, the number of business closures is also increased, and otherwise, when the number of active covid cases in dropped, the number of business closures is also dropped.

5. CONCLUSION
In the article, it has been defined that there was a fall in unemployment level in European Union every year until 2020, but EU has observed 6% increase in unemployment level in 2020 due to the pandemic. Moreover, people's unemployment expectations over the next 12 months have been increased approximately 3 times in 2020, labor market transition from unemployment to inactivity has been increased from 26.2% to 34,5% in the 2nd quarter of 2020, and the number of persons available to work but not seeking has been increased by 26% in 2020 in comparision with the previous year. Using the official data provided on Eurostat, it has been revealed that men employees are more affected than women employees during the pandemic in European Union in terms of unemployment level. Thus, the unemployment level of men has been increased by 6%, and the unemployment level of women has been increased by 4% in 2020 in comparision with 2019. According to data provided by Eurostat, the most vulnerable age group of employees has been the youngest employees in European Union during the pandemic. Thus, the unemployment level for those under 24 years old has been increased from 15.3% to 17.1%, in other words by 12%, while the unemployment level for the people aged between 25-54 has been increased from 6.2% to 6.6% or by 6%, and surprisingly, the unemployment level of the persons who are more than 55 years old has not been affected during the pandemic in European Union. At the end of the article, based on multiple regression analysis, it has been determined that the unemployment level is positively related with the number of active covid cases and the number of business closures, but negatively related with the households' major purchases which represent consumer demand. As a development of this research, the impact of technologies and vaccination on unemployment level during the pandemic will be investigated in the next articles. Because the statistical data shows that the economic activity fields in which it is possible to benefit from technologies such as education observed lower levels of unemployment than the other economic activity fields like tourism, construction etc., and vaccination which can also be accepted as a government policy negatively affects the unemployment level because of decreased restrictions.

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EXPLORING THE RELATIONSHIP BETWEEN TOURISM COMPETITIVENESS AND TOURISM CONTRIBUTION TO ECONOMY: GLOBAL PERSPECTIVE

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ABSTRACT

The aim of this paper is to explore the relationship between tourism competitiveness and significance of tourism to national economy. Building on the recent body of work that aims to explore relationship of tourism competitiveness with strictly economic (overall GDP and GDP growth) and other country level measurements (human development index, cultural dimensions), this paper closely examines relationship of tourism competitiveness with tourism performance in economic sense. For the purposes of measuring tourism competitiveness, World Economic Forum's Travel and Tourism Competitiveness Index (TTCI) report for 140 countries worldwide for 2019 has been used, while significance of tourism to national economy has been determined as a share of direct tourism related economy to GDP. Share of tourism related economy in overall GDP is then analysed against overall travel and tourism competitiveness index and each of its pillars as provided in TTCI report for 2019. Results show that share of tourism related economy to GDP can significantly be predicted by only a limited number of TTCI pillars, excluding the overall TTCI. GDP per capita seems to negatively predict the share of tourism related in overall economy, i.e. richer the countries are, they are generally less economically driven by tourism. Prioritization of T&T industry and tourist service infrastructure seem to be the best positive predictors of the of share of tourism related economy to GDP, followed by pillars related to transport infrastructure, ICT readiness and human resource and labour market. Network analysis shows that ICT readiness, transport related pillars and human resource and labour market are also the best predictors of the all the other pillars. Practical contribution of the paper is in identification of the elements (pillars) of competitiveness that predict tourism related economic effects, as well as in identifying other variables that influence competitiveness and performance relationship.
Keywords: tourism competitiveness, tourism contribution to economy, travel and tourism competitiveness index (TTCI)

1. INTRODUCTION

The concept of tourism competitiveness has received considerable scientific attention over the last 20 years. The efforts were mostly directed towards clarification of the term, its relationship with familiar terms (for instance performance) and development and/or criticism of the model.

Despite various efforts and proposals for building tourism competitiveness models, Travel and tourism competitiveness index (TTCI) as introduced by the World Economic Forum in 2007 remains the most widely used in science and practice, however going through constant methodology updates, partly following progress in scientific community. Research of relationships of tourism competitiveness and performance has seen various approaches in modelling tourism performance, steaming from tourist satisfaction (Cracolici and Nijkamp, 2009), competitiveness (Barros et al., 2005; Dwyer and Kim, 2003), tourist arrivals and tourism satellite accounts (Hanafiah and Zulfikly, 2019), while Yilmaz and Bitticci (2006) even suggested value chain performance measurement framework for tourism. In line with such research, there have also been studies on the exact relationship of tourism competitiveness and economic growth. Ozturk and Acaravci (2009) and Chatziantoniou et al (2013) have summarised the causality between tourism competitiveness and economic growth into four different hypotheses. Hanafiah et al (2017) analysed the relationship between tourism competitiveness with natural and cultural heritage and tourist arrivals to find negative correlation of tourism competitiveness as measured by TTCI with number of natural heritage sites, while important contributions on research on relationships of TTCI with various exogenous variables have also been provided by Kumar and Dhir (2020), Croes et al (2019), Romao (2020) and Wang and Liu (2020). This paper aims to closely examine the relationship of TTCI and its 14 pillars with the share of tourism related in overall economy in way to also identify TTCI pillars that serve as the best predictors of the share of tourism related in overall economy. Building on previous research, nominal GDP per capita for 140 countries will also be included in the analysis. Finally, network analyses will be performed to identify TTCI pillars that serve as the predictors of the share of tourism related in overall economy.

2. LITERATURE REVIEW
2.1. Tourism competitiveness and Travel and Tourism Competitiveness Index (TTCI)
The early efforts in defining tourism competitiveness and related concepts date from the beginning of the century, with the most important contributions from Ritchie and Crouch (2003), Dwyer and Kim (2003), Heath (2003), and Gooroochurn and Sugiyarto (2005). In the pioneering and one of the most cited works on the field, Ritchie and Crouch (2003) emphasized that the whole notion of tourism competitiveness is primarily theoretical concept rather than a measurement tool, and more importantly that competitiveness isn't guarantee of success. In other word and despite becoming one of the common measures of success of one country's travel and tourism sector, competitiveness is the "ability" to compete, rather than success in doing so. In a one of the more recent definitions, Croes et al (2019) emphasized tourism competitiveness as the country's ability to optimize its attractiveness for tourists, thus taking more of a demand side approach in understanding competitiveness. It is worth noting that Travel and tourism competitiveness index (TTCI) as introduced and measured by the World Economic Forum (WEF, 2019) has been mostly based on the initial model proposed by Ritchie and Crouch (2003). Index has been calculated on the country level for each year in the period from 2007 to 2009, and biannually since 2011. The index has seen continuous methodological improvements since its inception in terms of the general methodology, increase in the number of indicators and the sample (number of countries included in the survey). The key methodological change so far was introduced in 2015 when the number of sub-indices was increased from 3 to 4. The current structure of TTCI includes 90 indicators that serve for calculation of 14 competitiveness pillars organised in 4 subindices. The TTCI indicators are computed by using the primary (perception-based assessment) and secondary data, while they assess tourism competitiveness on the macro (national) level of a destination.

Following is the structure of TTCI (subindices and pillars):
- SUBINDEX A: ENABLING ENVIRONMENT
    - Pillar 1: Business Environment
    - Pillar 2: Safety and Security
    - Pillar 3: Health and Hygiene
    - Pillar 4: Human Resources and Labour Market
    - Pillar 5: ICT Readiness
- SUBINDEX B: T&T POLICY AND ENABLING CONDITIONS
    - Pillar 6: Prioritization of Travel & Tourism
    - Pillar 7: International Openness
    - Pillar 8: Price Competitiveness
    - Pillar 9: Environmental Sustainability
- SUBINDEX C: INFRASTRUCTURE
    - Pillar 10: Air Transport Infrastructure
    - Pillar 11: Ground and Port Infrastructure
    - Pillar 12: Tourist Service Infrastructure
- SUBINDEX D: NATURAL AND CULTURAL RESOURCES
    - Pillar 13: Natural Resources
    - Pillar 14: Cultural Resources and Business Travel

Despite its relatively wide application, the index has been the subject of significant criticism, most notably regarding adaptation to advanced economies, unclear method of weighting indicators and validity and reliability of applied statistical methods (Wu et al., 2012; Hanafiah, et al., 2016; Mendola and Volo, 2017).

2.2. Tourism competitiveness and economic effects of tourism

Among tourism competitiveness studies that have occurred over the last 20 years, relatively few were oriented at exploring the relationship between tourism competitiveness and economic growth, or the relationship between tourism competitiveness and economic effects in general (Wang and Liu, 2020). Significant portion of the work in the field was oriented at clarifying the causal relationship between tourism and economic growth. The main attempt has been to find the causality direction of whether tourism development causes economic growth or vice versa. The tourism-led growth hypothesis (TLEG) was first proposed by Balaguer and Cantavella-Jorda (2002) while investigating the Spanish economy's growth. Ozturk and Acaravci (2009) and Chatziantoniou et al (2013) summarised the causality between tourism and economic growth into four different hypotheses:
- The uni-causality is found from the tourism competitiveness to economic growth —the tourism-led economic growth (TLEG) hypothesis.
- An uni-causality is proven from EG to the tourism sector—the economic-driven tourism growth (EDTG) hypothesis.
- A bidirectional relationship exists between tourism and EG—the bidirectional causality (BC) hypothesis
- No causality is suggested between tourism and EG— no causality (NC) hypothesis.

No consistent theoretical and empirical grounds have been established if tourism development leads to economic growth or economic growth promotes tourism development (Antonakakis et al, 2015). Yildirim et al. (2005) and Eugenio-Martin and Morales (2004) emphasized that relationship between tourism competitiveness and economic growth differs between developed and developing economies.

Consequently, many studies have examined the validity of the TLEG by employing different datasets, including single-country, multi-country, or panel datasets; however, the studies have not found conclusive results (Chattopadhyay et al, 2021). A comprehensive review of the literature on the tourism development and economic growth nexus is provided by Brida et al. (2016) and Ahmad et al. (2020). Krstić et al. (2016) used the Travel and Tourism Competitiveness Index (TTCI) as the indicator of tourism competitiveness and found that economic competitiveness was affected by tourism competitiveness in sub-Saharan Africa countries. Webster and Ivanov (2014) performed research on 131 countries and found that tourism competitiveness (also measured via TTCI) has no statistically significant influence on tourism's contribution to economic growth. Wang and Liu (2020) used coupling coordination degree (CCD) model to examine balance between the trend in tourism competitiveness measured by TTCI and economic growth as measured by GDP and GDP per capita growth. Their findings suggest that results vary between countries in different regions, but also that despite the importance of the tourism industry for developing countries, most of their CCD between TC and EG was in the state of unbalanced development.

2.3. Tourism competitiveness and other dimensions, constructs and variables
Attempts to link tourism competitiveness with other have especially intensified over the last decade (Croes et al, 2019). Kumar and Dhir (2020) have researched relationship of TTCI and 6 cultural dimensions of the country as proposed by Hofstede. Their findings suggest that individualism, long-term orientation, and indulgence to be the supporting cultural dimensions that favour TTCI. The dynamic relationship among human development, economic growth, and tourism was analysed using cointegration techniques by Rivera (2017). The study revealed that tourism does not stimulate human development for Ecuador. The causal relationship supporting economic-led tourism growth is unidirectional, where tourism development is caused by economic expansion. Croes et al (2019) used mixed-effect regression model to explore the recursive relationship between tourism competitiveness and human development on the case of South American countries. The results suggest that human development significantly affects tourism competitiveness, while the tourism competitiveness effects on human development are only partial. The findings' theoretical implications are fourfold. First, one should expect the human development side to do better at lower development levels. Second, public resource allocation choices mediate the recursive nature of the relationship between tourism competitiveness and human development. Third, the higher the public expenditures ratio allocated to human development, especially health, the higher the mutual reinforcement links between tourism competitiveness and human development. Fourth, sequencing these two constructs is critical for performance. Using Poland as a case study and adopting the translog production function and a limited information maximum likelihood methodology, Croes et al. (2021) examined tourism development and human development's relationship and found that tourism development has a short-term impact on economic development and an indirect negative link with human development. Romao (2020) researched a connection between smart specialisation in various economic sectors and tourism competitiveness as measured as GVA of tourism on the case of European regions. Confirming some of the expected outcomes (positive influence of tourism specialisation, beds and arrivals on tourism GVA), research has also outlined some less expected findings such as negative correlation between regional prioritisation of agriculture and environmental technologies to tourism GVA and no statistically significant influence of culture and creativity and housing/construction on tourism GVA. Hanafiah et al. (2017) have analysed correlations between TTCI, natural resources, number of species, cultural resources and tourist arrivals of ASEAN countries. The findings were generally weak and insignificant correlations, which were even negative in case of TTCI and natural resources.

3. METHODOLOGY

The goal of this research is to provide an insight into relationship between tourism competitiveness, its pillars, and the share of tourism in overall economy. For that purpose, the results of 2019 TTCI as issued by World Economic Forum are used on the sample of 138 countries worldwide. As the measure for share of tourism related in overall economy, "T&T industry share of GDP" data provided within country reports of TTCI for 2019 have been used, as provided by Tourism Satellite Account Research by World Travel and Tourism Council for 2018. For the purposes of the analysis, scores of TTIC and all pillars are used as continuous variables more suited for further analysis, rather than ranks that are discrete variables. The original sample of 140 countries has been reduced to 138, since there were no available data on share of tourism related economy in GDP for Mauritania and Liberia. Since index and pillars of TTCI are normalised at the scale 0 to 7, the share of tourism in GDP has also been normalised to the same scale in order to improve the research results. Regression linear modelling has been used with share of tourism in GDP (TGDP) as dependent (target) variable and TTCI index, its subindices and GDP per capita (GDPPC) as independent variables (predictors). On top of regression linear modelling, Random Forest Regression has been used as additional tool to further verify and clarify regression results. Network analysis has been performed to provide more insight into mutual relationship between pillars of competitiveness.

3.1. Variables

As of 2015, TTCI is organised through 4 subindices and 14 pillars. Variable names for pillars have been assigned in the following way. On top of the 15 variables related to TTCI and its 14 pillars, GDP per capita and normalised share of tourism in GDP have been included in the analysis. Variables and assigned names have been shown in the table 1 below:

Dimension	Variable name
Travel and tourism competitiveness index	TTCI
Pillar 1: Business Environment	BE
Pillar 2: Safety and Security	SS
Pillar 3: Health and Hygiene	HH
Pillar 4: Human Resources and Labour Market	HRLM
Pillar 5: ICT Readiness	ICTR
Pillar 6: Prioritization of Travel & Tourism	PTT
Pillar 7: International Openness	IO
Pillar 8: Price Competitiveness	PC
Pillar 9: Environmental Sustainability	ES
Pillar 10: Air Transport Infrastructure	ATI
Pillar 11: Ground and Port Infrastructure	GPI
Pillar 12: Tourist Service Infrastructure	TSI
Pillar 13: Natural Resources	NR
Pillar 14: Cultural Resources and Business Travel	CRBT
Nominal GDP per capita in USD	GDPPC
Share of direct tourism in GDP (normalised to scale 0 – 7)	TGDPnorm

Table 1: List of variables for analysis

3.2. Research hypothesis

In line with the literature review and research focus that is relationship between tourist competitiveness, its pillars and the share of tourism related in total economy, the following are research hypothesis:

- *H0 Tourism competitiveness as measured by TTCI is a significant predictor of the share of tourism related in overall economy.*
- *H1 TTCI pillars from subindices Enabling Environment and Basic Infrastructure are the best predictors of other TTCI pillars.*

4. RESULTS
4.1. Regression linear modelling
TGDPnorm has been set as target variable, where other variables have been set as predictors. Countries with very high share of tourism in GDP (>12%) and include Seychelles (27.2%), Cape Verde (18.4%), Cambodia (14.5%) and Philippines (12.4%) that consequently have high Cook's distances have been excluded from the sample as outliers to ensure better model fit. Finally, with 134 countries left in the sample:

$$Adjusted\ R^2 = 39.7\%$$

Such a value of R^2 can be considered acceptable for this type of analysis. Regression linear modelling results are summarized in the table below:

Model term	Coefficient	Significance	Importance
Intercept	-0,351	0,294	
<u>PTT</u>	<u>0,427</u>	<u>0,000</u>	<u>0,482</u>
<u>TSI</u>	<u>0,285</u>	<u>0,000</u>	<u>0,231</u>
<u>GDPPC</u>	<u>-0,000</u>	<u>0,000</u>	<u>0,175</u>
HH	-0,083	0,082	0,040
TTCI	-0,231	0,098	0,036
IO	-0,110	0,100	0,036

Table 2: Results of regression linear modelling (predictors with significance < 0.05 underlined)

Regression linear modelling points out that prioritization of travel and tourism (PTT), tourist service infrastructure (TSI) and nominal GDP per capita (GDPPC) serve as the strongest predictors of the share of tourism related in overall economy, where the coefficient of two pillars is positive, while the coefficient of nominal GDP per capita is negative. There is also negative, yet less significant influence, of health and hygiene (HH), overall index value (TTCI) and international openness (IO) pillars.

4.2. Random Forest Regression
TGDPnorm has been set as the target variable, while the other variables are set as predictors. R^2 amounts to 0.21. Results are summarized in the following table:

Table following on the next page

Trees	Predictors per split	n(Train)	n(Validation)	n(Test)	Validation MSE	Test MSE	OOB Error
45	3	88	22	27	0.489	1.301	0.882

Note: The model is optimized with respect to the out-of-bag mean squared error

Variable	Mean decrease in accuracy	Total increase in node
CRBT	0.094	4.692
PTT	0.169	3.985
TSI	0.229	2.798
GPI	0.181	2.753
NR	-0.013	2.320
ATI	0.149	2.294
GDPPC	0.113	2.119
BE	0.090	1.817
SS	0.049	1.505
PC	0.002	1.432
ES	0.005	1.392
HH	0.021	1.259
HRLM	-0.003	1.103
IO	0.011	1.062
ICTR	0.110	1.007

Table 3: Results of Random Forest Regression
(predictors with mean decrease in accuracy > 0.1 underlined)

Random forest regression generally confirms the results of Regression linear modelling, while it additionally emphasizes predictability of both pillars related to transport infrastructure (ground and port and air transport infrastructure), but also ICT readiness, however to the lesser degree compared to pillars already identified in Regression linear modelling. Interestingly, nominal GDP per capita is lesser predictor of the share of tourism related in overall economy than in Regression linear modelling, yet still significant.

4.3. Network analysis

Two regression analysis models have outlined pillars of competitiveness that are the best predictors of the share of tourism related in total economy. Network analysis has been performed including only variables that refer to pillars of competitiveness, i.e. without two economy related variables (TGDPnorm and GDPPC). The goal of this analysis is to understand which pillars of competitiveness have the highest influence on the other pillars. The results of network analyses are shown in table 4:

Table following on the next page

Network summary

Number of nodes	Number of non-zero edges	Sparsity
14	60/91	0.341

Centrality measures per variable				
	Network			
Variable	**Betweenness**	**Closeness**	**Strength**	**Expected influence**
IO	1.000	0.007	0.791	0.791
PTT	0.000	0.007	0.676	0.660
ICTR	9.000	0.009	1.460	1.460
HRLM	1.000	0.009	1.160	1.160
HH	2.000	0.009	1.160	0.658
SS	3.000	0.007	0.754	0.519
BE	4.000	0.009	1.402	0.662
PC	4.000	0.007	0.739	-0.528
ES	2.000	0.006	0.792	0.088
ATI	7.000	0.009	1.224	1.183
GPI	6.000	0.009	1.281	0.839
TSI	16.000	0.009	1.258	1.023
NR	6.000	0.008	1.323	0.337
CRBT	3.000	0.008	1.143	0.768

Table 4: Results of Network analysis (predictors with the expected influence > 1 underlined)

Network analysis shows by far the highest level of prediction of ICT readiness on all the other pillars, followed by Air transport infrastructure, Human resource and labour market and Tourist service infrastructure, while all the remaining pillars have marginal predictability of the other pillars.

4.4. Hypothesis testing
Following the research results, hypothesis H0:
- *H0 Tourism competitiveness as measured by TTCI is a significant predictor of the share of tourism related in overall economy.*

  isn't supported, since regression results show that TTCI isn't a significant predictor of TGDPnorm, i.e. TTCI -> TGDP isn't supported.

As for hypothesis H1:
- *H1 TTCI pillars from subindices Enabling Environment and Basic Infrastructure are the best predictors of other TTCI pillars.*

  is supported, since network analyses shows that pillars from the afore mentioned subindices serve as the best predictors of all the other pillars.

5. DISCUSSION
Considering the focal point of this paper, research strongly suggests negative predictive influence of GDP per capita on the share of travel and tourism in overall economy, i.e. stronger the economy, it is less likely that it will contain a high share of tourism. However, there are other factors like size and geographical orientation (like in the case of Seychelles and Cape Verde), where it is logical for small island countries in the attractive places to be strongly economically driven by tourism, regardless on the strength of overall economy.

One can argue that tourism may present an opportunity for significant increase in wealth for developing countries, but its significance as a mean of creating substantial additional wealth for developed countries is limited. Given the structure of tourism supply and its historic development models, another hypothesis can be set that higher degree of tourism development is to a large degree a result of wealth, rather than its cause. In that sense, out of the 4 original hypothesis, this research supports either economic driven tourism growth (EDTG) or bidirectional relationship (BC) hypothesis, in line with some earlier research (Webster and Ivanov, 2014). Finding that the overall value of TTCI has negative predictive influence on the share of tourism related in overall economy comes as no surprise. Tourist service infrastructure and prioritisation of tourism and travel are the only pillars with significant positive predictability of the share of tourism related in overall economy, with less significant positive predictability of both pillars related to transport infrastructure (air transport and ground/port transport infrastructure) and ICT readiness. When analysing mutual predictive influence of various pillars, ICT readiness is the greatest determinant of all the other pillars, followed by air transport infrastructure, human resource and labour market and tourist service infrastructure. It was expected that pillars from enabling environment and infrastructure subindices have the greatest predictive influence on all the others. However, it has to be noted that competitiveness pillars are largely determined based by pillars where tangible resources prevail, i.e. technology development, availability and skill of workforce and investment intensive infrastructure, where it seems that pillars that consist mostly of intangible and regulatory elements (for instance business environment) have less effect on other pillars. It also has to be noted that pillars related to resources (natural resources and natural resources and business travel) seem to have marginal influence on all the other pillars, as well as on share of tourism related in overall economy. When put at Pearson correlation test, overall TTCI and GDP per capita correlate positively and strongly (coefficient 0.7 significant at 0.01) which comes to no surprise and confirms earlier research. However, this research once again highlights complex relationship between competitiveness and performance, and also provides additional ground in the TTCI criticism and need for further improvements, especially from the point of weighing of various pillars in the index calculation, since they obviously differ significantly in terms of influence on not only economic performance, but the essence of travel and tourism competitiveness itself.

6. CONCLUSION

The aim of this research was to examine the relationship of travel and tourism competitiveness index (TTCI), its pillars and share of tourism related in overall economy. Methodologically, World Economic Forum Travel and Tourism competitiveness index for 2019 on the sample of 140 countries was used, where for the share of tourism related in overall economy data from "T&T industry share of GDP" within country reports of TTCI for 2019 have been used, as provided by Tourism Satellite Account Research by World Travel and Tourism Council for 2018. The results confirm earlier studies and fail to prove any relationship between value of TTCI and the share of tourism related in overall economy, while it has been found that nominal GDP per capita serves as significant negative predictor of the share of tourism related in overall economy. Tourist service infrastructure and prioritization of travel and tourism are the most significant positive predictors of the share of tourism related in overall economy, while ICT readiness, transport infrastructure related pillars and human resources and labour market serve as the best predictors of all the other TTCI pillars. Overall results seem to support either economic driven tourism growth (EDTG) or bidirectional causality (BC) hypothesis. The limitation of the research is primarily in the reliability of data on the share of tourism related in overall economy as provided by WTTC, which are in majority derived from calculation models, rather than by the comprehensive procedure of Tourism Satellite Account (TSA) for each country being performed, where these results have historically shown to vary significantly.

However, sample of countries where TSA is regularly done is at present moment insufficient for a large-scale analysis of this phenomena. Further implication of this research is in supporting the existing claims in scientific community for further methodological updates in TTCI, since it has been shown that not all of the pillars carry the same weight. Recommendations for future research are in the verification of this research on the available sample of tourism related economic data derived from countries where TSA is performed.

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AUSTERITY POLICY AND ITS APPLICATION IN SELECTED EU COUNTRIES

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ABSTRACT
The global financial crisis that erupted in 2007 exposed the inefficiency of the markets and economic policy makers for preventive crisis management. However, it later served as an excuse for cutting of public spending. Given the current state of global economy after recent lock down, we are now in a position to prepare an adequate response for another possible future crisys. This paper presents the idea of austerity, examples that have supported such a way of fiscal policy throughout history and a review of their results. The Keynesian school (fiscalists) argues that fiscal policy has a strong impact on aggregate demand, production, and employment when the economy produces significantly less than potential national income. Then it is necessary to provide demand stimuli. Keynesians believe in the undoubted role of government, which must actively use fiscal policy measures to increase aggregate demand. Monetarists, on the other hand, believe that budget spending and tax changes can only affect aggregate demand, production, and employment in the short term. Monetary policy, according to them, has much more powerful instruments in controlling demand and inflation. However, it is generally accepted that fiscal policy (public spending and taxation) has a significant allocation, distribution and stabilization role, especially if the monetary policy is previously restricted by beeing member or aspiring member of monetary union. In this paper we present the measures that were undertaken by selected EU member states during the recent crisys, as well as their results eg. the consequences.
Keywords: austerity, expansionary fiscal consolidation, public spending, recession

1. INTRODUCTION

With the evolution of contemporary system of material reproduction of industrial society the idea of austerity policy and its applications also evolved. The challenge posed by the cost of the First World War was an excellent testing ground for austerity policy. Debts had to be reduced, and savings came as the best way out. Later, in the Great Depression, when U.S. unemployment was at a record level, austerity policy was challenged by the view that government deficits could be economically advantageous during a recession, or when the private sector could not generate enough demand to kick start the economy from depression. John Maynard Keynes, a well-known proponent of government intervention in the economy aimed at preventing the negative effects of recession and depression. Contrary to the liberal theories of Adam Smith and his invisible hand that will eventually solve all disballances, Keynes advocated state government intervention – fiscal, as well as broader economic policy measures, to increase aggregate demand. The economic recovery during and after World War II, generated by massive demand stimuli, confirmed Keynes' ideas about the role of the state in managing the national economy.

But in the 1970s, Keynes' ideas did not prove to be a good way to conduct macroeconomic policy in the new circumstances. The new economic liberalism which did not hesitete to implement austerity measures, became conventional and was progressively implemented in government policies, especially during the most recent global financial crisis of 2007 and beyond, mostly on demand from international creditors and other relevant regional and international political and financial institutions protecting *their* economic interests.

2. AUSTERITY IN PRACTICE

The central thesis of expansive fiscal consolidation is that by cutting public spending, especially welfare spending, and slashing taxes, the economy becomes more competitive and the expectation of consumers and investors changes; with newly reinvigorated confidence they start spending again.

2.1. The gloomy 30s: Austerity in Weimar Germany

Weimar Germany is infamous for its failures. From its founding, the Republic had weak legitimacy, owing to its birth as an attempt to appease the victorious powers of the First World War, never gained acceptance from the far left or the far right or from the numerous monarchists and nationalists. The final collapse of the Weimar democracy began with the Great Depression and ended with Adolph Hitler being named chancellor. In those years, under the Brüning government, Germany experienced one of the harshest austerity policies ever implemented. The context of the circumstances that Germany found itself in is extremely important. During most of its existence, the governments of the Republic consisted of the parties of the "Weimar Coalition", the SPD, the Zentrum party and the national liberal parties. Those political groupings were the only ones that accepted the legitimacy of the Republic and they cooperated on the many important national issues, until the 1930 election, when they couldn't agree on the response to the economic crisis. Early elections were called, and they resulted in a hung parliament (and with Nazis becoming the second party by the number of votes). With the main parties unable to form a governing majority the president used his emergency powers and named Heinrich Brüning, a Zentrum politician, as the chancellor, who governed for the next two years by decrees without parliament. With his hands freed, Brüning, who regarded that the cause to the crisis was an enormous tax burden on the companies that made them uncompetitive, implemented a classical liberal approach to the crisis and saw it as an indispensable cycle of "cleansing" the market of uncompetitive companies. Faced with the economic downturn he set to achieve the following goals (Bartsch & Eismann, 2005, p.18):

- preserve and enhance the competitiveness of the German economy through internal devaluation,
- balance the state budget by raising taxes and cutting social spending,
- recover the German economy and assist the agricultural sector of the economy

To balance the budget, it was paramount to reduce the number of public servants, cut their wages significantly, and ban any public sector employment. He began in June 1930 by lowering the wages of public sector employees by 6%, then further 6% in December of that same year while at the same time introducing an emergency tax of 5% on all yearly income above 8000 marks. In 1931. he went further and slashed the wages another two times, firstly by 4-8% and the second instance by 9% which results in a wage reduction of 23-26% in a year and a half. Private sector wages weren't left untouched, they were reduced to the level of 1927 i.e. a reduction of 10-15%. Those measures led to a rise in unemployment and consequently to rise in unemployment benefits being paid from the state budget which made it further unbalanced.

To remedy that the government increased the unemployment contribution from 3% to 6,5% and introduced new taxes to finance public works to lower unemployment (Bartsch & Eismann, 2005, p.19-21). The consequences of the above-described policy were catastrophic and fatal for German economy (Räth, 2003) and democracy, although there are discussions about whether there was any real choice due to the political, social, and international constraints of the time (James, 1983). Unemployment rose above 30%, wide segments of the society were impoverished which all had a grim consequence for the entire continent (Bartsch & Eismann, 2005, p.18). Although one must be very careful to ascribe a single cause to any historical event, and the policy of austerity itself hasn't created Nazi ideology, it did facilitate its rise to power by destroying the Weimar economy, radicalizing an already polarized society, and discrediting the democratic parties which paralyzed the political system. The German economy was withering away and, unfortunately for Germany, Europe, and the entire world, the only force opposing the austerity was the Nazi party - NSDAP.

2.2. Austerity Made in U.S.A.

The story of austerity in the United States is more layered and filled with twists and turns. The Hoover administration reacted to the onset of the Great Depression by a public works program and increasing the Federal budget by a third between 1929 and 1931 which, in itself, did not produce any impact on the economy, since the entire Federal budget was about 2,5% of GDP (Stein, 1996). The reversal followed after the UK left the gold standard which prompted many investors to believe that the US would follow suit. The result was a capital flight, a rise in interest rates, and numerous bank defaults. Hoover reverted to strict fiscal discipline, regarding it as a way of showing the investors that the US has no intention to leave the gold standard. He increased taxes by 900 000 000 dollars and imposed cuts on welfare programs (at that time mostly related to veteran care) which caused the Depression to worsen. What followed next was rather peculiar from today's perspective – the 1932 presidential campaign was marked by both the Republicans and Democrats promising to impose further austerity. Franklin Delano Roosevelt, contrary to the policies he remains famous for to this day, criticized the Hoover administration of not cutting enough. FDR won the elections and did a U-turn on the economic policy. His New Deal introduced many new welfare programs and gave the government an unprecedented influence on the economy. Strangely enough, even with the New Deal policies being implemented successfully, American experiments with austerity weren't over. After the 1936 election FDR, at the behest of his Treasury secretary Henry Morgenthau implemented contractionary measures in fiscal policy which in turn caused a rise in unemployment(Jones, 2020) and the so-called Roosevelt Recession of 1937-1938 (Blyth, 2015). Every time the Federal government reacted with a tax increase or a budget cut i.e. austerity, GDP fell. (Amadeo, 2021). The real recovery began when the Federal government began a massive public spending effort to equip its Army, Navy, and the Air Force that led to full employment and final economic recovery.

2.3. Ireland and Denmark - The success story of austerity?

On the examples of Ireland and Denmark Giavazzi and Pagano tried to prove that fiscal contraction can produce expansionary effects; independently of the initial indebtedness of the respective countries, massive fiscal contraction i.e. huge wage cuts and devaluation always lead to the recovery of the economy (Alesina&Ardagna, 1998). Fianna Fáil won two elections in 1982 on the promise that it will adopt austerity measures. Ireland as "a community was living away beyond its means", as its *Taoiseach* Charles Haughey had put it in 1981 (The Irish Times, 1999). The measures of the previous government only resulted in a further economic slump. The answer was mild austerity. However, lowering interest rates worsened the economic crisis.

Despite his failed first term, Haughey won the 1987 election and implemented the harshest austerity policy Ireland has ever seen. Tax increases, fall of inflation, the interest rate drops, and substituting the public spending by private one, were all a part of his policy of stabilization (Giavazzi&Pagano, 1990). It consisted of social spending cuts, public sector wages cuts, depreciation of the currency, and through the system of collective bargaining, wage contraction in the private sector by 12 to 15 percentage points. The result was a huge GDP growth and a rise in foreign investment. According to the Bocconi School proponents[1], the crucial key to the Irish success were the cuts on the expenditure side of the budget. However, as some authors point out Ireland did not achieve the economic recovery solely through policies of the Irish *Rialtasnah Éireann*. Stephen Kinsell emphasizes that Ireland did achieve an economic recovery after austerity but that relationship between those two is a matter of correlation, not causation. The author points out that the only public expenditure that was cut was capital investment. On the contrary, current spending which consists of wages and welfare spending was consistent and even rose one year. He notes another event that occurred at the same time – the Irish recovery occurred in the context of growth in the entire Western world (Irelands trading partners) and an influx of EU funds (Kinsell, 2012). Furthermore, a tax decrease that was equivalent to 2% of the Irish GDP happened a year before the time span analyzed in the case study. The wage growth that occurred, the global economic upturn and increased emigration weren't taken into account. In other words, the Irish expansionary fiscal contraction in the 80s is a myth. Denmark is even more interesting example of the two paragons of austerity. By emphasizing Denmark as a champion of successful fiscal consolidation, Giavazzi and Pagano propagated the idea that cuts can lead to growth. In 1982 the Danish public debt rose from 29% of the previous year to 65%. Despite the strong aggregate demand, unemployment rose by 4.2%. Faced with such an abysmal state of the economy the newly formed conservative government implemented a draconian policy of austerity. Public investment was slashed, public expenditure was cut, the Danish crown was pegged to the *Deutsche Mark*. It was dubbed one of the most successful fiscal consolidations of the OECD countries up to that point. Real public deficit improved by 12,5% and structural (cyclical) deficit improved by 9,5%, public deficit was -9,1% (-8,1%) of GDP in 1982, the beginning of fiscal consolidation and ended up at a surplus of 3,4% (1,4)% of GDP in 1986, the end of fiscal consolidation (Bergman & Hutchinson, 2007). As a result of those positive results, public debt started to decrease, simultaneously GDP allegedly stimulated by a rise in domestic consumption which rose despite a drop in disposable income (due to tax increases) and investments rose as well. The average real GDP growth was 3,7%, between 1982 and 1987, the biggest GDP growth in Denmark since the 1960s. Unemployment fell as well by 2,2% in the same period. Instead of the negative short-term impact of austerity on GDP growth, as standard Keynesian economics would foretell, Denmark, according to Alesina and Ardagna, proved that fiscal contraction could have expansionary effects if done properly (Bergman & Hutchinson, 2007). Alesina and Ardagna, although revising their original claim and asserting that Denmark's case showed mixed results, remained steady in their conviction that, regardless of the public debt levels, big fiscal contraction focused on the public expenditures, followed by lowering of wages and devaluation, could lead to the growth of the economy (Alesina&Ardagna, 1998, p.516). However, the Danish economy wasn't experiencing a recession in the 1980s; the only shocks were political ones – frequent government turnover. On the contrary, the Danish economy was overheated, and its real remedy to curb inflation risk was austerity.

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[1] „Dubbed by Blyth as Bocconi Boys, Pagano, Alesina, Peroti, and Ardagna, unified in the common belief that welfare state is too bloated to avoid cuts, have held to their guns even after the European sovereign debt crisis. The Bocconi Boys are important because they were the ones to synthesize centuries-long fruition of an idea and successfully install in the halls of power. Their idea was wholeheartedly accepted by the EU institutions which prompted those institutions to force austerity on the Southern Member States…" (Broketa, Rancic, Pilipovic, 2021, p.1464).

Therefore, Denmark was in quite a different situation than other countries that implemented austerity under the influence of the expansionary fiscal contraction theory. The Danes didn't suffer a recession, which means their consumer consumption was rising and easily substituted any government cuts that would otherwise in a recession environment cause further fall of economic activity. That is the reason why the Danish experience is important. It showcases that austerity indeed is the remedy sometimes, just not in the times of a recession, but when the economy is growing too fast. Public spending cuts and tax increases must be used to cool the economy down, but that doesn't have anything to do with expansionary fiscal contraction.

2.4. Austerity in the EU

The newest round of austerity occurred in the EU in the 2010s when the entire continent, especially the Eurozone and the notorious PIIGS countries turned to austerity as the remedy to the Great Recession. Although the beginning of the recession was marked by massive fiscal and monetary stimulus by 2010 the political balance swung to the proponents of austerity, the most fervent of them Germany whose arguments were embraced by the new Conservative government in the UK. The reason behind a sudden switch from Keynesianism to austerity lies in the fear of the German political elites (and elites of some other countries) that the mere amount of the money pumped into the economy in 2008-2009 will cause galloping inflation which could only be avoided by tightening one's belt (Blyth, 2015). Germans succeeded in convincing other members of the G20 that the time for austerity has arrived. One must not blame the Germans but understand their political economy – Germany's political and economic elites are haunted by the Weimar experience of hyperinflation and that angst is built into the ordoliberal doctrine. That national trauma facilitated the adoption of expansionary fiscal contraction as the way forward not just for Germany but the entire EU. Simultaneously, the Bocconi Boys were promoting the same idea to the EU institutions. The economic results of such a policy are still fresh in the memory of many Europeans and shouldn't surprise anybody who reads these lines. The EU's economy entered a recession; the more a country slashed its public spending the deeper recession it experienced (Heimberger, 2017). The size of the lost GDP in the period of fiscal consolidation was between 5,5% and 8,4% and it can be argued that in the prevailing circumstances (already weakened economies and ineffective monetary policy of the ECB) austerity caused the recession of the European economies in the 2010s. Austerity worsened the macroeconomic woes on the demand side of the economy and caused a debt-deflation spiral that is marked by low inflation (and even deflation), rise in unemployment, growth of private debt and harder servicing of said debt, as well as growth of public debt to GDP ratio (Heimberger, 2017).

2.4.1. Tightening the belt – Croatia

Croatia, although not an EU member until the 1st of July 2013, carried out fiscal consolidation with results not dissimilar to those of other European countries. The first consolidation was undertaken by the Sanader/Kosor government. The primary deficit was cut by 0,9% by slashing the expenditure side of the budget; primarily of public capital investment cuts, wage cuts, as well as increasing revenues by VAT increase from 22% to 23% and the introduction of a crisis tax of 2%. In 2010 the first effects of those cuts could be seen in the lowering of the deficit. The same year saw cuts in veteran care (which would continue until the end of the recession). In 2011 expenditures rose but for the first time, the government cut welfare spending by lowering unemployment benefits and maternity pay (Deskar-Škrbić, 2018). The largest fiscal consolidation followed the victory of the center left Kukuriku coalition in 2012. The unforgettable statement of the then Prime Minister Zoran Milanović about the need for collective savings was pictorially described by tightening the belt, while the austerity measures of his predecessor, Ivo Sanader, were renamed from *New Deal* to *Old Peel*, because it was

important to show that even stronger austerity measures can be applied (Večernji list, 2008). The consolidation focused on the lowering of public sector wages, mostly due to lowering the health-care contribution and lowering the wage coefficients. In addition to all of this welfare spending was further cut and the VAT was increased from 23% to 25%. In 2014 the consolidation continued by another decrease in the wages of public sector, slashing veteran welfare programs and restricting welfare payouts by introducing stricter eligibility requirements and a cut in public capital investments by additional 10% (Deskar-Škrbić, 2018). The effect of the undertaken fiscal consolidation wasn't a GDP growth, as predicted by the theory of expansionary fiscal consolidation. Croatia spent the entirety of the period between 2009 and 2014 in a recession and what is most indicative that in the year of the deepest cuts (2012) the GDP fell more than in other years except for 2009 when the global recession spilled over to Croatia. In that same period, unemployment rose from 9,1% in 2009 to 17,3% in 2014. Austerity, instead of recovering the Croatian economy, impoverished it.

2.5. The curious case of Euro zone
In contrast to a country that uses its sovereign currency (a currency that they emit and that isn't pegged to any foreign currency or any precious metal) the Euro zone is not a sovereign country, with its parliament and government, with its taxes and tax authorities. There is no common European social safety net, no European army, or police. There is the ECB, a central bank without a state, and 19 different states without truly independent central bank. The national central banks must obtain emission rights from the ECB, and the ECB can't borrow to the public sector of the EU or its Member States which limits public spending because too much of it could risk the solvency of a Member State. In other words, the Euro zone countries are in some sort of gold standard that bars them from conducting an external devaluation by printing money and spending their way out of a crisis and leaves them no option but to perform an internal devaluation, also known as austerity (Blyth, 2015, p.114). Besides the Euro zone countries, the Republic of Croatia finds itself in a similar situation, even before entering the European Exchange Rate Mechanism II, because Croatian National Bank has to keep same amount of Euros in the reserve to keep the exchange at 1 EUR: 7,4 HRK rate, to enable the Croatian state to service its euro-denominated debt. That (partly) explains why its hands were tied in the 2010s when it did austerity – it had to be done to avoid state bankruptcy and to defend the exchange rate. The economy was sacrificed for the solvency of the nation. The same policy was conducted by many a nation in the 1930s when, in the middle of the Great Depression, they chose austerity to defend their gold standard. It is a legitimate public policy to have a fixed exchange rate mechanism, Croatia did that to combat runaway inflation in the 1990s, but by choosing so a country has no choice but to implement austerity in times of a recession which can be hard to do in a state that is purportedly democratic and social as the Croatian Constitution stipulates. The gold standard does not care for democracy. It is not the pathway to stability but a golden straitjacket, that impedes rational economic policy in the name of, as Blyth (2015) puts it, a truly dangerous idea.

3. CONCLUSION
Austerity had a long history in its fruition and is the result of two ever-constant ideas that follow capitalist doctrine since it started developing in Europe – frugality as a virtue and the fear of the state. When we frame the discussion in those terms, the answer is inescapable – austerity is the way forward. The Bocconi boys shared, in essence, the same angst that Smith and liberal economists had; therefore, they created the theory of expansive fiscal contraction. Unfortunately, the theory doesn't work and the only thing it accomplished was irreparable damages to numerous world economies. Not only were they wrong but their latter statistical analysis, which should have proved them correct, was based on a faulty calculation.

Expansionary fiscal consolidation doesn't work. Not a single country in human history has successfully economically recovered from a recession by doing austerity. In the best of cases, they deepened their economic problems; in the worst cases the economic and social calamity bred the conditions for extremists to take the reins of power. The reason why austerity doesn't work is that in the situation of an already weakened aggregate demand the worse that the state can do is limit the demand side further. It should do the opposite, massive fiscal expansion and public spending that would compensate for the fall in private consumption. Austerity is fatal to the economy because the instinct of every human being in times of economic uncertainty is to keep/save one's money, whether because they lost their job and consequently their source of income or because their disposable income will be cut. That basic instinct produces a chain reaction that worsens the state of the economy because a cut in one's spending is simultaneously a cut in somebody else's income. Furthermore, the other reason used to justify austerity, namely that it's used to avoid state bankruptcy, doesn't hold up. A state that issues its own currency and doesn't peg it to a foreign currency cannot go bankrupt because it is the state that controls the supply of said currency. The state isn't restricted in its spending by the amount of taxes it collects; it is limited by the productive capacities of the national economy in producing goods and services i.e. inflation that can occur if it floods the economy in money while the productive capacities stay the same. Recent financial crisis has shown the power of the dominant EU countries to impose the wrong policies, which ultimately suited only them. Europe trusted the Germans without too many reservations; at the same time, they lacked German production, work ethic and a good credit rating. The aim of this paper was not to prove the impossibility of prosperity by spending cuts policy, but to point out that the same model cannot be applied in all countries, in the same way and at the same time of business cycle, regardless of the current state of the national economy. Austerity is a remedy in two specific cases; the first is a situation of an overheated economy, when there is full employment, all productive capacity of the economy is utilized, and when there is a threat of inflation. In that case, the government must expunge the money surplus out of the economy by increasing taxes, lowering public spending, or the combination of both. The second instance is when a state doesn't have a sovereign currency, that is when it uses a foreign currency or its currency is pegged to a foreign one, or its economic policy is restrained by its obligations to creditors and nominated in foreign currency, or it needs to hold its currency exchange rate under control. It is important to emphasize that austerity does not stimulate economic growth. In the first case, the aim is to reduce economic growth, the aim of the second one is to defend the exchange rate arrangement and/or avoid state bankruptcy.

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ENTREPRENEURIAL CAPACITY OF HIGHER EDUCATION INSTITUTIONS AS A PREREQUISITE FOR ECONOMIC GROWTH

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ABSTRACT
At a time when enterprises operate in an environment characterised by fast-occurring changes and unpredictable challenges, knowledge and the ability to learn become the only way of efficiently adapting to new business conditions. In this context, higher education institutions play an important role by providing intellectual services and raising the level of knowledge in the society, thus shortening the gap between the economy and the scientific community, and contributing to their stronger interaction. This said, higher education institutions are faced with ever greater challenges in fulfilling the demands of the users of their services. The position and role of higher education institutions is gradually changing, as is their modus operandi. New solutions are sought, those focused more on the entrepreneurial component as the key factor in sustainable development of higher education institutions. Investing in research and development contributes to creating added value and impacts economic development. Spin-off companies are established, with a potential to become the initiators of economic growth. By presenting selected cases, this paper demonstrates successful examples of the functioning of higher education institutions in Croatia moving toward a technology transfer in accordance with the triple helix principle. In conclusion, in order to achieve economic growth, fast and urgent adaptation of infrastructure is necessary, along with implementation of structural reforms connected with investments in research and development in the public and private sector.
Keywords: higher education, entrepreneurship, technology transfer, research and development, economic growth, triple helix

1. INTRODUCTION
In the conditions of ever greater need for the knowledge provided by higher education institutions (HEIs) in the domain of economy, and with ever-increasing competition in the market of intellectual services in the European Union, HEIs are faced with challenges that require them to think about their own development from an entrepreneurial point of view. To add to that, there is also a new method of adopting policies that pertain to higher education in the EU, a process that includes various stakeholder groups, from government institutions to NGOs, HEIs, private companies, civil society organisations, and others. For more than half a century now, efforts have been made at EU level to create a common higher education policy, but at the same time maintain and preserve university autonomy and national identity. The common higher education policy has established forms of cooperation between HEIs in the EU, in an effort to further improve the quality of higher education and foster its values at the EU level, while at the same time bringing the intellectual and scientific potential closer to the

demands of the economy. In this context, HEIs are going beyond their national frameworks and becoming important factors in the European higher education system, stimulating with their intellectual services the development of the economic system and the society as a whole. HEIs are taking on the role of active participants in and initiators of development. However, their own development largely depends on their own entrepreneurial capacities and their entry in the intellectual services market. Depending on their available resources, capacities, expertise and experience, with obligatory maintenance of high educational responsibility, HEIs need to develop their market position outside the framework of their previous, standard, pattern-based behaviour. Recognising changes and opportunities, and timely responding to them, is what creates the prerequisites for their business development and success. Openness to new ideas, solutions and knowledge leads to faster development and better positioning on the intellectual services market. In the research-related section, using the methodological approach of a case study, this paper demonstrates on selected cases the successful examples of functioning of HEIs in Croatia in the context of technology transfer, based, among other things, on a triple helix principle. It is safe to say that, for the purpose of achieving greater competitiveness of national economy, one requires fast and urgent adaptation of infrastructure and implementation of structural reforms connected with investment in research and development in the public and private sector. By investing their own capacities and resources in the development of intellectual services, HEIs create the prerequisites for their own development, but also provide for a general welfare in the society. The first chapter gives an overview of theoretical knowledge about cooperation between HEIs on the one side and the economy and local self-government on the other, while the second chapter uses the case study method to demonstrate examples of good practice in Croatia. The paper ends with a closing chapter.

2. COOPERATION BETWEEN HIGHER EDUCATION INSTITUTIONS AND LOCAL SELF-GOVERNMENT

Continuous development of education and professional training is becoming crucial for economic prosperity and social welfare. European development trends make it clear that a broad access to quality education and training is the initiator of economic growth, social cohesion, research and innovation, and that it has a strong impact on creating better opportunities for personal growth of the citizens of the European Union (European Commission, 2018.) This is evident from the priorities proposed in the Europe 2020 strategy, which complement one another (European Commission, 2010):

- Smart growth: developing an economy based on knowledge and innovation.
- Sustainable growth: promoting a more resource efficient, greener and more competitive economy.
- Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion.

According to a study on cooperation between HEIs and the economy titled "The State of University – Business Cooperation in Europe", conducted between 2016 and 2018 by the European Commission and involving the participation of more than 3,000 European HEIs and 22,000 managers in more than 16,000 businesses across 33 countries in Europe, cooperation between HEIs and the economy can have significant positive effects on all participants (European Commission, 2018:3). Businesses are aware of the benefits that come from partnership or cooperation with HEIs as sources of future-oriented innovativeness and development. HEIs are considered a source of talent and entrepreneurship, and main facilitators of regional development. However, the study showed that university-business cooperation that takes place through four identified activity groups (research, education, valorisation and management) is at a very low level.

Cooperation in research (particularly cooperation in research and development) is the most common activity, and it is followed by education (particularly student mobility), while valorisation and management activities are far less common (European Commission, 2018:5-6). This suggests that there is a mutual connection between the activities of HEIs and the business sector, which means that there is great likelihood that cooperation within one activity will lead to cooperation in other activities as well. Cooperation between HEIs and the business sector needs to be observed as a set of mutually beneficial relationships involving a large number of potential cooperation activities, which could include even the government and other stakeholders in the social community. Potential that is visible in the cooperation between HEIs and the business sector in Europe can be presented as follows (European Commission, 2018:14):

- Cooperation in education offers potential for better aligning of curricula and the skills of HEI graduates with the demands of the labour market, improving employment possibilities for students, and recruitment for employers as well as lifelong learning programmes for the business sector.
- As far as research is concerned, HEIs offer the greatest benefit to the economy as a partner for innovation with a longer-term horizon as well as shorter-term problem solving. Conversely, the economy offers HEIs insights, opportunities, data for high quality research and the opportunity to bring research into practice and create impact.
- Through valorisation, HEIs become part of a regional innovation system acting as a source of next generation innovations, high-tech new economic operators and entrepreneurial talent for the value chains of industry.
- Cooperation in management provides possibilities for improved regional and institutional governance, the sharing of facilities, equipment and other resources in order to better leverage strategic assets.

The potential is there for HEIs to act as "anchors" upon which their cities and regions can build their competitiveness. In this context, university campuses act as platforms or hubs, modern collaborative zones that integrate excellence in HEIs and business. University-business cooperation has the potential to increase the ability of the higher education system to align and keep up with the rate of change in the areas of education and research in European societies, to create and develop talent as well as raise Europe's competitiveness in a globalised world characterised by rapid changes (European Commission 2018:14). In conclusion, it can be said that only cooperation between universities, businesses and the social community as a whole can result in creating a society the creativity and innovativeness of which will contribute to further progress. The results of these triple helix models are new forms (institutions, centres of excellence, technology parks, incubators) that do not belong to any individual actor but are created instead at the points where their interaction and cooperation meets. Etzkowitz (2013) finds that cooperation between all three sectors contributes to improvement of each of them, but also of the society as a whole. Therefore, all three sectors must be interwoven (Etzkowitz, 2008:10). Some of the successful examples of triple helix model projects worldwide are presented in Table 1.

Table following on the next page

Project	Project holder	Result achieved
Laval University, Joint International Research Unit (JIRU) – Fiore, Cormio, Di Marzo	National Research Council (Italy)	Examples and instruments of international transfers of technology
How Universities Aim to Serve the Regions - Self-Assessment Criteria for University Role Transformation: the Case of Russia – Kobzeva, Malakhovskaya, Pavlova, Gribov	Ministry of Science and Education (Russia)	Indicators that measure innovativeness and development of a university
Lombardy Region Open Innovation Platform (Italy) – Albonetti, Peduzzi, De Bartolo	Regional Research Centre (Lombardy) Innovation, university, export; support of internationalisation	Platform for: development of technology; development of knowledge; integration of comprehensive competencies connected with innovative activities, business networks and innovative networks, international relationships and interest in various technical and economic topics

Table 1: Examples of successful triple helix models worldwide
(Source: Todeva et al. 2019)

2.1. Operations of higher education institutions

Finding and spreading knowledge has always been a crucial component of HEI mission statements. Knowledge is spread in the form of high-quality academic publications, abstracts, collections of papers from conferences and presentations that all serve as a measure of success, both for HEIs and for individual research activities. The generation and transfer of knowledge is what HEIs do. This is at the same time their core business activity. However, it is necessary for HEIs to be entrepreneurial as well. They need to be aware of the demands and needs of their potential users, of the economy and of the society as a whole, in order to offer them good-quality educational programs, prepare quality projects, introduce new programs in accordance with the demands of the market, and other. The fundamental mission of HEIs is, therefore, riddled with challenges brought on by environmental change. HEIs not only wish to be at the service of public interest via their educational objectives, but they also need to focus on generating income through exploitation of intellectual property created by their employees. The primary reason for incorporating the commercial value as a component of HEI mission statements pertaining to the spreading of knowledge is the promotion of technological development for the welfare of the society as a whole. However, the commercialisation of scientific discoveries in many cases limits the spreading of knowledge in the public domain due to postponed publishing of codified knowledge in scientific publications with the aim of protecting the new discoveries by patenting them. In such cases, profit, copyright and licence agreements are the drivers of universities' research activity, rather than research just for the sake of research. Faculties that used to be focused on their teaching skills or primary scientific research can now focus their engagement on professional development in a certain area of development of intellectual property, which can result in commercial application.

Higher education is no longer observed as a system committed solely to education and research; instead HEIs are incorporating commercialisation of intellectual property in their business policies. The transformational policy of combining basic scientific research and applied technology is common practice in highly developed countries, defining higher education in a broader context. The linear model of a modern university with an emphasis on a profit-generating research mission includes discoveries, patents, licensing, granting patent rights and spreading knowledge in the form of education and publication. This mechanism that transforms research into commercial applications and added knowledge to serve the educational purpose will continue to be a model for HEIs that are intensely focused on research (Van Dusen, 2013:1-13). In the new business conditions that are present in the global market, HEIs are given an opportunity to place their intellectual services on the foreign market. Whilst in the past HEIs mostly offered their services in the form of invisible export, delivering educational programs to foreign students, at the turn of the 21st century HEIs were given an opportunity to exchange knowledge through various international congresses and conferences, and to offer intellectual services to public and private operators in the international market. One can also observe the appearance of a conceptual model of globalisation of national educational systems that see education as an enterprise (Australia, Great Britain, Germany, and the USA), with its objective being the creation of financial gain in the international market of educational services (Stukalova, Shishkin and Stukalova, 2015:277)

2.2. The entrepreneurial university

Universities fulfil a key role in the society through education and research, and generation of new knowledge (Abreu et al., 2016; Dalmarco et al., 2018). However, apart from teaching and researching, many universities set a third objective before themselves, this being the transfer of knowledge (Munari et al., 2016). According to OECD, knowledge transfer implies "commercialising public research by universities and public research organisations to generate economic and social value and develop industry," through various mechanisms. One of these mechanisms is the transfer of technology that pertains, among other things, to licensing patented inventions and to academic entrepreneurship (Markman et al., 2005). According to the Ministry of Science and Education (2021), technology transfer implies a process of transforming research results into new or improved products, services or processes that have certain market value. This is precisely the reason why ever more universities with significant profits are attempting to find a solution to effectively manage the sales of their ideas and inventions (Aldridge, 2017). So, for instance, Harvard, Boston and Stanford universities, but also many others, are establishing business incubators and research parks in order to stimulate new business ventures and research, and consequently trigger economic growth. An important role in this entire process is played by technology transfer offices (TTOs), which act as mediators in the transfer of technological innovations from the laboratory to the industry (Markman et al., 2005). Entrepreneurship answers the questions why, when and how innovations and inventions reach their final stage, which is market placement. This is preceded by scientific research as a key element, one that is particularly prominent at universities as research-oriented institutions (Etzkowitz, 1997). Consequently, it is evident that "knowledge spillover" research and continued interaction between the inventors and the users of technology enables faster gaining of new knowledge. This is why it is necessary to speed up the transfer of knowledge and innovations at universities through establishing TTOs, business incubators and science parks. Thanks to the Technology Transfer Act, the number of scientific discoveries at US universities increased rapidly, as did the number of newly-established companies dealing with advancement of technology created at universities, which actually demonstrates that there is great interest for this kind of cooperation between universities and the industry.

This is how US universities, through their TTOs, are becoming integral parts of their broader business communities that bring together scientists, business incubators, science parks and the industry (Markman et al., 2005). At the same time as this is happening in the US, European universities are not lagging behind in this segment either. One such example is the University of Oxford as one of the major universities in the UK. Back in 1987 it established a company called Oxford University Research and Development Ltd, which was renamed Isis Innovation a year later, and then again Oxford University Innovation (OUI) in 2016. Together with other university constituents, OUI cooperates with scientists in helping to contribute to commercialisation of various discoveries, while ensuring intellectual property protection and proper commercialisation through licensing and establishing spin-off companies (Technology transfer from the University of Oxford, 2010).

2.2.1. Role and significance of TTOs
Technology transfer at universities takes places through cooperation with partners from the industry. An important role, that of mediators in the process, is played by TTOs. According to OECD, a TTO at a university or research centre/institute has the task of identifying and managing intellectual property, protecting it and commercialising it. Apart from that, another role of the TTO is to establish and manage spin-off companies and maintain contact with partners from the industry. A TTO can be observed as an outstretched arm extended to partners from the industry in order to resolve technological difficulties and scientific problems emerging in the industry, as detailed in Figure 1 (Bucsai, 2013). More specifically, a TTO connects researchers with university management that will help them in realising their intentions. On the other side there are technology recipients and service users that will assess the success (or lack thereof) of the new technology and that will serve as the benchmark to which the companies have to adapt.
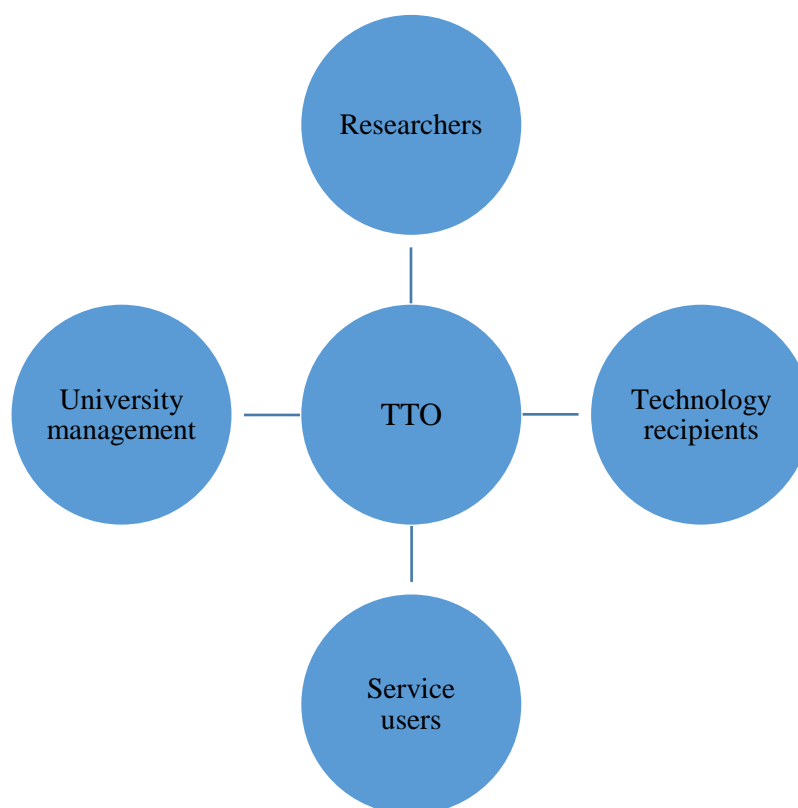
Figure 1: A TTO's connection with the university and the market
(Source: Bucsai, 2013)

This reduces the transaction costs between the recipient and provider of technology, by reducing both parties' negotiation costs. TTOs often appear as a third party to protect the interests of scientists (Hülsbeck et al., 2013). In order for the technology transfer process to be successful, one has to have employees who are well versed in working both at the university and in the corporate world (Munari et al., 2016). The number of TTOs at universities increases year after year. According to AUTM, only about 30 universities had a TTO in the US in 1979, but this number surged to 174 by 1999, owing to the acts adopted in 1980. Increase in the number of TTOs became even greater in the 1980s, 1990s, and 2000s, ultimately resulting in a total of 155 universities having an established TTO in 2012. However, only a few of them generate significant revenue from licensing patents, with 8 universities earning 50% of their total revenue from licensing, and 16 of them generating almost ¾ of their revenue that way (Center for Technology Innovation at Brookings, 2013). Brought about by the activities of TTOs, economic development is just one of the factors that are considered to be the result of work of TTOs. Nevertheless, it is one of the most important factors and in most cases, it is the only one that is noted (Lowe & Quick, 2005).

2.2.2. Establishing new companies

One of the most observable effects of the technology transfer process at universities is the number of newly-established companies that use those new technologies as their platform for development of a spin-off company (Lowe & Quick, 2005). Spin-offs are new companies established by an individual who is a member of university staff or who is connected with them, with a view of commercialising the technology transferred from the university (Bradley, 2013). Most annual reports reveal the economic impact of such company development. This is evident due to the fact that spin-offs bring numerous benefits, such as new job openings or human capital (Lowe & Quick, 2005). This shows that the connection between the university and the spin-off company is a positive thing, because the university provides quality staff and specialised facilities needed for unhindered development and commercialisation of technology.

3. METHODOLOGICAL APPROACH AND RESEARCH

For the purposes of conducting this research, the methodological approach used in this paper is a case study. In other words, it presents selected examples as stories of success when it comes to the functioning of HEIs in Croatia in the context of technology transfer, implemented, among other things, based on a triple helix model. Four examples of universities have been researched and analysed in this paper, demonstrating the way technology transfer is implemented at those universities in procedural and systematic terms. Croatian scientific and research sector comprises 25 public scientific institutes, falling under the following categories: 10 universities (8 public ones and 2 private ones), 72 public university constituents (faculties, academies and departments), 6 colleges, 4 public polytechnics. Public scientific institutes' primary activity and purpose is the conduct of scientific research, contribution to the scientific area in which they are registered, and contribution to social development in general. Institutes are expected to participate in creating study programs, especially PhD programs, as a way of transferring knowledge and establishing scientific and professional cooperation with the public and private sectors in Croatia and abroad (Agency for Science and Higher Education, 2021). The purpose of TTOs is to provide support to researchers at public scientific organisations across all stages of implementation of technology, from the initial idea, identifying market potential, process of protection and commercialisation of intellectual property through licensing or establishing knowledge-based companies (spin-offs, spin-outs) (Ministry of Science and Education, 2021). Some of the most successful examples of technology transfer in Croatia are listed below.

3.1. University of Rijeka

University of Rijeka meets the infrastructural requirements that enable it to implement technology transfer, and it comprises of the following constituents:
1) University of Rijeka (four university departments, 11 faculties)
2) University of Rijeka Technology Transfer Office
3) Science and Technology Park of the University of Rijeka (STEP RI)

As a result, its TTO is capable of strengthening the bond between the University and the economy, stimulating research and professional work, and supporting protection and commercialisation of the results of that work across individual stages, from the idea, to intellectual property protection and ultimately its commercialisation (Karanikić, 2017). On the other hand, services offered by the TTO to scientists in the transfer of results of research and professional work of the University are the following:

- Education of the University's scientists and students regarding the importance of transfer of technology and intellectual property
- Expert evaluation of the commercial potential of research results
- Consultancy with regard to possibilities of protecting intellectual property and ways of commercialising it
- Finding partners for such commercialisation
- Finding sources of funding
- Presenting and promoting results of scientific research and professional work to the scientific, professional and general public.

This mutual interaction gives the students of the University of Rijeka an opportunity to turn their creative ideas into marketable goods and establish innovators' associations. One other of those objectives is to encourage self-employment and entrepreneurship, which gives the city of Rijeka a source of income for the city budget and an opportunity for economic growth. That is precisely why the City of Rijeka supports the work of young innovators and provides the resources needed to encourage inventiveness. Those resources are allocated by the Association of Inventors from Rijeka, according to specific allocation criteria.

3.2. Centre for Research, Development and Technology Transfer of the University of Zagreb

The Centre for Research, Development and Technology Transfer (CIRTT) helps research groups at the University in providing funding for research and development and for managing research projects. The CIRTT also helps research groups and partners from the business sector in establishing cooperation in the development of technology and commercialisation of intellectual property created at the University's constituents. The CIRTT provides special support to researchers and students in establishing companies and operating in a way that is knowledge- and technology-based.
The CIRTT regularly organises individual support, education and other events intended for researchers and students of the University (CIRTT, 2021).

3.3. Technology Transfer Office of the University of Split

The Technology Transfer Office is the place where science and the economy come together and at the same time the best starting point for finding partners in the economy who require the knowledge and the research and analytical capacities of the University.

Activities of the Office are particularly focused on fostering a culture of innovation and entrepreneurship based on knowledge and its commercialisation, and on the commercialisation of the results of scientific research (Technology Transfer Office of the University of Split, 2021):

- Consultancy regarding intellectual property issues
- Expert assessment (evaluation) of the technical and commercial potential of research results
- Establishing and improving cooperation between scientific and business communities
- Intellectual property protection and related strategies
- Finding strategic partners for cooperation with the University and commercialization of research results
- Creating opportunities for internationalization of business and for entering new markets
- Education regarding recent and applicable entrepreneurial knowledge
- Other issues related to the starting and successfully conducting entrepreneurial activities.

3.4. Tera Tehnopolis

This technology transfer office commercialises the intellectual property of Josip Juraj Strossmayer University of Osijek and strengthens the connections between the University and the economy. In 2015, with the help of HAMAG-BICRO and The World Bank, Tera Tehnopolis became the regional office for implementation of the Program for support of technology transfer offices, which finances the activities of commercialisation of scientific research results. It is precisely that funding that is available to the University's researchers who wish to commercialise the products/services developed with the help of research projects. In addition to that, Tera Tehnopolis is a recognised centre for implementation of the Proof of Concept (PoC) program (Tera Tehnopolis, 2021). Apart from the above-mentioned institutions, mention should also be made of the Department for Projects and Knowledge Transfer of the Ruđer Bošković Institute, which performs tasks related with intellectual property and knowledge transfer (Ruđer Bošković Institute, 2021).

4. CONCLUSION

HEIs are faced with challenges brought on by changes in the environment in which they operate. Since the beginning of the 21st century, knowledge and ability to learn have become the only way one can efficiently adapt to new business conditions. In the context of those trends, HEIs are gradually changing their position and role, as well as their modes of operation. New solutions are sought, those that will be focused more on the entrepreneurial component as the key factor of sustainable development of HEIs. By investing their own capacities and resources in the development of intellectual services, HEIs create the prerequisites for their own development, but also provide for a general welfare in the society. This is certainly supported by a new method of adopting policies that pertain to higher education in the EU, a process that includes various stakeholder groups, from government institutions to NGOs, higher education institutions, private companies, civil society organisations, and other HEIs operating in the European Union, which is an attempt to further improve the quality of higher education and promote its values at the level of European Union, while at the same time bringing the intellectual and scientific potential closer to the demands of the economy. In this context, HEIs are going beyond their national frameworks and becoming important factors in the European higher education system, stimulating with their intellectual services the development of the economic system and the society as a whole. HEIs are taking on the role of active participants in and initiators of development. However, their own development largely depends on their own entrepreneurial capacities and their entry in the intellectual services market. Depending on their available resources, capacities, expertise and experience, with obligatory maintenance of high educational responsibility, HEIs are developing their market position outside the

framework of their previous, standard, pattern-based behaviour. Recognising changes and opportunities, and timely responding to them, is what creates the prerequisites for their business development and success. Openness to new ideas, solutions and knowledge leads to faster development and better positioning on the intellectual services market. HEIs are attempting to reach agreements and establish cooperation with the local self-government and entrepreneurs, and rely on commercialisation of their services to increase revenue and position themselves in the intellectual services market as important providers of intellectual services. When Croatia joined the European Union, it got access to a large market. At the same time, that put HEIs in a position where they were faced with new challenges brought on by the higher education services market of the EU. Following the example set by developed economic systems found in the west of Europe, Croatia should aspire to establishing university-based, but also science-oriented spin-off companies that are the key to self-sustainability of funding of higher education in Croatia. Establishment of science-oriented spin-off companies should change the current negative trend, characterised by only a handful of companies in Croatia achieving cooperation with scientific institutions in the context of research and development. Cooperation between national scientific institutions and the industry, through actual projects, could become a firm foundation for the progress and development of Croatian economy in the future. Despite the fact that the technology transfer process is still progressing at a somewhat slower pace, greater interest in this kind of economic development has nevertheless been noted. After all, the technology transfer process should serve to commercialise the discoveries with the greatest potential, which are in high demand on the market, and consequently this is an ideal opportunity for both young but also seasoned, already renowned scientists to come forward and contribute to economic growth on both the local and the national level.

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CORONA VIRUS - SECURITY THREAT OR EPIDEMIOLOGICAL CRISIS?

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ABSTRACT
COVID - 19 pandemic prompted a change in the security paradigm and challenged the scientific community to define new approaches and new methods of researching security phenomena posing a threat that will "reshape our world". The aim of this research was to contribute to the understanding of the "new safety paradigm" created by the COVID-19 pandemic, and to analyze the development potential of crisis transformation of influenza (Coronavirus Diseases) in relation to the age of the population exposed population of the Republic of Croatia. Research results have shown that there has been a significant change in the degree of exposure of certain age groups in the population of the Republic of Croatia, that the most vulnerable age group is the age group from 0 to 30 years, and in this group the greatest risk is borne by high school and university students in the first years of higher education. It has also shown that the level of exposure no longer follows the age structure and that only one measure, no matter how "ideal", does not solve the problem when the crisis has a strong potential to transform its effects on the population. The Government of the Republic of Croatia considers the epidemic (pandemic) COVID-19 a "developed crisis" and not a "security threat" which results show to be completely correct by confirming the research hypothesis that COVID - 19 can be reshaped according to the age of the population.
Keywords: *COVID-19, population, age, security, crisis*

1. INTRODUCTION
In their work, the authors Tatalović S., Malnar D. (2021) concluded that "the outbreak of the COVID-19 pandemic in early 2020 led to an unprecedented crisis of global proportions that led to a blockade ..." or ".. .threatened international and national security ". Likewise, the authors concluded that this was a "recognized threat" defined in strategic security documents, but there was no successful response from security systems to that threat. The reason for this, according to the authors, is the "old" understanding of security that still relies on traditional security studies or a traditional concept that "does not allow full recognition of the causes of threats and crises and their correlation." Therefore, the aforementioned authors hypothesized that the COVID - 19 pandemic prompted a change in the security paradigm, ie challenged the scientific community to define new approaches and new methods of researching security phenomena (phenomena and their manifestations). In this context, one of the most important security phenomena that occurs in various manifestations or manifestations of a situation or event is certainly a threat or crisis, especially when it comes to national and international security. The COVID-19 pandemic poses a threat that, according to European Commission Vice President Josep Borrell Fontelles, will "reshape our world ". Therefore, the question justifiably arises - does the Republic of Croatia treat the COVID-19 pandemic as a security threat or a crisis?

2. SECURITY THREAT OR CRISIS

A threat (lat. Vis compulsiva) represents a continuous intention to do some evil, and such evil must be impermissible. Therefore, the notion of threats has entered the criminal legislation of many countries, so the Republic of Croatia defines a threat in Article 139 of the Criminal Code of the Republic of Croatia as follows: " Whoever seriously threatens another with evil in order to intimidate or disturb him will be punished by imprisonment ...” and further: “… who seriously threatens to kill, seriously injure, abduct or deprive another person of his liberty, or inflict harm on person by arson, explosion, ionizing radiation, weapons, dangerous weapons or other dangerous means, or destroy social status or material survival will be punished by imprisonment .. “. As it can be seen from the Criminal Code, the basis of any threat is an evil that can be defined in the most general sense as "that which exceeds any given and generally recognized norm." Evil has been mentioned in various forms throughout history, and one of the sources is the Bible (Revelation 6:8), which mentions the Riders of the Apocalypse and specifically mentions "The Rider on a Pale Horse" and mentions the following: " …a horse and on it a rider whose name was Death, and behind him went the tomb. And power was given unto them over a quarter of the earth, to kill with the sword, and with hunger, and with death, and with the beasts of the earth”. The basic feature of the last of the four riders (white, red, black and pale) is that "..sows death by spreading plagues." The evil brought on by the "white rider" is most often associated with infectious diseases, such as the "Spanish flu", "Smallpox", "Tuberculosis", "Malaria", "Plague" and other infectious diseases that took millions of lives, despite great advances in medicine. So when it comes to the threat associated with the "fourth rider" then it is a pandemic that "..has power over a quarter of the earth" and it comes as a plague (contagious disease in animals that has passed to humans) because as such it has an explosive spread ability. So, as certain authors pointed out in their research (Tatalović S., Malnar D.:2021) which is also proved by some historical facts, it is a "recognized threat", ie an already recognized evil. This is confirmed by the research of the author (Fatović F.S., Šain S.,: 2020) published in “Liječnički Vjesnik”, which analyzes the "Spanish flu" as the cause of death in the City of Zagreb in 1918. Namely, the research established that the first cases of people suffering from the "Spanish flu" appeared in July 1918. From September 1st to the end of 1918, a total of 861 people died from the "Spanish flu" and complications of pneumonia, and analyzed autopsy protocols showed that the regular complication was pneumonia of a hemorrhagic nature. The authors state that some other complications of influenza were mentioned in the literature at the time, such as fibrous pleurisy, purulent bronchitis, pulmonary edema, pulmonary abscess, cardiac hypertrophy, acute inflammation of the larynx and trachea, and purulent pleural inflammation and pulmonary gangrene. Nothing is different in the case of the flu caused by the coronavirus. Thus, influenza epidemics have been known since ancient times, as the authors state, and experience for thousands of years has pointed to the fact that there are certain laws in their occurrence. In his work with the famous title "The problem of constant change of the influenza virus" 45 years ago, Pasini (1976) pointed out and confirmed a number of other research results related to the variability of influenza virus. Certain authors (Fatović FS, Šain S.,: 2020) state certain analogies, for example, that the Asian strain from 1957 already appeared once in the epidemic of 1889/90 and the Hong Kong strain from 1968/69 it has already caused a pandemic, which may lead to the conclusion that a pandemic strain that would be antigenically similar to that of 1918 can be expected from the Spanish flu pandemic. But despite the aforementioned facts, and despite the fact that in the last hundred years, thanks to specific therapies and prophylaxis, infectious diseases have been largely successfully controlled and suppressed, the recent outbreak of coronavirus confirms the 1976 hypothesis that the influenza epidemic is a cyclical chronological phenomenon. Many facts and findings related to the occurrence of this infectious disease are still undiscovered, and the occurrence itself is insufficiently investigated.

2.1. An epidemic as a security threat

It is reasonable to ask the question, are infectious diseases, whether they occur as an epidemic or a pandemic, covered by the security policies of nation states? The authors (Roksandić S., Mamić K.,: 2020) therefore question another very important issue, analyzing the period from VI. century when the "Justin's plague" appeared until the cholera epidemic that appeared after the earthquake in Haiti, which reads: "COVID-19 pandemic - is it an unexpected security threat or the historical continuity of mankind?" written that in the case of coronavirus it is not an "unexpected threat" or as mentioned in the introduction it is an already "recognized threat". But it is also a matter of nation states and the international community, despite "historical facts," not recognizing an epidemic or pandemic as a security issue, or failing to recognize health security as an important area of national and international security. This is evidenced by the insight into the National Security Strategy of the Republic of Croatia in which infectious diseases (which have the potential of an epidemic or pandemic) are not recognized as security threats of national importance, as well as the fact that the European Union does not have a common health policy regarding infectious diseases as security threats. National Development Strategy of the Republic of Croatia recognizes two priority areas of public policy until 2030 in strategic goal no. 5 "Healthy, active and quality life":

1) Quality and affordable health care and care, and
2) Health, healthy eating habits and active life through sports.

In this context, strategic goal 5, ie priority 1 states the following: "Given the impact of other departments on health (environment, infectious diseases such as zoonoses, etc.), inter-professional cooperation and the development of a cross-sectoral approach will be promoted", ie Health and health care policy priorities state: "Modernization of health infrastructure by building new or renewing existing capacities" and "improvement of public health activities under the leadership of the Institute of Public Health in order to combat infectious and non-communicable diseases". The following is evident from what has been written before:

- that the Republic of Croatia in its strategic documents does not anticipate an epidemic or pandemic of infectious diseases such as zoonoses[1] as a security threat,
- to view it as a public health problem in the solution of which the Croatian Institute of Public Health occupies a key place.

Namely, this is confirmed by Article 3 of the Homeland Security Act, where a threat is defined as an event, process or action that may or intends to endanger national security and prevent or hinder the achievement of goals defined by the national security strategy, and the homeland security system as a system of internal resources affairs, defense, security - intelligence system, civil protection, fire, foreign affairs and other bodies that perform organized and coordinated tasks and tasks of identifying, assessing, reducing or eliminating security risks of importance for the national security of the Republic of Croatia. It should be emphasized that the mentioned article also defines the concept of risk, which represents the possibility or potential of negative consequences for national security, and is determined on the basis of an assessment of the probability of occurrence of a harmful event and possible harmful consequences. Article 9 stipulates that coordination for the Homeland Security system shall, on an annual basis or as appropriate, propose to the National Security Council to discuss security threats and assess national security risks and to take measures to address them. It is important to note that the head of the Coordination for the Homeland Security System is also the head of the central state administration body responsible for health.

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[1] Zoonosis (Greek zoon - animal and nasal - disease) is a group of infectious diseases common to humans and some animals, and can spread from animals to humans and vice versa. The causes of zoonosis are bacteria, viruses, parasites, fungi, etc., and influenza (influenza) belongs to this group of diseases.

The session of the Coordination for the Homeland Security System was held on April 8, 2020 and was dedicated to the current crisis situation of the coronavirus epidemic. "The current situation, measures and activities managed by the Government of the Republic of Croatia, which are related to preventing the spread of the coronavirus epidemic, were discussed. It was concluded that all components acted in accordance with their responsibilities and powers, using existing knowledge, capabilities and resources, and that all measures taken so far to combat the epidemic were appropriate and need to continue to be implemented responsibly at all levels. Analyzing the current situation with the epidemic and earthquake through four phases of emergency or crisis management, which include prevention, preparedness, response and recovery, it can be concluded that the system's response to both crisis events was good and fast, although the epidemic was developmental and the earthquake a sudden event. " Based on the above, it can be seen that the Coordination for the Homeland Security System views the corona virus epidemic as a development emergency or a "development crisis" in accordance with Article 3 of the Homeland Security Act which defines a crisis as an event or condition threatening national safety, health and lives of citizens, significantly impairs the environment or causes significant economic damage, and the response to such an event or situation requires coordinated action by state bodies and the coordinated application of measures within the competence of these bodies. In response to this "development crisis" caused by the coronavirus epidemic (pandemic), the Government of the Republic of Croatia decided to act in accordance with the Law on the Protection of the Population from Infectious Diseases and the Law on the Civil Protection System. Why is this important?

2.2. An epidemic as a developmental crisis

Coordination for the Homeland Security System as an interdepartmental body responsible for harmonizing and coordinating the work of the Homeland Security System defined the coronavirus epidemic (pandemic) in the Republic of Croatia as a "development crisis" and included four phases in crisis management: prevention, preparedness, response and recovery. A crisis (German Krise <Latin crisis: judgment <Greek κρίσις: decision) is a profound and comprehensive disruption of an individual or the functioning of society with strong and more or less severe and lasting consequences. A crisis, no matter how difficult it may seem, can be an opportunity for the development of new values, it also means a threat and an opportunity, but its main feature is uncertainty because it represents a turning point between doom and salvation. Namely, it penetrates deeply into a person's integrity, puts it to the test, confusion and feelings of helplessness occur, especially if the person as an individual was not ready for a crisis and cannot cope with the loss of freedom of movement or social contacts. The worst that a crisis can cause is a state in which a person as an individual does not feel his environment safe, so he does not want to change his habits and accept a "new state" in which there are restrictions on the achieved human freedoms. Due to all the above, the terms "crisis management", "crisis situation", "crisis management" and the like are increasingly in circulation. The Prime Minister of the Republic of Croatia in an interview published on 16.12.2020. under the title "We are determined to turn all the challenges of the crisis into opportunities, and potential vulnerabilities into advantages" confirms this. This is also confirmed by the collection of papers of the Institute of Tourism entitled "COVID-19: threat and opportunity for Croatian tourism" (Ćorak S., Gjurašić M. „ ed .: 2021). Observing the coronavirus epidemic (pandemic), the Government of the Republic of Croatia decided to deal with the crisis and applied the provisions of the Law on the Protection of the Population from Infectious Diseases and the Law on the Civil Protection System. The first law determines infectious diseases whose prevention and control is of interest to the Republic of Croatia as well as measures to protect the population from infectious diseases, while the second law regulates the operation of civil protection as a system of public interest for the Republic of Croatia and

security of the Republic of Croatia. The Government of the Republic of Croatia has adopted the "Report on the effects of the implementation of measures under the Protection of the Population from Infectious Diseases Act during the epidemic of the COVID-19 disease sampled by the SARS-COV-2 virus. In the Republic of Croatia for the period from March 11, 2020 to January 15, 2021 the Official website of the Government for timely and accurate information on coronavirus was established "(https://www.koronavirus.hr/). Based on timely and accurate data available at https://www.koronavirus.hr/podaci/489, a survey was conducted.

3. RESEARCH GOAL, HYPOTHESES AND METHODOLOGY
The aim of the research, the results of which are presented in this article, was to contribute to the understanding of the "new safety paradigm" created by the COVID-19 pandemic, and to analyze the development potential of crisis transformation of influenza (Coronavirus Diseases) or SARS CoV-2 (Severe acute respiratory syndrome coronavirus 2) in relation to the age of the population exposed population (population) of the Republic of Croatia in accordance with the Act on the Protection of the Population from Infectious Diseases. The research hypothesis was as follows:

- **H_0:** COVID - 19 can be reshaped according to the age of the population
- **H_1:** COVID - 19 cannot be reshaped according to the age of the population

The term population means the population of a nation-state divided into age groups from 0 to 90 years, with an interval of 10 years. The official data from the Central Bureau of Statistics of the Republic of Croatia, the population estimate of the Republic of Croatia for 2019 published on 11 November 2020 and data from the Government's Official Website for timely and accurate information on coronavirus were used as reference data. The crisis in which the population finds itself today stems from the degree of exposure of the population (population of the Republic of Croatia) to coronavirus (covid), which is clearly shown by official data of the Government of the Republic of Croatia (https://www.koronavirus.hr/podaci/489).

The question is what is the exposure of the population to that flu (influenza)?

In order to answer this question, it was necessary to estimate the size of the population, which is the population of the Republic of Croatia. The same was done on the basis of the Press release of the Central Bureau of Statistics of the Republic of Croatia dated 11 September 2020 entitled "Population estimate of the Republic of Croatia in 2019". According to the previously mentioned estimate, the population by age groups would be as follows as shown in Figures 1 and 2. Figure 1 shows an estimate of the population by age groups at intervals of 10 years.
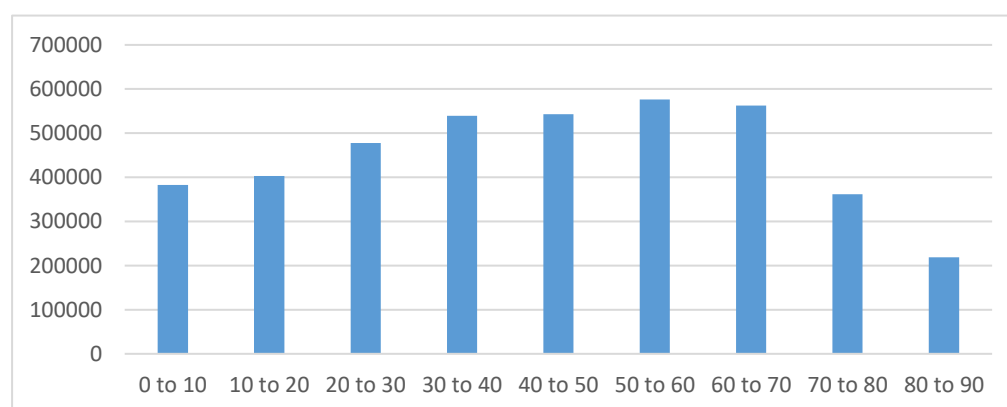
*Figure 1: Age structure of the population of the Republic of Croatia in 2019
(Source: Central Bureau of Statistics of the Republic of Croatia)*

Figures 2 show the age structure of the population in three groups, as follows:
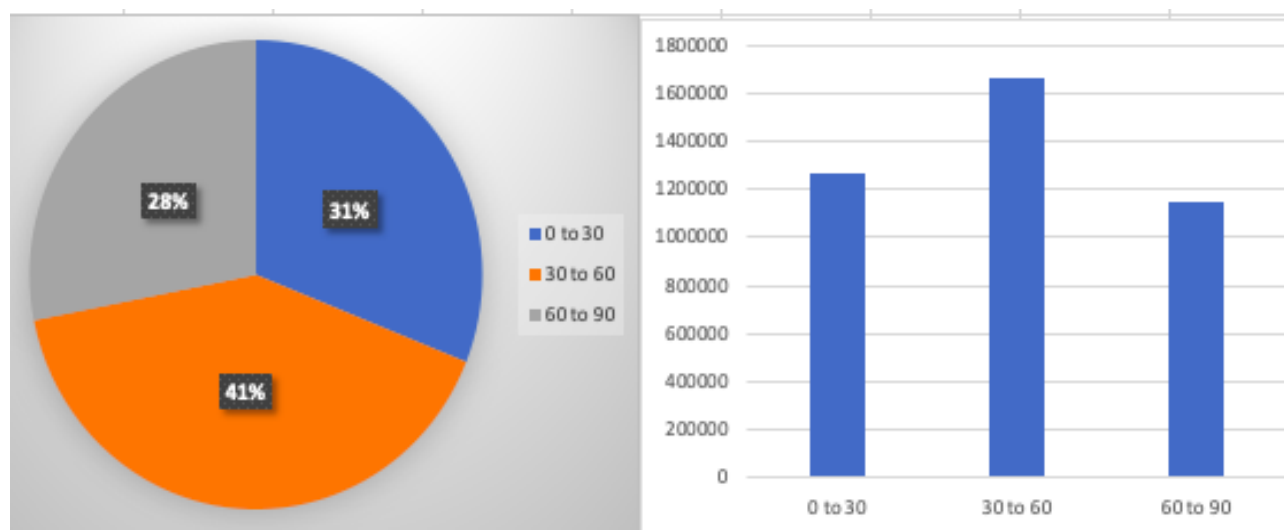
Figure 2: The structure of the population of the Republic of Croatia by age groups at intervals of 30 years
(Source: Central Bureau of Statistics of the Republic of Croatia)

As the official data enable the analysis by age groups, as shown in Figure 3, the analysis of the exposure of the population by age groups was approached in such a way that for the periods autumn 2020 and autumn 2021 the data on the average maximum number of infected persons were observed and compared.
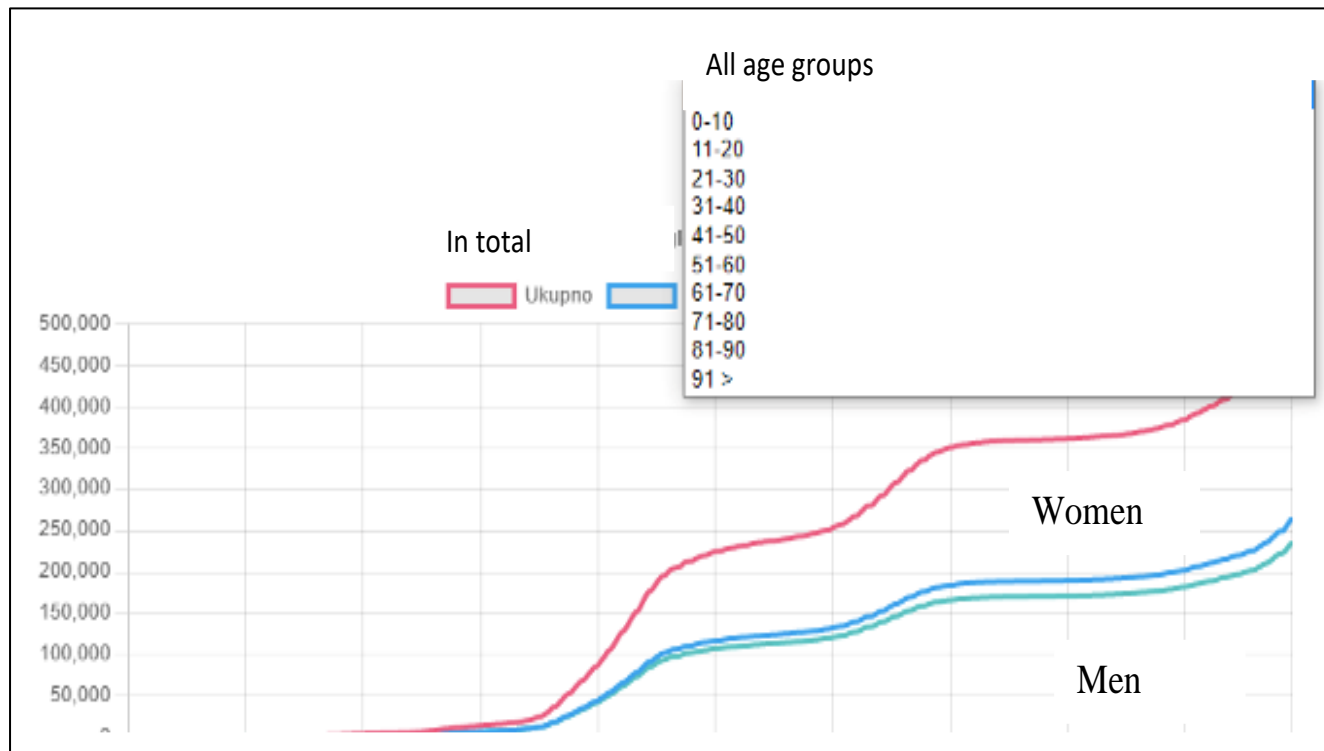
Figure 3: Exposure level (all counties, all age groups) autumn 2020
(Source: Government, www.koronavirus.hr)

4. RESEARCH RESULTS

Figure 4 shows the level of exposure of the population in the fall of 2020, while Figure 5 shows the level of exposure in the fall of 2021.
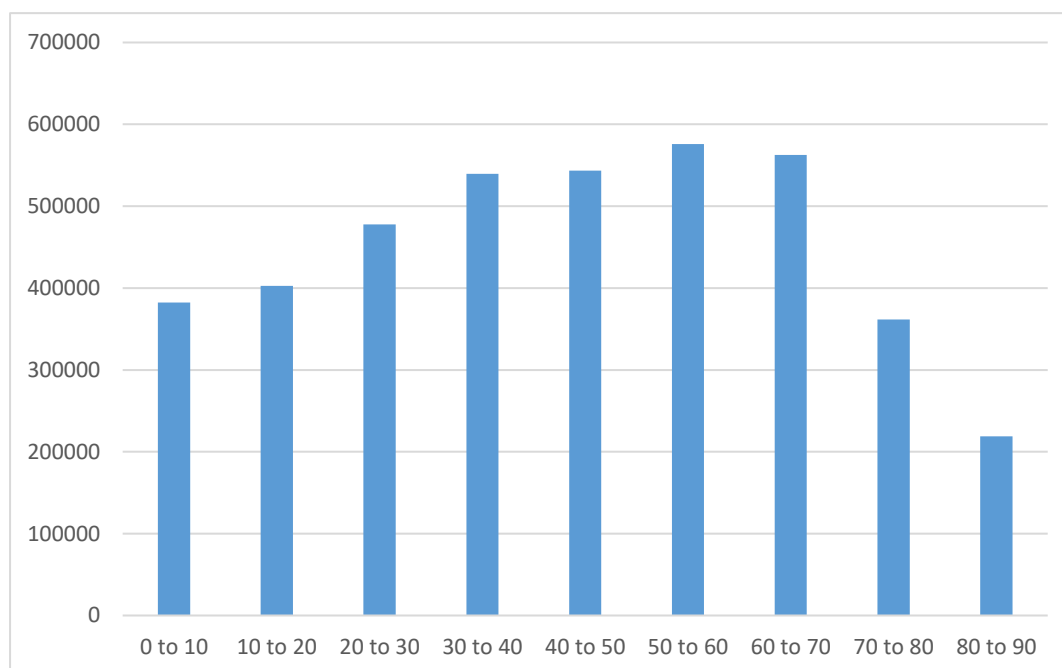
Figure 4: Exposure level (all counties, all age groups) autumn 2020
(Source: Government, www.koronavirus.hr)
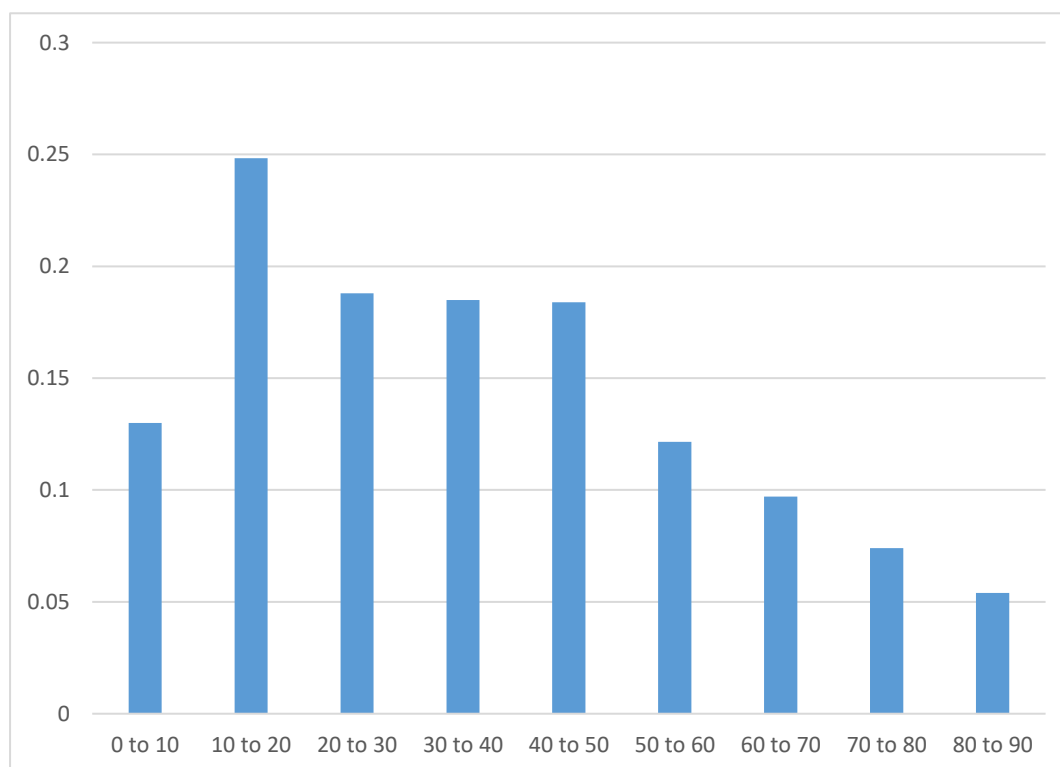
Figure 5: Exposure level (all counties, all age groups) autumn 2021
(Source: Government, www.koronavirus.hr)

Figure 6 shows a comparative diagram of population exposure by age groups in 2020/2021.
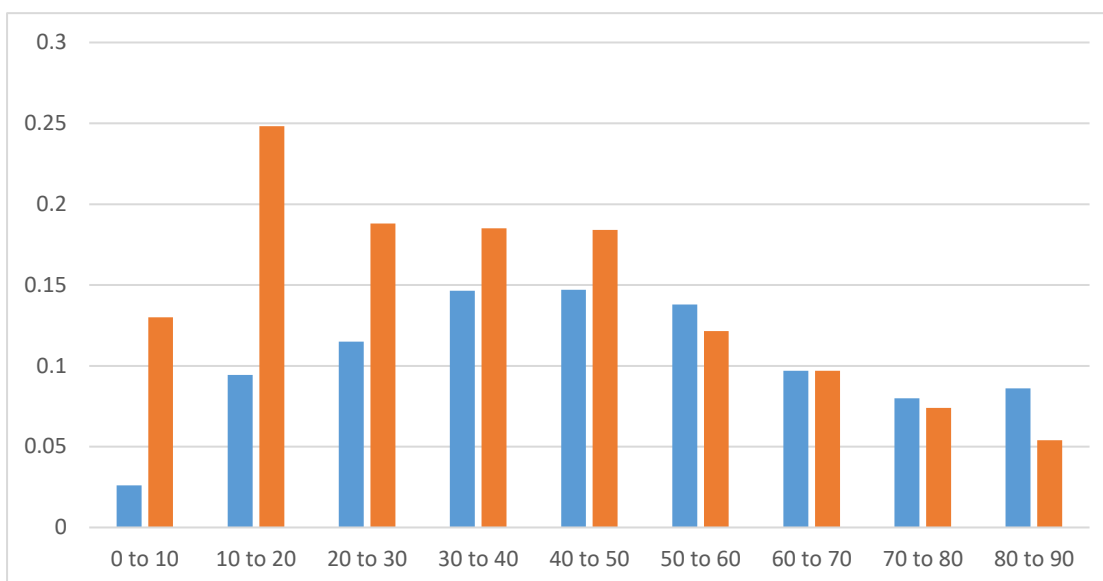
Figure 6: Comparative diagram of population exposure by age groups 2020/2021 year
(Source: Government, www.koronavirus.hr

Undoubtedly, it can be observed that there has been a significant change in the age groups that are most exposed to the threat of coronavirus, and thus the transformation of the exposure of the population. The diagrams in Figure 7 show this best.
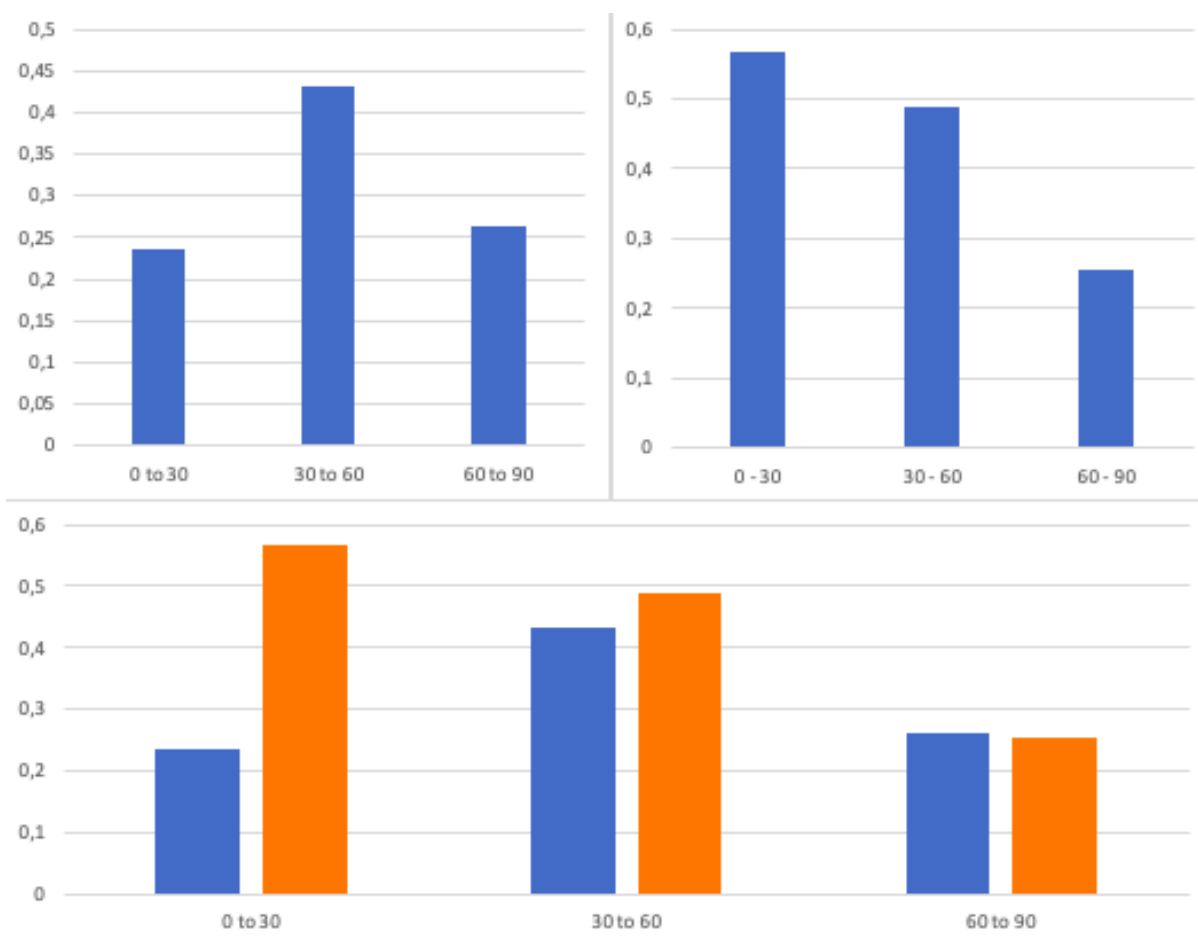
Figure 7: Exposure level - single and comparative presentation
(Source: ibidem)

5. DISCUSSIONS OF THE RESLUTS
The presented results undoubtedly indicate that there was a significant change in the exposure of age groups to the threat of coronavirus, which changed the category of endangerment, ie, it can be argued that there was a transformation of the population. This is also shown in Figure 8 and Figure 9. Namely, in Figure 8 it is clear that the degree of exposure is proportional to the age structure of the population, while Figure 9 shows a significant change in this regard. The degree of exposure in relation to the age structure of the population has changed significantly.
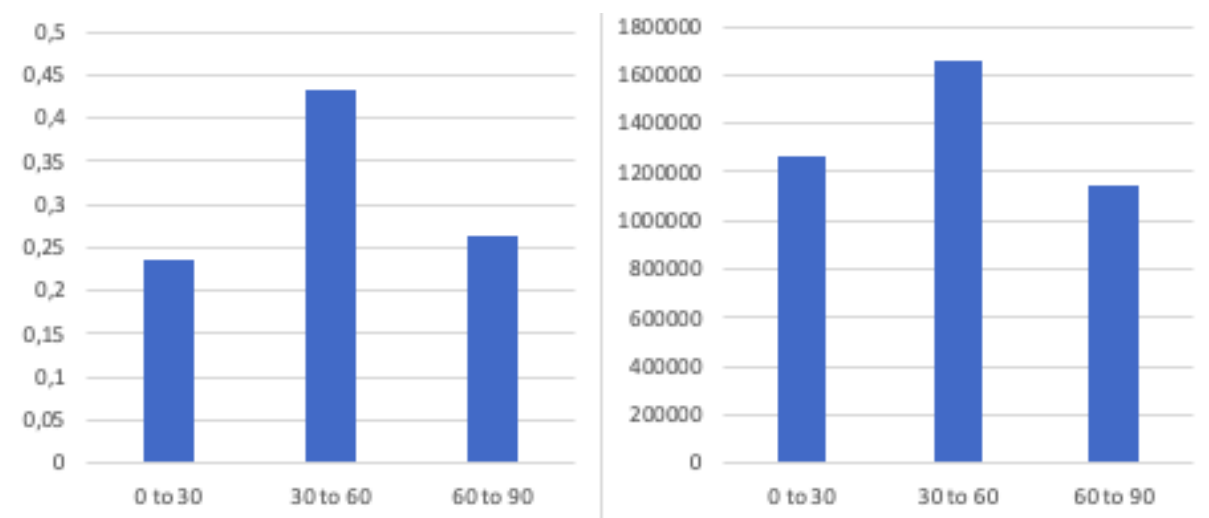
Figure 8: Comparison of exposure level (autumn 2020) and age structure of Croatia inhabitants in 2019 (Source: ibidem)
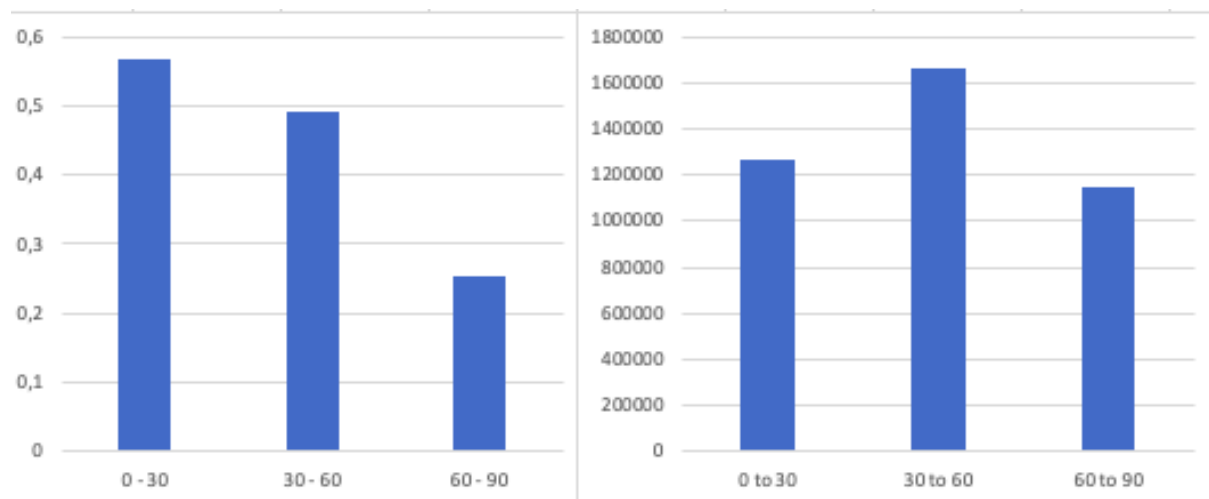
*Figure 9: Comparison of exposure level (autumn 2021) and age structure of Croatia inhabitants in 2019
(Source: ibidem)*

6. CONCLUSION
Based on the analysis of the exposure of the population to the corona virus, it can be preliminary concluded:
- There has been a significant change in the degree of exposure of certain age groups in the population of the Republic of Croatia, which means that there has been a transformation of the epidemiological crisis into an infectious disease caused by the corona virus,

- The most vulnerable age group, in terms of being at risk of coronavirus infection, is the age group from 0 to 30 years, and in this group the greatest risk is borne by high school and university students in the first years of higher education.
- The level of exposure no longer follows the age structure of the population (population) of the Republic of Croatia, and thus the priorities of prevention or suppression of the epidemic in the Republic of Croatia change significantly.
- The speed and intensity of the transformation (exposure) of exposure indicates the need to predict and predict "new" manifestations and manifestations of exposure in the current epidemiological crisis, in order to take measures and activities to anticipate their protective role.
- It is equally clear that only one measure, no matter how "ideal", does not solve the problem when the crisis has a strong potential to transform its effects on the population.

The approach of the Government of the Republic of Croatia in considering the epidemic (pandemic) COVID-19 as a "developed crisis" and not a "security threat" is completely correct. In this context, crisis communication with the population should be given special expression in order to avoid crisis situations caused by uncertainty, panic and fear.

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PRODUCTIVITY CONVERGENCE OF POST-TRANSITION COUNTRIES AFTER EUROPEAN UNION ACCESSION

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ABSTRACT
After post-transition countries entered the European Union, the effect of convergence has been highly disproportionate if looking at share of gross salary in the final product per capita. The goal of this paper is to point out the different level of economic development of post-transition countries, which shifted from socialist-communist economy in 1980s to the capitalist economy after the 1990s. Moreover, authors will analyze the level of real economic development, comparing the real productivity with nominal productivity from 2000 to 2020. The ratio between gross salaries in real GDP per capita and export of goods per capita is representing the real economic productivity, while nominal productivity will be represented through the level of purchasing power measured by gross salaries among the observed countries. Observed countries are post-transition countries, which all became European Union members, namely: Slovenia, Poland, Czech Republic, Slovakia, Hungary, Romania, Bulgaria and Croatia. This paper will compare which of named countries have higher living standard measured by the level of gross salary, while on the other hand, the living standard will be also shown in the real terms, expressing the paradox of economic development.
Keywords: *GDP per capita, gross salary, external trade coverage ratio, export of goods, productivity*

1. INTRODUCTION
Most of post-transition countries passed through different levels of economic development. From socialist economy in 1980s, they shifted to the capitalist economy after the 1990s. Certain economies, which all became European Union members, such us Hungary, Poland, Czech Republic, Slovakia, Slovenia, Romania and Bulgaria have all different internal pillars of economic growth. Some of those countries have been achieving the economic growth by building their competitive advantage on their geographical location, while others have had emphasize on their industrial and manufacturing sectors. From today's perspective, the countries ranking has changed a lot, if comparing their productivity and economic growth. In the late 1980s, Croatia and Slovenia (at that time part of Yugoslavia), were more developed compared to Romania, Bulgaria, Czech Republic and Slovakia (formerly Czechoslovakia). However, today we are witnessing a very different situation. The order among the countries has changed significantly, especially in favor of Poland, Czech Republic and Hungary.

On the other hand, Slovenia has maintained its competitive advantage and level of productivity over Croatia also after the transformation. After the post-transition countries joined the European Union, the new economic order started among them. High inflow of net foreign direct investment (FDI), followed by internal salary depreciation and external exchange rate depreciation, significantly influenced on the economic growth. Some countries left their own monetary policy when they joined the European Monetary Union (EMU) in order to reduce their currency risk and the interest rate risk. At the same time, other countries stayed with their independent monetary policy and used the mechanism of exchange rate to stimulate the productivity and economic growth. From observed countries, only Slovenia and Slovakia stopped using their currency and joined the European Monetary Union i.e. introduced the Euro. In contrary, other countries continued to use their domicile currencies. From the observed countries, Slovenia, Czech Republic, Hungary, Slovakia and Poland were the ones that first joined the European Union in May 2004. After them, in January 2007, Romania and Bulgaria became European Union members, followed by Croatia in July 2013. However, Slovenia cancelled the domicile currency Tolar 3 years after joining the European Union in January 2007, while Slovakia stopped with the use of domicile currency, i.e. Slovak Koruna in January 2009. Other observed countries have not yet entered the European Monetary Union, despite having possibilities, defined by the 1992 Maastricht nominal criteria.

2. THE CONVERGENCE OF POST TRANZITION COUNTRIES

Chart 1: Real gross domestic growth rate in post-transition countries from 2000 to 2020
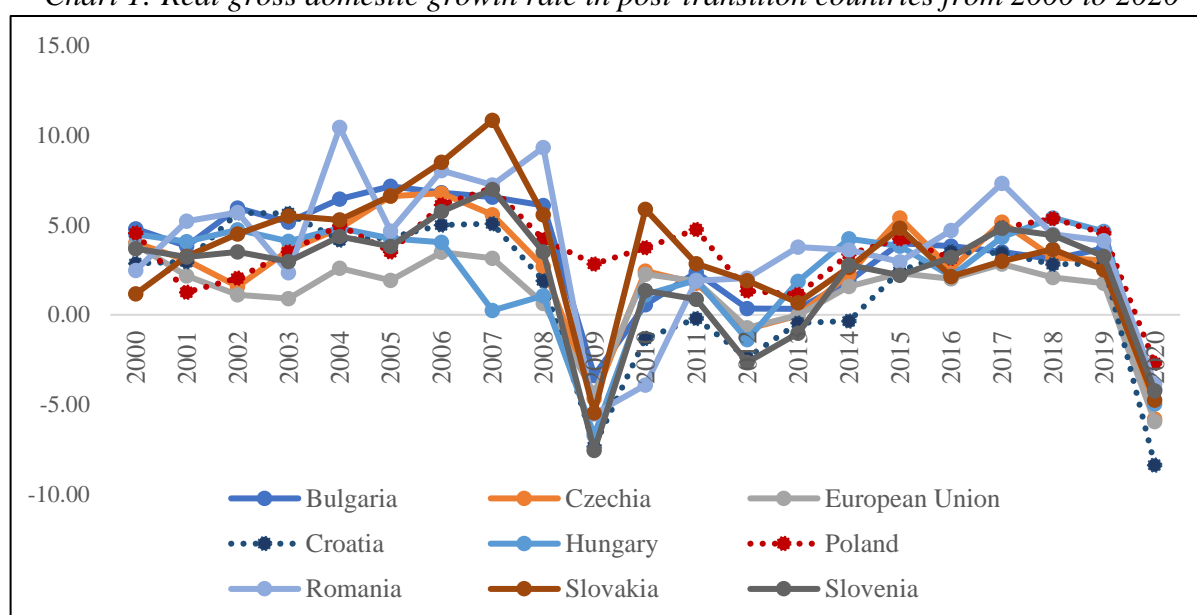
Source: World bank database, https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG, author calculation.
Note: Czechia means Czech Republic

Chart 1 shows the movement of the real GDP growth rate. In the observed period from 2000 until today, it is noticeable that Romania and Slovakia have significant deviations in growth rates, while other observed countries had lesser jumps in GDP growth rates. However, from the observed countries, only Croatia had a long lasting recession for 6 years (2009 - 2014), while Slovenia, Hungary and the Czech Republic had an economic growth in 2010 and 2011. Nevertheless, those countries entered recession again in 2012 and recorded a negative GDP growth rate. The chart also shows which of observed countries were affected the most by the exogenous shocks and how domicile economies responded to those.

It is also taken into account that the observed economies have a different GDP structures. Thus, if comparing the observed countries, Croatia has the highest elasticity to exogenous shocks caused by crises. From the period 2009 to 2020, Croatian economy past 7 years in recession, while in the other observed countries that was not the case. The external shock had a significant effect on Croatian economy; as a result of financial crisis in 2009 where GDP had decrease 7.3%, and in 2020 GDP decreased 8.4% as a result of the crisis caused by the COVID 19 pandemic. However, from the GDP structure it is visible that the dominant component is the tourism with the share of 19.6% (2019). Therefore, the chart 1 also shows that the economies which have based its strength on services such as tourism are more vulnerable to exogenous shocks which have a direct effect on the GDP movements. Other observed countries have a different GDP structure, and the tourism is not the predominant component (does not exceed 3% of GDP). In the other words, they haven't show such vulnerability on demand shocks from 2009 financial crisis nor on supply and demand shocks from 2020 COVID crisis. The resilience of economies and their elasticity is even more visible from foreign trade of goods (excluding services), with the emphasis of exchange of goods in the manufacturing sector. Manufacturing sector should represent a backbone of any successful economy.

Chart 2: External trade coverage ratio in post transition countries 2002 to 2020
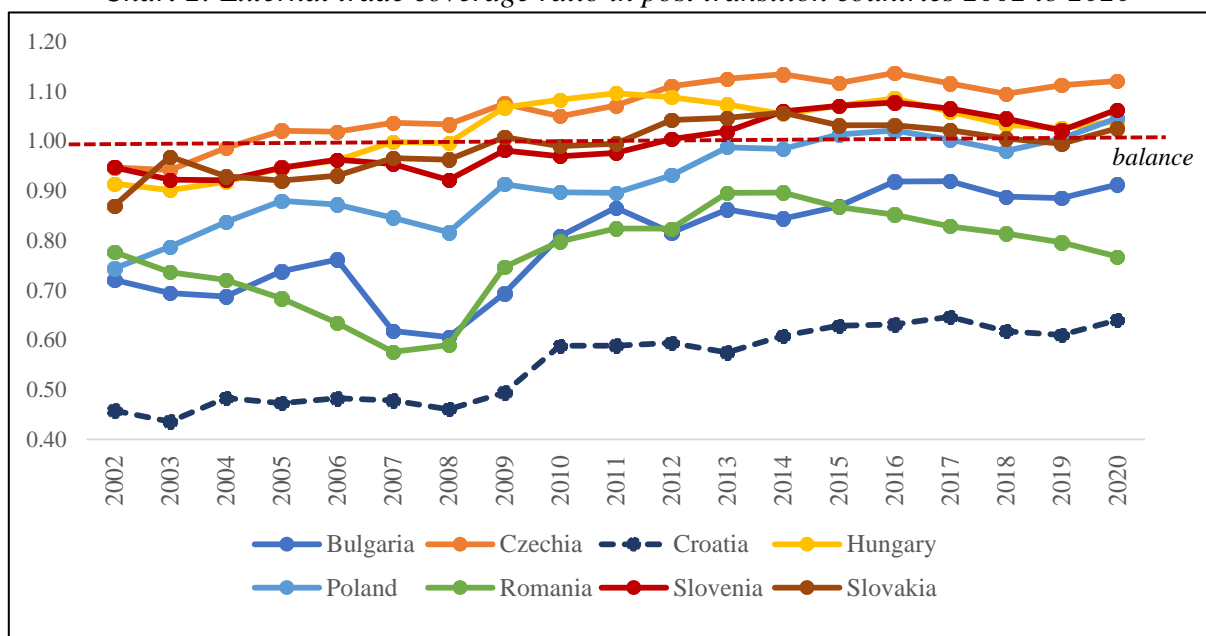
Source: Eurostat, International trade of EU, the euro area and the Member States by SITC product group [EXT_LT_INTERTRD__custom_1661511]. The value 1,00 means external trade balance, <1,00 present external trade deficit and >1,00 present external trade surplus, author calculation

A chart 2 shows that the coverage of imports by exports in 2020 in Croatia is 64%. The same indicator was 46% in 2002. From the observed post-transition countries, Croatia has the worst external trade coverage ratio. Even the nominally poorer countries compared with Croatia, such as Bulgaria and Romania have above 80% coverage of imports by exports. The countries with a foreign trade surplus are Poland, Czech Republic, Slovenia and Slovakia. Czech Republic has recorded the best results in the foreign trade surplus of goods i.e., 12% in 2020. The biggest jump in 2020 compared to 2002 has recorded Poland with 30 percentage points (74% in 2002 and 104% in 2020) and in 2015 it shifted from deficit to surplus. All observed countries had a foreign trade deficit in 2002, while the post-transition countries that first entered in the surplus area were Czech Republic in 2005, than Hungary in 2007, followed by Slovakia in 2009, and

Slovenia in 2012. In the observed period, Slovenia has the most stable curve of the coverage of imports by exports, in the range of 0.95 to 1.05. It is important to point out that some of the countries were controlling their foreign trade balance with a monetary policy, through the exchange rate. In that way, they were able to increase the competitiveness of domicile economy. As an example, in the last 10 years Hungary has depreciated the Hungarian forint over 34%, Romania its Leu by 15.6%, Poland its Zloty over 18.0% and Czech Koruna was depreciated around 14.8%.

3. NOMINAL AND REAL EFFECT OF CONVERGENCE

In continuation, authors will analyze nominal and real effects of convergence of post-transition countries. The effect of nominal convergence will be presented as GDP per capita at current prices and gross salary per capita. The effect of the real convergence will be presented as the level of GDP per capita measured by purchasing power parity (GDP per capita PPP). GDP per capita in current prices represents the ratio between the total GDP in current prices and population in observed countries. The real GDP per capita or GDP per capita measured according the PPP represents the real level of purchasing power in observed countries.

Table 1: The movement in GDP per capita at current prices 2000-2020

Year	EU 27	Bulgaria	Czechia	Croatia	Hungary	Poland	Romania	Slovenia	Slovakia
2000	18.380	1.760	6.530	5.500	5.020	4.880	n/a	10.990	4.150
2001	19.220	2.010	7.400	6.030	5.890	5.560	n/a	11.670	4.440
2002	19.870	2.220	8.560	6.680	7.060	5.510	2.250	12.520	4.900
2003	20.330	2.400	8.690	7.200	7.450	5.040	2.370	13.150	5.600
2004	21.180	2.710	9.460	7.840	8.300	5.400	2.820	13.860	6.460
2005	22.010	3.110	10.780	8.540	9.030	6.450	3.720	14.560	7.310
2006	23.200	3.560	12.130	9.400	9.150	7.200	4.590	15.680	8.460
2007	24.550	4.240	13.470	10.260	10.190	8.230	6.110	17.370	10.440
2008	25.260	4.880	15.540	11.210	10.800	9.600	7.140	18.760	12.230
2009	24.050	4.930	14.260	10.550	9.440	8.240	6.150	17.760	11.830
2010	24.900	5.080	15.020	10.610	9.980	9.400	6.200	17.750	12.610
2011	25.650	5.640	15.740	10.600	10.250	9.860	6.540	18.050	13.240
2012	25.760	5.780	15.470	10.420	10.110	10.070	6.620	17.630	13.570
2013	26.020	5.790	15.170	10.420	10.340	10.190	7.190	17.700	13.710
2014	26.580	5.960	15.000	10.370	10.770	10.630	7.570	18.250	14.040
2015	27.500	6.380	16.080	10.740	11.460	11.190	8.080	18.830	14.730
2016	28.200	6.840	16.790	11.320	11.850	11.110	8.630	19.590	14.920
2017	29.320	7.420	18.330	12.080	12.980	12.170	9.580	20.820	15.530
2018	30.290	8.000	19.850	12.880	13.920	12.960	10.500	22.140	16.420
2019	31.310	8.820	21.140	13.660	14.950	13.900	11.520	23.170	17.250
2020	29.890	8.840	20.120	12.400	14.010	13.650	11.330	22.310	16.860
%, 2020/2000	*63%*	*402%*	*208%*	*125%*	*179%*	*180%*	*404%*	*103%*	*306%*

Source: Eurostat, Main GDP aggregates per capita [nama_10_pc], Romania compared 2020 vs 2002 (no data available), author calculation

In 2000, Bulgaria recorded only 9.6% of GDP per capita in current prices in comparison with the EU27. Bulgaria is followed by Slovakia with 22.6%, Poland with 26.5%, Hungary with 27.3%, Croatia with 29.9% and Slovenia with 59.8% of the average GDP per capita of EU27. However, today in 2020, that ratio has changed significantly; Bulgaria's GDP per capita in current prices increased by 402% compared to 2000, followed by Romania's by 404% compared to 2002 (data for 2000 and 2001 are not available), Slovakia's by 306% compared to 2000.

Slovenia's GDP per capita in current prices increased by 103%, Croatia's by 125% and Hungary's by 179% in 2020 compared to 2000. It should be noted that Slovenia's GDP per capita base was at almost 60% of the EU27 average, what also represents a significant growth. If comparing the observed post-transition countries, Croatia had the slowest growth of GDP per capita. From 8 observed countries (excluding the EU27) in 2000, Croatia ranked 3rd in terms of GDP per capita in 2000. First was Slovenia and the second was Czech Republic. However, in 2020, Croatia was in the 6th place, almost the same as Romania and slightly above Bulgaria. Today, Croatia is at the level of 41.5% of the average GDP per capita of the EU27. From all observed countries, Slovenia has the best performance, with the 74.6% of the average GDP per capita of the EU27 measured by market prices.

Table 2: The movement in GDP per capita measured according to PPP 2000-2019

Year	Bulgaria	Czechia	Croatia	Hungary	Poland	Romania	Slovenia	Slovakia
2000	5.630	14.210	9.740	10.390	9.360	n/a	15.780	9.950
2001	6.120	15.300	10.110	11.470	9.660	n/a	16.460	10.760
2002	6.660	15.670	10.960	12.480	10.140	6.170	17.380	11.430
2003	7.090	16.550	11.590	13.120	10.420	6.410	17.890	12.010
2004	7.720	17.680	12.400	13.760	11.290	7.600	19.240	12.850
2005	8.660	18.740	13.120	14.550	11.810	8.160	20.270	14.110
2006	9.320	19.730	14.550	15.210	12.540	9.560	21.260	15.590
2007	10.390	21.600	16.050	15.730	13.840	11.280	22.700	17.410
2008	11.140	22.010	16.530	16.380	14.470	13.260	23.390	18.660
2009	10.590	21.020	15.320	15.770	14.510	12.650	20.930	17.460
2010	11.230	21.250	15.280	16.650	15.930	12.990	21.290	19.230
2011	11.880	21.880	15.850	17.380	17.020	13.500	21.830	19.730
2012	12.340	22.120	16.170	17.600	17.730	14.260	21.960	20.330
2013	12.230	22.650	16.230	18.050	17.840	14.530	22.030	20.520
2014	12.990	23.970	16.470	18.950	18.560	15.230	22.770	21.330
2015	13.830	25.500	17.500	20.160	19.950	16.240	23.780	22.540
2016	14.340	25.800	18.020	19.970	20.000	17.340	24.250	21.180
2017	15.020	27.170	18.970	20.640	20.790	18.980	25.550	21.030
2018	15.860	28.430	19.990	22.010	21.840	20.200	26.910	21.790
2019	16.950	29.730	21.250	23.300	23.230	22.170	28.260	22.380
%, 2019/2000	*201%*	*109%*	*118%*	*124%*	*148%*	*259%*	*79%*	*125%*

Source: Eurostat, Main GDP aggregates per capita [nama_10_pc]. No dana available for 2020. Romania compared 2019 vs 2002 (no data available), author calculation

GDP measured by purchasing power parity (PPP) shows the real purchasing power in the domicile country. In 2000, the average Slovenian could buy 63.9% more domicile goods than the average Croat. At the same time, the average Czech could buy 46.4% more than the average Croat. If looking the purchasing power parity, Croatia was slightly above Poland, and above Bulgaria and Romania in 2002. However, in 2019, Croatia ranked penultimate in GDP per capita measured by purchasing power parity, while the Bulgaria was the last. Among all observed post-transition countries, Czech Republic has the highest GDP per capita measured by purchasing power parity and it amounts 93% of the EU27 average, followed by Slovenia with 88% of the GDP per capita according to the PPP of average EU27. All mentioned indicates that Croatia has a more significant internal appreciation (higher salaries) and relatively higher domicile prices compared to the average EU27 and compared to other observed post-transition countries.

4. PRODUCTIVITY IN POST TRANZITION COUNTRIES

Further, the productivity among post-transition countries is going to be analyzed. Productivity will be expressed as the ratio of gross salary[1] and GDP per capita at current prices at the year level. The goal of this paper is to explore the "economic paradox" of post-transition countries productivity. The first analyzed country will be Croatia. Through previous research's, Croatia showed extremely low level of coverage of imports by exports, as well as the low and slow growth rate of GDP per capita in current prices and real GDP per capita expressed in purchasing power parity (PPP). Those results point out the non-efficient macroeconomic policy based on consumption, what is resulting by imports exceeding exports[2]. In order to get a more realistic view of productivity and competitiveness of post-transition countries, the authors will analyze how much a country produces of a gross domestic product per capita for a gross salary per capita. It is important to emphasize that the analyzed indicators are gross and not net, i.e. gross domestic product and gross salary.

Table 3: The productivity ratio in post transition countries 2000 to 2020

	Bulgaria	Czech	Croatia	Hungary	Poland	Romania	Slovenia	Slovakia
2000	n/a	0,69	n/a	0,83	1,18	n/a	0,81	1,27
2001	n/a	0,69	n/a	0,83	1,21	n/a	0,85	1,24
2002	n/a	0,71	n/a	0,83	1,19	n/a	0,86	1,17
2003	n/a	0,71	n/a	0,82	1,19	n/a	0,89	1,09
2004	n/a	0,69	n/a	0,81	1,10	n/a	0,90	1,05
2005	n/a	0,68	n/a	0,81	1,07	n/a	0,89	0,99
2006	n/a	0,68	n/a	0,82	1,04	n/a	0,87	0,92
2007	n/a	0,67	n/a	0,84	1,04	n/a	0,84	0,79
2008	0,68	0,70	n/a	0,86	1,00	0,76	0,84	0,75
2009	0,76	0,75	n/a	0,92	0,98	0,81	0,91	0,78
2010	0,80	0,76	n/a	0,91	0,97	0,88	0,95	0,76
2011	0,77	0,76	n/a	0,92	0,95	0,88	0,96	0,75
2012	0,79	0,78	n/a	0,97	0,95	0,85	0,99	0,75
2013	0,84	0,77	1,08	0,96	0,97	0,81	1,00	0,75
2014	0,86	0,75	1,08	0,92	1,00	0,82	0,98	0,76
2015	0,87	0,73	1,07	0,89	0,99	0,85	0,96	0,75
2016	0,87	0,74	1,05	0,91	0,98	0,86	0,94	0,76
2017	0,89	0,74	1,03	0,93	0,97	0,85	0,90	0,76
2018	0,88	0,75	1,03	0,93	0,99	1,01	0,88	0,76
2019	0,89	0,75	1,00	0,96	0,98	0,99	0,87	0,76
2020	0,93	0,76	1,11	1,02	1,00	1,19	0,92	0,78

Source: author calculation based on Eurostat data
Note: Coeficient 1 means that the ration between annual gross salary and gross domestic product per capita is equale, if the coeficent <1,0 it means that the annual gross salary lower than gross domestic product per capita, and if the coeficient >1,0 it means that the annual gorss salary above the annual gross domestic product per capita. Data for some period are not available.

Table 3 clearly shows the disparity between GDP per capita in current prices and gross salaries among the countries. From the observed countries, only Croatia has a higher share of the individual's gross salary in relation to GDP per capita in current prices (2020 can be viewed as an "outlayer").

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[1] Gross earning - Single person without children earning 100% of the average earning, Average annual gross earnings by sex and NACE Rev. 2 activity (earn_gr_nace2),https://ec.europa.eu/eurostat/web/main/data/database
[2] The Lack of domicile production

This disparity leads to a consumption paradox in which domicile economies consume significantly more than they produce. In Croatia, this phenomenon has been present over many years. If we look at the period from 2000 to 2012, which is not listed in table 3, only Croatia has a discrepancy in gross salaries and GDP per capita in current prices in average of 22.05% in favor of gross salaries[3]. All countries have a coefficient less than 1, except Croatia. Slovenia is in the range from 0.81 to 1.0, while Slovakia increased its competitiveness and has a coefficient of 0.76 in 2019, followed by the Czech Republic with coefficient of 0.75, and Hungary with a coefficient of 0.96. Those coefficients indicate that all post-transition countries have different economic policies from Croatia. They do not exceed consumption measured by the gross salaries in GDP per capita at current prices, because they produce more. At the beginning of 2000, Poland and Slovakia had coefficients above 1. Over time, the coefficient decreased, as their production grew at higher rates than the growth rate of gross salaries, i.e. because they raised the level of productivity.

5. CONCLUSION

Dynamics of the process of transformation differs between the post-transition countries. Some countries left their own monetary policy when they joined the European Monetary Union and introduced Euro in order to reduce their currency risk and the interest rate risk. Post-transition countries, which introduced Euro, are Slovenia and Slovakia. At the same time, other countries stayed with their independent monetary policy and used the mechanism of exchange rate to stimulate the productivity and economic growth. Countries used the exchange rate mechanism to attract net foreign direct investments (FDI). Except the exchange rate mechanism, countries also used the internal depreciation or the policy of relatively low salaries. Example for that are Hungary, Poland, Bulgaria and Romania. Post-transition countries had an accelerated economic growth because of combination of external exchange rate depreciation and internal salary depreciation. As a consequence of those actions, countries became attractive for foreign investments. Therefore, in the initial phase, most post-transition countries used the policy of internal depreciation, i.e. cheap labor. That strategy is extremely favorable for attraction of foreign capital and even for a relocation of factories of large world producers. In addition to above strategy, countries also used exchange rate to attract foreign trade investments (FDI). Thus, for example, Hungary managed to attract one of the world's largest manufacturing companies, offering a cheap labor and external depreciation of the forint. Other post-transition countries have done the same. However, post-transition countries became even more competitive after years of significant inflow of foreign trade investments. They began to increase salaries in order to maintain competitive advantage of their countries, conscious that the exit costs of multinational companies can be very high. Hungary is a perfect example. They invested a lot in car industry, where Suzuki, Mercedes and Audi opened their factory plants. In that way, some of the post-transition countries continued to use the exchange rate for controlling the macroeconomic movements. After several years, external depreciation became a huge challange for foreign investors. On the one hand, countries are facing high capital exposure, and on the other, they are still importing a lot of intermediate goods (used for production of final product). That is the way to make a pressure for countries to strengthen a domicile production. Unfortunately, Croatia did not use that kind of economic strategy. On the contrary, Croatia pursued a policy of fixed exchange rate and internal appreciation. Croatia did not use the same instruments, as other post-transition countries to ensure the economic growth. Instead, Croatia put all efforts on building the tourist sector, which proved to be the most exposed to exogenous shocks. The 2009 mortgage crisis and the 2020 COVID 19 crisis are the best indicators of high exposure to exogenous shocks.

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[3] Source: Croatian Bureau of statistics; average total gross salary. The data are not comparable with table 3, because the Eurostat use the data per type of perosn.

During the transformation period, Croatia was not conducting the economic policy of strengthening the manufacturing industry through the exchange rate and internal depreciation. The import-export coverage curve is showing the difference between the countries. In addition, Croatia has recorded lower GDP per capita in current prices relative to other post-transition countries. Croatia had relatively high gross salaries throughout the observed period, which did not follow the production. In the other words, the growth rate of gross salaries grew faster than the growth rate of GDP per capita comparing to other post-transition countries. That is visible in the productivity ratio, where Croatia is at the last place in ranking among observed post-transition countries. All said leads to the so-called "economic paradox", where Croatia still has relatively high salaries in relation to the output that a country produces.

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PREDICTION OF NATURAL GAS CONSUMPTION BY NEURAL NETWORKS

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ABSTRACT
Due to its environmental benefits, natural gas has become one of the most popular energy sources. Natural gas is the third largest energy source in 2020, after oil and coal, accounting for nearly 25%. The consumption of natural gas has been increasing in recent years, except for last year when consumption decreased by 2.3%. The aim of this paper is to present a neural network model (using Multilayer Perceptron algorithm) that could predict natural gas consumption on an hourly basis. The dataset consists of hourly natural gas consumption data obtained from natural gas supplier and distributor, and meteorological data. There have been many studies in which researchers have attempted to predict gas consumption, and the accuracy of these models is important for decision making, especially for gas nominations (gas orders). The results show that the statistical correlation between the actual and predicted values is very high, but the relative absolute error and root relative squared error are about 25% which cannot be considered satisfactory for this type of prediction. The comparison between the actual and predicted values shows that the model appears to be good at predicting gas consumption in the winter months, but predicts lower values than actual ones for the summer months.
Keywords: *Algorithms, Energy, Natural gas, Multilayer Perceptron, Machine learning*

1. INTRODUCTION
According to BP (2021), during the COVID-19 crisis, global energy demand fell by 4.5% in 2020, which is the largest decline since the end of World War II. The decline was mainly due to falling oil demand as a result of the global lockdowns. However, natural gas showed greater resilience than oil. Its consumption fell by 2.3% but the share of natural gas in primary energy continued to rise, reaching 24.7%. This is not surprising as natural gas is becoming more popular due to its positive impact on the environment. Natural gas consumption is the main topic of this article. Consumers are constantly consuming natural gas as it flows through the pipelines and passes through different supply chain participants - from producer (or importer), transporter and distributor to consumers. The natural gas system operates on balancing principles. The total amount of gas that is injected into the transmission system (from import or production) must also be withdrawn (from the distribution system as consumption). Suppliers, who have signed the agreement with consumers to supply the gas on their behalf, are obliged to make a so-called nomination (or order) of natural gas.

The nomination is the quantity of gas required for the following day (or even broader period of time). If the actual consumption exceeds the nominated quantity, the supplier has to pay a certain penalty. For this reason, accurate prediction models of natural gas consumption are crucial due to financial reasons. The main goal of this paper is to develop a neural networks model that can accurately predict the hourly natural gas consumption. The input variables will consist of meteorological data as well as historical gas consumption data. This article is organised as follows: Section 2 provides an overview of previous research in this field, in Section 3 methodology and data are described, results are presented in Section 4, while the discussion and conclusion are given at the end of the paper.

2. LITERATURE REVIEW

Natural gas prediction methods are the subject of research of numerous researchers. Šebalj et al. (2017) conducted the systematic analysis of the methods for predicting natural gas consumption. They analyzed 39 articles from year 2013 to 2017. The results show that the prediction of natural gas (NG) consumption can be done on different areas and in different horizons, using various methods and input variables. Prediction areas refers to country, region, city or individual consumer area. The largest number of authors were predicting the natural gas consumption on the country or city level. Regarding prediction horizon, 2/3 of the papers deal with the predictions on yearly or daily level. In predicting natural gas consumption several methods were used. The most common method is Neural network (or methods based on the same principles, like ANFIS), followed by various Mathematical and statistical models or Time series analysis methods. For modeling, researchers often use past NG consumption and weather data (temperature, wind speed, wind velocity) as input variables. Karabiber and Xydis (2020) also conducted a literature review analysis. Their results show that the most used variables are Heating Degree Days (HDD), day type (weekend or weekday), meteorological conditions (wind speed, wind chill, rain amounts, solar radiation, max and min temperature etc.). Of the more recent works, several can be highlighted. For example, Arik (2019) suggested an Artificial Bee Colony (ABC) algorithm and linear regression for predicting natural gas consumption in Turkey and results show that ABC outperforms the linear regression model. Es (2020) presented a new grey seasonal forecast model to predict monthly natural gas demand in Turkey. The accuracy of the model was measured by the mean absolute error (MAE), the root-mean-square error (RMSE), the mean absolute percentage error (MAPE) and the post-error ratio (C). The proposed model produced a MAPE of 8.67% which considers to be excellent. Anagnostis et al. (2019) used a Long Short-Term Memory (LSTM) algorithm to forecast a day-ahead natural gas demand in Greece. The LSTM algorithm is a time series method with characteristics similar to neural network. The performance measures were mean square error (MSE), MAE, MAPE and coefficient of determination (R^2). They tested and evaluated 15 combinations of number of layers and compared the results with different neural networks structures where the proposed model shows its efficiency. Karabiber and Xydis (2020) presented four day-ahead forecasting models (three neural network models and one ARIMA model) to forecast the NG consumption in Denmark. They wanted to develop a more accurate forecasting model than the current forecaster. As the input variables they used historical consumption, heating degree days, wind speed, biogas production, type of day, electricity pricing, gas pricing, solar radiation, minimum and maximum hourly temperature for day, lagged consumption and temperature, and fourier terms (FT) for seasonality. The proposed model has better MAPE, ranging from 34% to 72% reduction in comparison with the current forecasting model. Min et al. (2020) compared two method of natural gas demand forecasting based on the monthly dataset of NG demand and meteorological factors of Beijing. They proposed a novel intelligent prediction model (EMD_BP model) and BP neural network algorithm. The results show that the fitting error of the EMD_BP and BP model were 3.7% and 4.6% respectively.

An integrated approach of classical least square time series approach with neural network models was proposed by Pradhan et al. (2018). That model performed better than the classical least square model and neural network model. Machine learning techniques for predicting natural gas consumption were used in research conducted by Sharma et al. (2021). To capture the intra-day variability in NG demand, they used a block-wise approach where separate model was developed for each block of the day. Four different forecasting models were developed using the block-wise technique (a gradient boosting model - GB, a gradient boosting model using features from Principal Component Analysis – GB-PCA, ANN-CG model using features from sensitivity analysis and ANN-CG model using features from PCA (ANN-CG-PCA)). They also developed three hybrid forecasting models by combining the forecasts from the four individual models. The combined models outperformed the individual models and the MAPE was around 15%.

3. METHODOLOGY
This research was conducted in several stages, as shown in Figure 1.

Creating dataset
- combining two separate datasets - dataset with gas consumption data and dataset with meteorological data
- adding more columns (day type and weekday)

Data cleaning
- replacing missing values with "?" character which is suitable for Weka

Creating ARRF file for Weka
- creating special type of file that is used by Weka for analysis

Neural network model evaluation
- choosing neural network parameters (number of epochs, momentum, learning rate and number of nodes in hidden layer)
- choosing appropriate performance metrics and evaluation of results

Attribute selection
- list of input variables that affect the output the most

Figure 1: Research design stages
(Source: Authors)

The neural network model was created using the data mining tool Weka. According to Witten et al. (2011), Weka workbench is a collection of state-of-the-art machine learning algorithms that includes methods for the main data mining problems: regression, classification, clustering, association rules and attribute selection.

3.1. Neural networks
According to Müller and Renhardt (1990), "neural network models are algorithms for cognitive tasks, such as learning and optimization, which are in a loose sense based on concepts derived from research into the nature of the brain" and typically are used in problems of classification or forecasting (Gurney, 1997). Simply put, a neural network is a machine learning method that simulates the behavior of the human brain. The neural network contains several types of layers - input layer, hidden layer(s) and output layer, which are connected by weighted connections. Each of these layers contains a different number of nodes (neurons).

The number of nodes in the input layer refers to a number of input variables, while the number of nodes in the output layer represents the class (output) variable(s). In this paper, the performance of the neural network model was tested using the multilayer perceptron (MLP) algorithm. The multilayer perceptron algorithm is a general-purpose feed forward network and one of the most popular and widely used neural network algorithms. It is a modification of the standard linear perceptron, introduced by Rosenblatt in the late 1950s, and it uses three or more layers of nodes (neurons) with nonlinear activation functions. Its advantage over perceptron is that it can distinguish data that is not linearly separable (Zekić-Sušac et al., 2009; Alsmadi et al., 2009). To optimize the error function, it uses the back propagation algorithm which searches for the minimum of the error function in the weight space using the method of gradient descent. The combination of weights which minimizes the error function is considered to be a solution of the learning problem. It also needs to use an activation function. One of the most popular activation functions for backpropagation networks is the sigmoid function (Rojas, 1996). The general architecture of an artificial neural network can be seen in Figure 2.
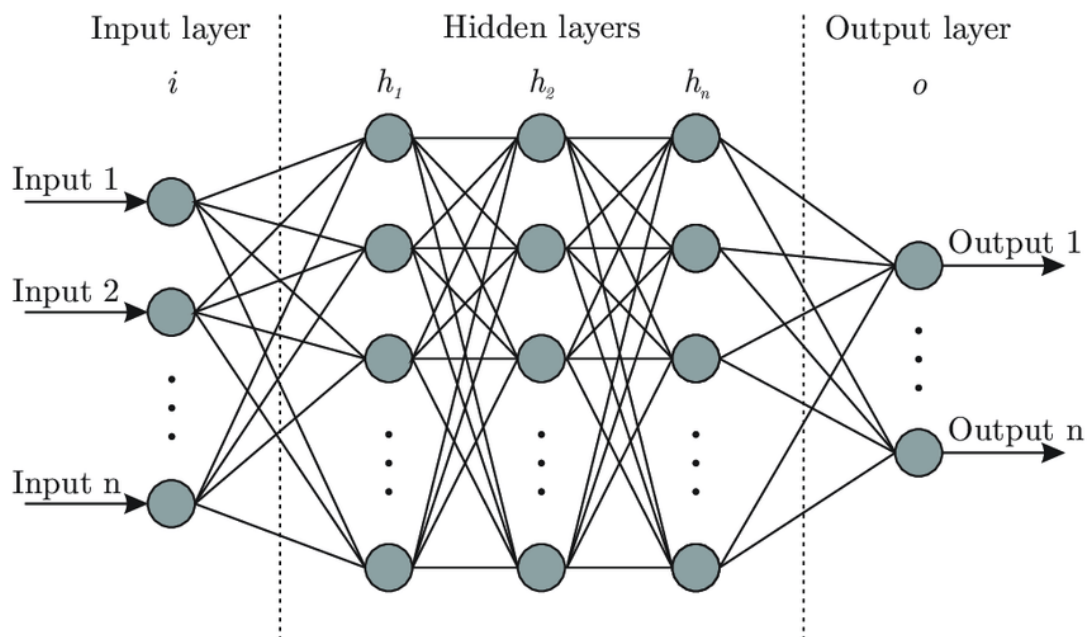
Figure 2: Artificial neural network architecture
(Source: Bre and Gimenez, 2017)

3.2. Data

The dataset for creating a neural network model consists of real historical data of natural gas consumption and meteorological data. The consumption data was received from a natural gas supplier and distributor in Croatia and represents the hourly gas consumption of the household sector, for the period from January 1 to December 31, 2017. The meteorological data is provided by the Croatian Meteorological and Hydrological Service. This dataset contains a total of 8,754 records (one record for each hour in the year 2017). The total number of input variables is 10, as shown in Table 1.

Table following on the next page

Variable no.	Variable description	Descriptive statistics
1	Hour (1-24)	
2	Day (1-31)	
3	Month (1-12)	
4	Day type {HOL="Holiday", WD="Working day", DAH="Day after holiday", WE="Weekend"}	HOL=3.50%, WD=68.55%, DAH=0.55%, WE=27.40%
5	Weekday {Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday}	Monday-Saturday=14.25%, Sunday=14.46%
6	Temperature (in °C)	Min: -18.9, Max: 38.3, Mean: 12.14, StdDev: 10.036
7	Humidity (in %)	Min: 21, Max: 100, Mean: 73.715, StdDev: 20.856
8	Pressure (in hPa)	Min: 979, Max: 1028, Mean: 1006, StdDev: 7.051
9	Wind speed (in m/s)	Min: 0.1, Max: 8.5, Mean: 2.098, StdDev: 1.233
10	Wind direction (00 to 32)	Min: 2, Max: 32, Mean: 19.32, StdDev: 8.705

Table 1: Input variables
(Source: Authors)

The variables **Hour** (1-24)**, Day** (1-31)**, Month** (1-12) are used to examine the difference in natural gas consumption for each hour, day and month of the year. It was assumed that the **Day type** (holiday – HOL, working day – WD, day after holiday – DAH and weekend – WE) has a certain impact to the output. On holidays or weekends, the consumption should be increased. If a holiday falls, for example on Thursday, there is a possibility that the holiday will be combined with a weekend, so gas consumption will be higher on Friday as well. Therefore, the value "day after holiday" is introduced. The variable **Weekday** (Monday – Sunday) is used to study the impact of weekdays on gas consumption. The last five variables are meteorological variables, such as: **Temperature, Humidity, Pressure, Wind speed, Wind direction**. The output variable refers to the natural gas hourly consumption. Figure 3 shows fluctuations in hourly gas consumption through the year 2017. As expected, the lowest natural gas consumption was recorded in the summer months. There were no sudden fluctuations in natural gas demand during the observed year.

Figure following on the next page
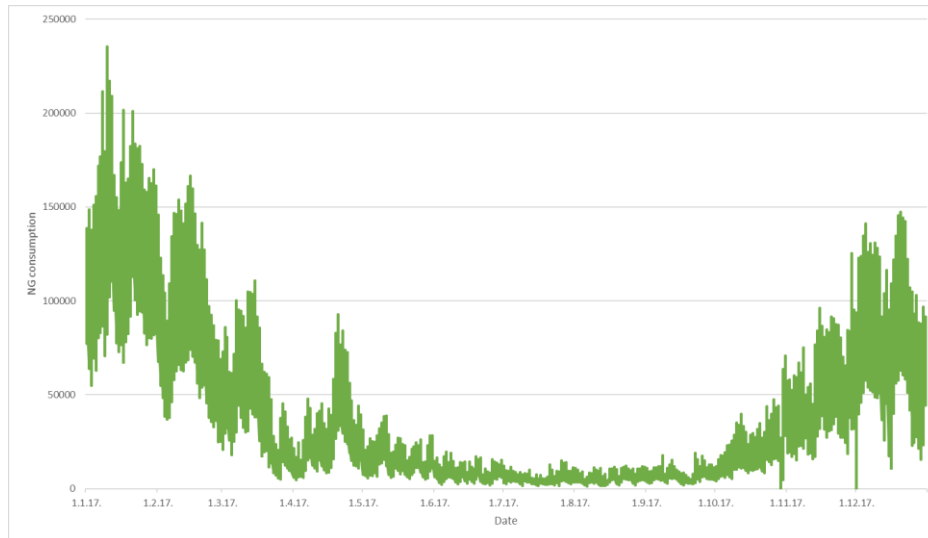
Figure 3: Hourly natural gas consumption through year 2017
(Source: Authors)

3.3. Neural network setup

For the purpose of this paper, the multilayer perceptron (MLP) algorithm was used. The neural network consisted of three layers. The input layer contains 19 nodes – one node for each numeric variable, and one node for each value of nominal variables. The output layer contains one node representing the hourly historical gas consumption, and there are 10 neurons in one hidden layer. According to Murtagh (1991), the number of hidden layers and the number of nodes in each layer can vary for a given problem. Heaton (2017) considers that the most problems require only one hidden layer. As for the number of neurons in the hidden layer, the same author suggests that it should be between the size of the input layer and the size of the output layer. Weka suggests that 10 is the optimal number of nodes in the hidden layer which is consistent with Heaton's research. The neural network architecture is presented in Figure 4.
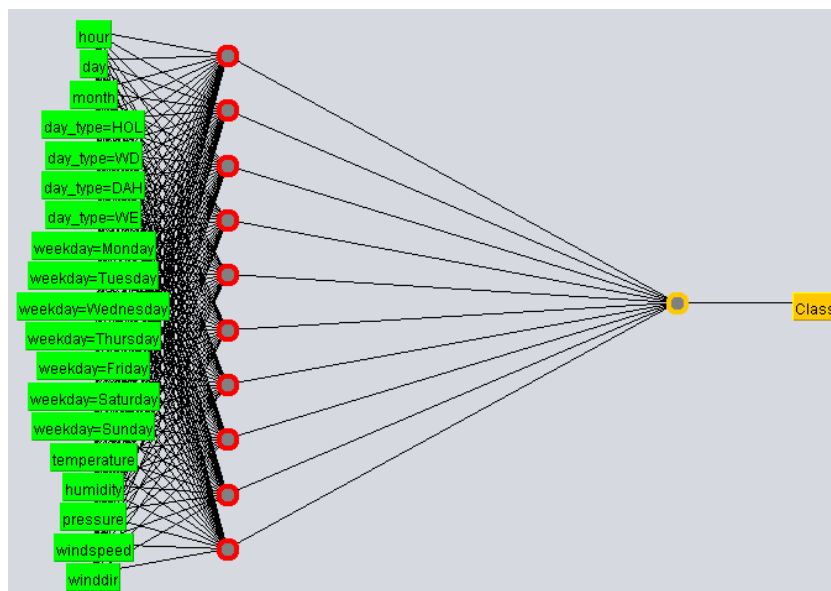
Figure 4: Neural network architecture
(Source: Authors)

The number of epochs to train through was set to 500, learning rate was 0.3 and momentum 0.2.

4. RESULTS

Usually, the neural network modeling dataset is divided into two subsamples – the training set and the test set. Since this dataset contains data for only one year, splitting it into a training set and a test set will make the sample unrepresentative (the test set will contain more data from one season). Therefore, 10-fold cross-validation was used to implement the neural network. This means that the data was randomly divided into 10 parts, one of which was used for testing and the remaining nine parts were used for training. This process was repeated 10 times and then the 10 error estimates were averaged. The accuracy of prediction was measured using five of the most common evaluation metrics – correlation coefficient, mean absolute error (MAE), root mean squared error (RMSE), relative absolute error (RAE) and root relative squared error (RRSE), calculated as follows (Witten et al., 2011):

$$MAE = \frac{|p_1 - a_1| + \cdots + |p_n - a_n|}{n}$$

$$RMSE = \sqrt{\frac{|p_1 - a_1|^2 + \cdots + |p_n - a_n|^2}{n}}$$

$$RAE = \frac{|p_1 - a_1| + \cdots + |p_n - a_n|}{|a_1 - \bar{a}| + \cdots + |a_n - \bar{a}|}$$

$$RRSE = \sqrt{\frac{|p_1 - a_1|^2 + \cdots + |p_n - a_n|^2}{|a_1 - \bar{a}|^2 + \cdots + |a_n - \bar{a}|^2}}$$

where $p_1, p_2, \ldots, p_n$ are the predicted values, and $a_1, a_2, \ldots, a_n$ are the actual values.

Low values of error metrics signify higher accuracy of the model, but correlation coefficient value close to 1 is preferred, signifying better performance of the model and that the regression curve fits well on the data (Anagnostis et al., 2020). After 10-fold cross-validation, the neural network was built, and the results are shown in Table 2.

Correlation coefficient	0.9648
Mean absolute error (MAE)	9005.72
Root mean squared error (RMSE)	12215.48
Relative absolute error (RAE)	24.53%
Root relative squared error (RRSE)	26.90%

Table 2: Neural network results
(Source: Authors)

The results show that the statistical correlation between the actual and predicted values is very high and that these values are perfectly correlated. The RAE and RRSE errors are almost the same (about 25%) and usually this value can be considered as reasonable (see Ma and Liu, 2017). However, for predicting natural gas consumption, the model would be considered successful if the error rate is up to 10%. Figure 4 shows the comparison between the predicted (blue) and actual (orange) values of natural gas consumption on different basis. The first image shows the comparison on an hourly basis. The model appears to be good at predicting gas consumption in the winter months but predicts lower values than actual ones for the summer months. If the data is summarized on a daily basis, it can be seen that the line showing the predicted values follows the line with the actual values quite well. Even better results can be seen by comparing actual and projected values on a monthly basis, as shown in the third image.
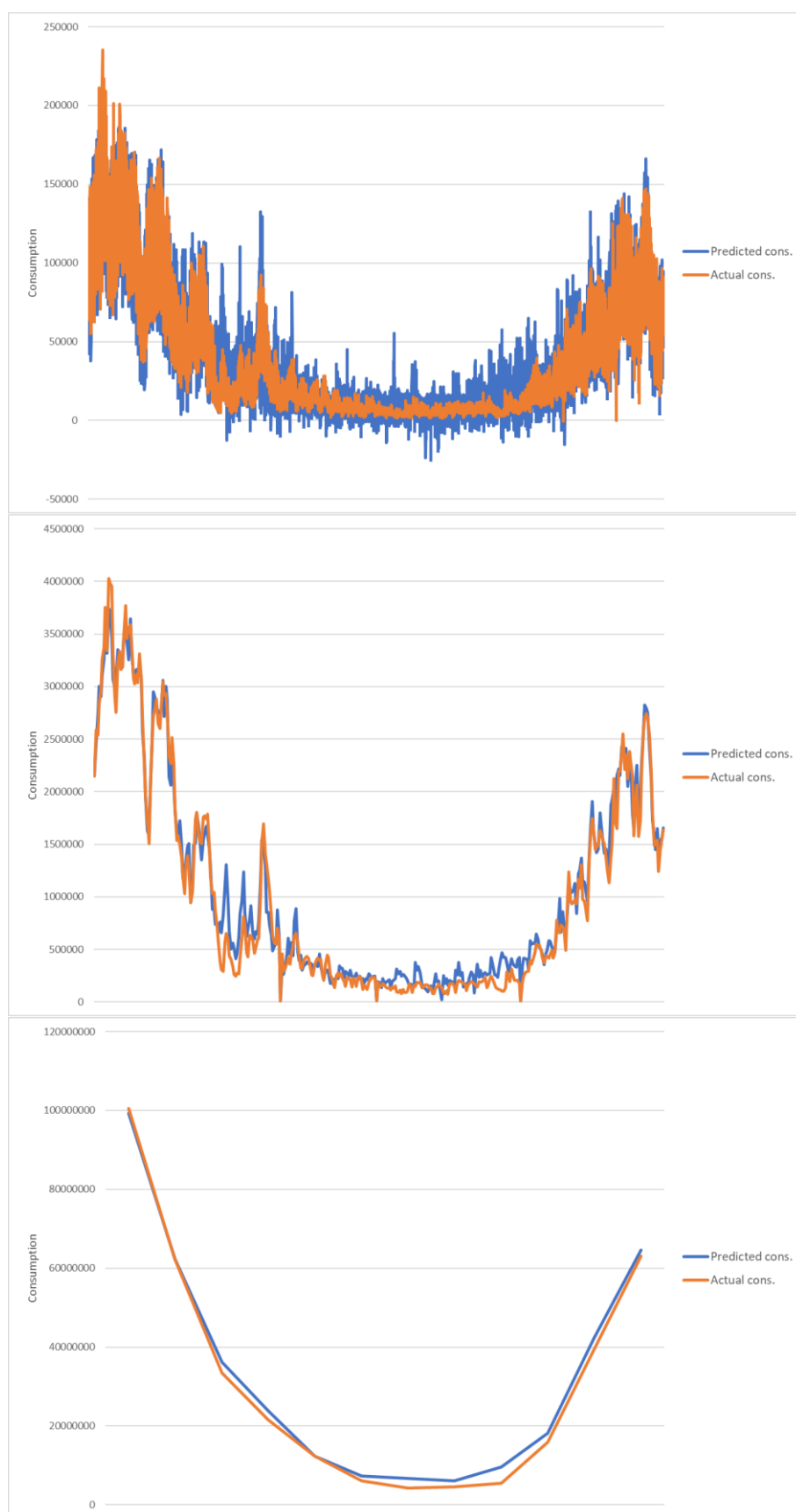
*Figure 5: Comparison of the predicted and actual values of natural gas consumption on the
hourly, daily and monthly basis
(Source: Authors)*

This confirms the research conducted by Šebalj et al. (2018) who concluded that it is very difficult to predict gas consumption and, thus, submit nominations, since the difference between nominations and actual consumption rise (accuracy drops) when the time period is narrowed. This is also the case here. The predicted consumption for each month is very close to the actual consumption. When the time period is narrowed down (e.g., to an hourly level), the difference is much larger.

4.1. Attribute selection

After model evaluation, the attribute selection process was conducted. It includes searching through all possible combinations of input variables in order to find the subset of attributes that works best for prediction. First step is to choose the attribute evaluator in Weka. It determines what method is used to assign a worth to each subset of attributes (Bouckaert et al., 2016). Weka contains several attribute evaluators, and the comparison of the attribute selection results is shown in Table 3. The variables are ranked by the importance and the given values.

Attribute selection evaluator			
CfsSubset	**Classifier**	**Correlation**	**Relief**
month	wind direction	pressure	hour
day type	month	humidity	month
temperature	day	hour	pressure
wind speed	wind speed	windspeed	temperature
	day type	day type	day
	weekday	weekday	weekday
	temperature	day	day type
	humidity	wind direction	wind speed
	pressure	month	wind direction
	hour	temperature	humidity

Table 3: Attribute selection results
(Source: Authors)

After the attribute selection process, the authors conducted four additional experiments (one for each attribute selection result) in which only the five highest ranked variables were included. The results were worse than those of the first experiment in which all variables were included in building the neural network.

5. DISCUSSION AND CONCLUSION

Forecasting natural gas consumption is of great importance for suppliers who must nominate (order) a certain amount of gas each day, one day in advance (for each hour). The nominated amount of gas should be equal to the amount consumed by the consumers in order for the transmission system to be in balance. Since it is very difficult to accurately predict future consumption based only on past experience and historical data, advanced forecasting methods can play an important role. Previous research has shown that neural networks are one of the machine learning methods that can accurately predict natural gas consumption. Therefore, the authors of this paper chose this method to predict NG consumption. The dataset consisted of data related to the historical natural gas consumption and meteorological data for the year 2017. To build the neural network model, 10 input variables were included - hour, day, month, day type, weekday, temperature, humidity, pressure, wind speed and wind direction. The Multilayer Perceptron (MLP) algorithm was used, and the network consisted of three layers - input layer, hidden layer with 10 nodes and output layer. The prediction accuracy was measured using the five most common metrics - correlation coefficient, MAE, RMSE, RAE and RRSE.

The results showed that the relative prediction error (RAE and RRSE) was around 25% which cannot be considered satisfactory in this case as the error should be as low as possible (below 10%). Also, a graphical comparison of the actual and predicted consumption can show that the neural network model can predict the consumption relatively well in the winter months, while it is slightly worse in the summer months. A limitation of this work can be the fact that the gas consumption data was collected from only one distributor and from one measuring-reduction station (which, however, has the highest gas flow). For future research, the authors plan to include more input variables (such as solar radiation, etc.) in the model. Also, the development of two separate models is planned - one for forecasting consumption in the winter months, and the other for forecasting consumption in the summer months. This will show whether the accuracy of the forecast (at least for the winter months) will increase.

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EFFECTS OF THE COVID-19 PANDEMIC ON THE REPUBLIC OF CROATIA'S TRADE SECTOR IN 2020

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ABSTRACT

Trade, as an important economic activity, is an intermediary in the added-value chain and it strongly influences production and consumption. The COVID-19 pandemic has caused grave economic consequences worldwide. The Republic of Croatia is not an exception. However, not all Croatian economic sectors have suffered equal damage in 2020 (the pandemic year). On the contrary, many businesses ran smoothly due to their rapid adjustments, such as implementing the "remote work", changing the product range, introducing innovations, e-Economy, home delivery, etc. The businesses of the primary and secondary economic sectors have felt less impact, while the tertiary sector businesses, i.e. tourism, catering, transport and trade, have suffered the most severe damage. Due to social and physical distancing measures, the tertiary sector of the economy, i.e. the service sector has suffered the most damage. The new data on fiscal and monetary policy measures used in response to the crisis shows that these policy measures were effective in mitigating some of the emerging economic costs. It was also detected that job closures and stay-at-home restrictions had been effective in fighting infections, but they were also associated with significant economic costs. Furthermore, according to the Croatian Central Bureau of Statistics data for 2020, the share of trade in gross added value was 19.6%, and trade participated with 18.6% of the total number of employees. This paper's research focuses on the effects of the COVID-19 pandemic on the trade sector in the Republic of Croatia. Consequently, in the spring of 2021, the authors conducted empirical research of business entities from the trade sector on the territory of the Republic of Croatia that were directly experiencing the effects of the pandemic. The subject of the research were business entities in the trade sector, which were asked to state the severity of the effects on the business elements. Respondents were directors, sales directors, finance directors and spokespersons of the trade sector business entities. The results of the survey were processed by a computer program, presented in tables and charts, followed by interpretation of the results. The general conclusion is that there was a significant revenue decline and that the Croatian Government's measures had strongly supported the trade sector. Those measures were welcomed by the trade sector since without them many business entities would have been faced with survival.
Keywords: COVID-19, trade sector, economy, Republic of Croatia

1. INTRODUCTION

The COVID-19 pandemic has caused serious economic consequences worldwide and there seems to be no place left out of its reach. This not only has caused consequences for the economy but for the whole society, which has led to dramatic changes in the behaviour of

businesses and consumers, raised several ethical issues and brought about a new interrelationship between employees, managers and the government. Service sectors such as trade have suffered the most from the social distancing measures and limitations of contact. The subject of research in this paper is narrowed down to the effects of the 2020 pandemic on the trade sector. The purpose of the research is to gain insight into the issues arising in the Republic of Croatia's trade sector and the consequences of the crisis caused by the COVID-19 virus pandemic to the Croatian economy. Empirical research was aimed at business entities from the trade sector in the Republic of Croatia that have been directly affected by the pandemic and which were asked to comment on the severity of these effects on elements of their business. A survey using the structured questionnaire method was conducted on business entities from the trade sector, enquiring about the effects of the pandemic on their business. Standard statistical methods will be used to analyse and process the collected data using specific computer programs.

2. CHARACTERISTICS OF THE TRADE SECTOR AS PART OF THE ECONOMIC SYSTEM

Trade is (HE, 2020): "an activity that enables the fastest and most successful connection between producers and consumers". The trading system consists of wholesale trade, retail trade, electronic trade, warehouses, collecting (purchase) stations, shops and branches. Retail trade is (Zelenika, 2005, p. 421): "the purchase of goods and its resale to people for personal consumption or household use and is mainly oriented to the sale of goods to end consumers."
Retail trade is part of the total trade as a national economy's economic activity. According to Huška (Huška, 2017, p. 130): we can differentiate between (1) retail trade to meet the daily needs of the population and (2) specialized sales of consumer goods but of more lasting value. Retail trade is the last link in the supply chain that has direct contact with the end consumer, directly or indirectly connecting producers (of goods or products or services) and their consumers (end-users of products or services) (Huška, 2017, p. 132). Criteria for the classification of retail stores are laid down in the Ordinance on the Classification of Stores and Other Forms of Retail Trade (OG, 2009/39). They are classified according to size (OG, 2009/39) into very small, small, medium and large. The following table shows the distribution of retail trade according to the size of the sales facilities, the number of employees and the turnover in HRK.

	STORES / SHOPS	AREA M²	EMPLOYEES	TURNOVER IN HRK
IN TOTAL	**31,126**	**4,465,913**	**125,287**	**120,955,983**
Small business entities	21,088	1,472,324	53,018	30,433,683
Very small business entities	15,880	896,445	34,006	16,849,396
Small business entities	5,208	575,879	19,012	13,584,287
Medium-sized and large business entities	10,038	2,993,589	72,269	90,522,300
Medium-sized business entities	3,602	718,795	17,123	16,994,827
Large business entities	6,436	2,274,794	55,146	73,527,473

Table 1: Sales capacities of stores by business entities' size in 2017
(Source: Author's processing according to the CBS data)

The Croatian retail network is characterized by fragmentation, which is reflected in the large number of small stores that occupy office space of up to 100 square meters. There has been a steady growth trend since 2008 from 34,000 stores to almost 50,000 in 2019. This was followed by the increase in the number of employees by 100,000 in those twenty years.

The construction of large shopping centres has contributed significantly to this growth. From 2008 to 2019, "the share of retail trade in Croatia's GDP was around 10% on an average annual basis, while in the European Union, the trade participated in GDP on average with 10.9% (Huška, 2017)". Retail trade of the Republic of Croatia is an important area of the Croatian economy which can be confirmed by its contribution to the creation of GDP "(the second position in order of importance immediately after the manufacturing industry), share in the number of employees (the second position in order of importance immediately after the manufacturing industry), share in the number of registered companies (the first position) and share in the number of active companies (the first position) (JaTrgovac, 2020)". Unlike the relationship between international trade and economic growth, little attention is paid to the relationship between international trade and quality of life (QoL). At the instinctive level, it could be argued that international trade changes economic growth mainly due to exports, while imports affect economic development. If countries use imports of both human and physical capital along with technology and new ideas, it can expand the development capacity of any country and thus improve the quality of life of its people. For example, imports of advanced agricultural machinery, improved technical services, and modern agricultural methods can expand a country's ability to produce abundant food. The quality of education can also be improved by exchanging experts, researchers and students. Trade openness leads to greater economic development and, consequently, to an improved quality of life. In this context, it is necessary to analyse the consequences that the closure of borders and thus the reduced volume of trade has on GDP, and consequently on the quality of life. Trade as an important economic activity is an intermediary in the added value chain and has a strong influence on production and consumption. According to the Central Bureau of Statistics (CBS), the share of trade in gross value added was 19.6%. Trade participates with 18.6% of the total number of employees (Anić, 2020, p. 3). In trade, changes are frequent and dynamic, since numerous factors influence its development. Trade includes wholesale and retail trade. The decline in tourist traffic was also reflected in the trade turnover. Therefore, retail trade in the period from January to October 2020 decreased by 6.9% in nominal terms and by 6.5% in real terms. This was mostly the result of significantly lower sales of motor fuels and lubricants, as well as of clothes and footwear, mainly due to the shutdown of the economy and significantly reduced tourist arrivals. Sales of motor vehicles decreased significantly (16.4%), participating in the sector with 2.7% (Croatian Chamber of Economy, 2020). At the same time, the pharmacies' turnover increased by 6.2% due to the increased demand for medical and pharmaceutical products. The largest increase of 12.1% was recorded in the online sales of consumer goods. In the "wholesale and retail trade; repair of motor vehicles and motorcycles" sector, there was an average of 206,730 employees in 2019, and in September 2020 this number dropped to 204,739 employees, which is a reduction by 1,991 employees, i.e. 1%. The downward trend of employment continued in October 2020 when it dropped by an additional 0.1%. The share of trade in the structure of GDP quarterly from 2017 to 2020 is presented in the following table.

2017				2018				2019				2020		
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
15.3	19.3	**23.9**	16.8	15.7	19.6	**24.0**	17.4	15.9	19.8	**24.1**	17.5	15.9	15.5	**19.9**

Table 2: Share of trade in GDP
(Source: Author's processing according to the CBS data)

The table shows that the third quarter was the most important for the trade sector as a result of the tourist season, and if we compare Q3/2019 and Q3/2020, it shows a lower contribution to the GDP by 4.2%.

3. ASSESSMENT OF MULTIPLIER EFFECTS OF THE PANDEMIC ON THE CROATIAN ECONOMY

Not all sectors of the economy have suffered equal damage in the 2020 pandemic year. On the contrary, many businesses ran smoothly due to their rapid adjustments, such as implementing the "remote work", product range changes, innovations, e-Economy, home delivery, etc. The businesses of the primary and secondary economic sectors have felt less impact, while the tertiary sector businesses, i.e. tourism, catering, transport and trade, have suffered the most severe damage. The multiplier effects of selected sectors on the total GDP of the Republic of Croatia are researched below. The NCEA[1] nomenclature is used to assess cross-sectoral connections of which "G - Wholesale and retail trade" was analysed for the research topic. Gross value added (GVA) is an appropriate indicator of production in the economy. In other words, the difference between GDP and GVA stems from adjustments for product taxes and subsidies.

4. ESTIMATE OF PANDEMIC'S MULTIPLIER EFFECTS IN THE TRADE SECTOR ON GDP

The extent to which other sectors participate in the value-added generated in trade can be extrapolated from an updated symmetric input-output table (product · product) which includes:

- CPA_G45 - Wholesale and retail trade of motor vehicles and motorcycles; repair of motor vehicles and motorcycles;
- CPA_G46 - Wholesale trade, except of motor vehicles and motorcycles;
- CPA_G47 - Retail trade, except of motor vehicles and motorcycles.

and is shown in the following table:

ACTIVITY	INTERMEDIATE CONSUMPTION	TOTAL USE VALUE	SHARE IN GVA
Wholesale and retail trade of motor vehicles and motorcycles; repair of motor vehicles and motorcycles	4.297,214	8 502 524	12.9%
Wholesale trade, except of motor vehicles and motorcycles	17.451,107	34 025 867	51.8%
Retail trade, except of motor vehicles and motorcycles	9.014,396	23 168 903	35.3%
TOTAL TRADE	30.762,717	65 697 294	**100%**

Table 3: Value of trade services in thousands of HRK
(Source: according to updated CBS data - Symmetric input-output table (product · product))

Trade services are used by several other economic sectors. Intermediate consumption in the transport sector amounted to HRK 30,762,717,000, which is 46.8% of total GVA. The trade sector participates in the total GDP of the Republic of Croatia with 9%. The increase/decrease in production in each of the sectors affects the increase in the gross value added of that sector in accordance with the share of gross value added in gross output, which is determined by input-output coefficients. "The ratio between the total gross value added directly and indirectly generated in the total economy and the increase/decrease in the gross value added of a producer who directly supplies a certain good or service to end consumers is called the gross value added multiplier" (Mikulić, 2018, p. 154). Online updated data from the supply and use table and the

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[1] NCEA is an abbreviation (acronym) for the National Classification of Economic Activities, which is a hierarchically structured classification of all economic activities.

2015 input-output table were used to assess cross-sectoral dependence (CBS, 2021) and based on the calculated multipliers of gross value added and employment according to the template of the Institute of Economics in Zagreb (Mikulić, 2018). Input-output tables make it possible to quantify the total changes that an increase in production of a certain sector brings to the overall economy, and which are the result of cross-sectoral interdependencies in production processes (Mikulić, 2018, p. 153). The following table presents the direct and total effect and the corresponding multipliers for the trade sector.

ACTIVITIES	GROSS OUTPUT		GVA			EMPLOYMENT (PER MILLION HRK)		
	Direct effect	Mult.	Direct effect	Total effect	Mult.	Direct effect	Total effect	Mult.
Wholesale and retail trade of motor vehicles and motorcycles; repair of motor vehicles and motorcycles	1.00	1.54	0.57	0.85	1.48	4.40	5.62	1.28
Wholesale	1.00	1.66	0.48	0.79	1.63	1.81	3.32	1.84
Retail	1.00	1.59	0.49	0.77	1.57	4.68	6.06	1.30

*Table 4: The direct and total effect of an increase in gross output, GVA and employment
(Source: according to Mikulić, 2018.)*

According to Table 4, the multiplier of gross wholesale trade output is 1.66, which means that an increase in final demand for wholesale services of HRK 1 will result in an increase of HRK 1.66 in the total production of the national economy. The gross value added of a unit that directly provides wholesale trade services will increase by HRK 0.48, but the total gross value added of the total economy will increase by HRK 0.79, i.e. the GVA multiplier is 1.63. One million HRK of final demand for wholesale stores directly affects the increase in the number of persons employed in this industry by 3.32, while the multiplier effect on employment is 1.84, i.e. just over 5 employees will be necessary to get employed in the national economy in order to deliver wholesale services to consumers in the amount of HRK 1 million.

5. METHODOLOGY OF RESEARCH
The research was conducted in the period from 20th February – 20th May 2021. The survey questionnaire was distributed from the official websites of trade sector companies operating in the Republic of Croatia. A total of 35 completed questionnaires were received and all were in Croatian. Answering all questions within the survey was mandatory. The Likert 5-point scale was used, where for each selection criterion (from very dissatisfied-very satisfied) respondents could circle one answer on a scale from 1 to 5.

6. RESEARCH RESULTS
The correctly completed survey questionnaires supplied the answers structured in relation to the location of the trading company according to the statistical region. The implication is that 26% of them operate in Northern Croatia, 37% in Adriatic Croatia, 11% in Pannonian Croatia regions and 26% in the City of Zagreb. The next survey question's purpose was to find out the size of the examined company according to the number of employees. The structure of the response is shown graphically as follows.

Figure following on the next page
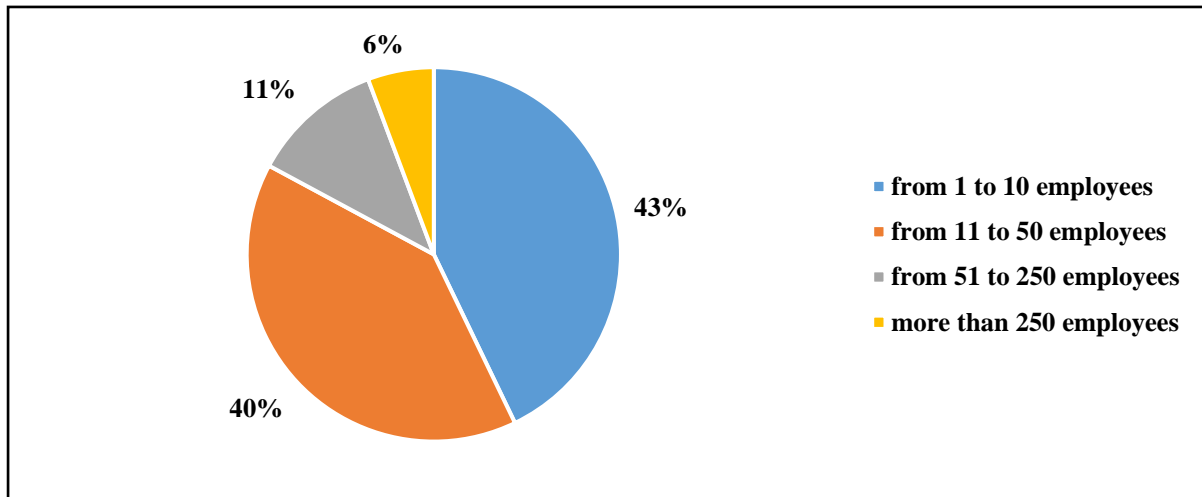
Chart 1: Company size
(Source: Author's processing)

43% of respondents answered that they have up to ten employees in their business enterprise, 40% of them replied to have 11-50 employees, 11% replied to have up to 250 employees, and 6% answered that they have more than 250 employees. From the enclosed answers it is evident that these are mainly small and medium enterprises according to the number of employees.
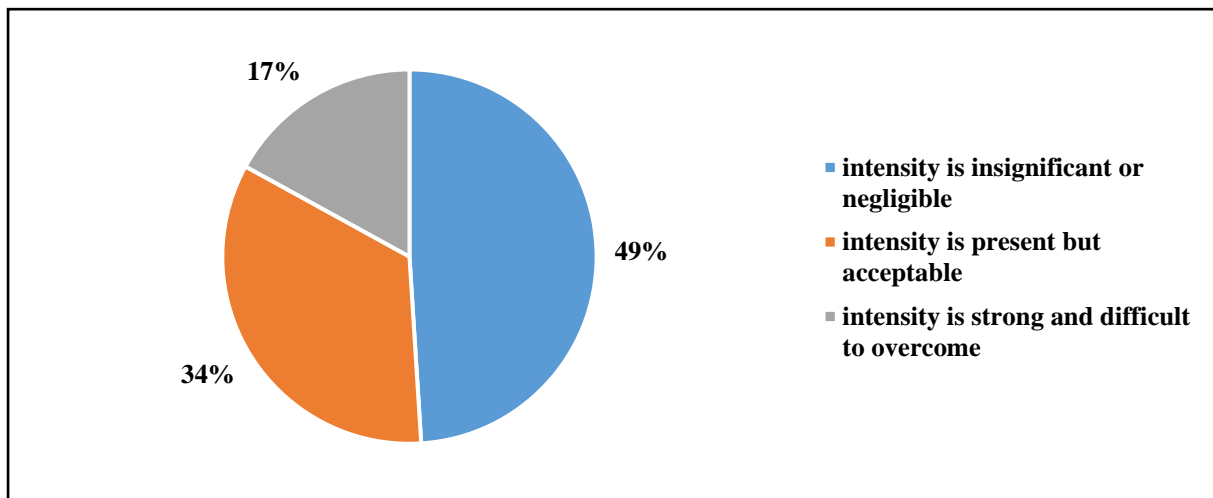
Chart 2: Please estimate the severity of revenue decline in the first quarter of 2021, compared to 2019
(Source: Author's processing)

The following question provided answers regarding the severity of the decline in revenues in the first quarter of 2021 in comparison to the COVID-19 pandemic-free year. It is interesting to note that 49% of respondents answered that the severity of the decline in income is insignificant or negligible. Whereas this is a trade sector, it can be assumed that many companies at the time of the COVID-19 pandemic had quickly adapted to doing business by taking advantage of digital tools such as online sales and thus maintained their sales and revenue. 34% of respondents stated that the severity of the decline in revenues was present but acceptable, which means that these were the companies that have adjusted their operations to the circumstances of the COVID-19 pandemic. Only 17% of them answered that the severity of the decline was strong and difficult to overcome.

The next question asked the trade companies to assess the measures of the Croatian Government regarding the subsidization of employees' personal income.
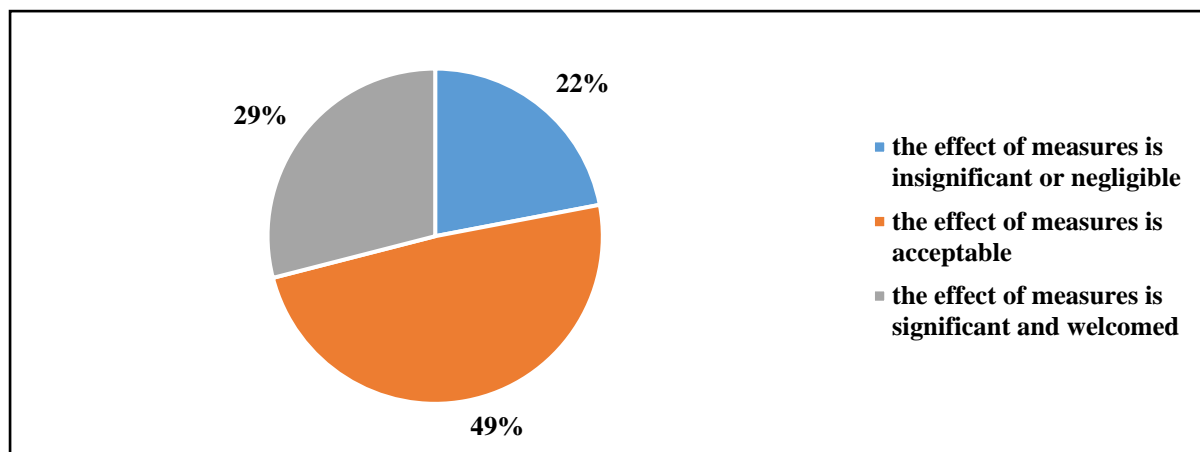
Chart 3: How do you evaluate the Government measures to subsidize employee salaries
(COVID-19 Government wage subsidy schemes)
(Source: Author's processing)

The enclosed chart shows that most companies in the trade sector have positively evaluated the Government's measures in subsidizing employee salaries in the total share of 78% (the total sum of ratings "the effect of measures is acceptable" and "the effect of measures is significant and welcomed"). This confirms the effect of the measures taken by the Government of the Republic of Croatia for jobs retention with HRK 10 billion of subsidies, primarily to the private sector, employees and employers. The Government's aim with the measures it took was to keep the unemployment rate low, to preserve the liquidity of the companies and to ensure the smallest possible economic downturn. However, 22% of business entities operating in the trade sector also stated that the effect of the measures was insignificant or negligible. The next question of the survey questionnaire builds on the previous one and refers to the effectiveness of the measures of the Government of the Republic of Croatia to reduce fixed costs. The structure of the response is shown in the following chart.
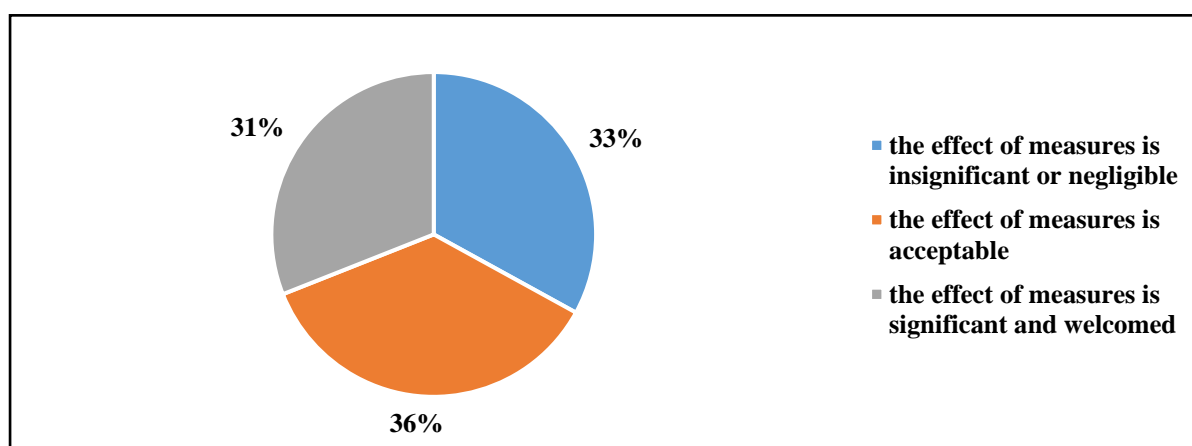
Chart 4: How do you evaluate Government's measures to reduce fixed costs
(Source: Author's processing)

One of the measures of the Croatian Government was full or partial compensation of fixed costs - utilities, rent, RTV subscription, internet, landline telephone, costs of bookkeeping services, monument rent, ZAMP, etc.

It was noticed that the surveyed business entities in the total share of 67% (total sum of assessments "the effect of the measures is acceptable" and "the effect of the measures is significant and welcomed") have positively assessed the effect of the Government measures related to reduction, partial or full subsidy of fixed costs in business operations within the trade sector. However, 33% of them were not satisfied with the implementation of this measure. Some entrepreneurs were not satisfied with this measure because the Government offered to cover fixed costs to those entrepreneurs who had closed business and whose turnover had decreased by more than 70%. Still, some entrepreneurs have requested that all businesses that are in trouble due to the COVID-19 pandemic should be included in the measures. They also suggested that the main parameter be a drop in turnover, and not whether a business is closed due to the COVID-19 measures or not. The next question was intended to analyse the level of satisfaction of business entities in the trade sector with the measures taken by the interest group to which they belong, namely the Croatian Chamber of Economy (HGK). The Croatian Chamber of Economy is the umbrella institution of domestic entrepreneurship. They have been promoting, representing and protecting the interests of their members at home and abroad for over 165 years. Some of the measures proposed by the Croatian Chamber of Economy for the trade sector and its business entities in 2020, which were fully accepted, were the following: opening of retail stores; extension of working hours in grocery stores/retail, pharmacies and shops selling basic household necessities until 8 pm; opening of shops selling new technologies, IT equipment, electronic devices (importance of equipment in working from home, conducting distance learning, etc.); opening of shops for construction materials and home equipment at the level of the Republic of Croatia; opening of furniture and home décor stores in compliance with the measures of the Civil Protection Headquarters; opening of car showrooms and car parts stores in compliance with the measures of the Civil Protection Headquarters; opening of mini markets in smaller towns; opening of shopping malls; increasing the number of customers in stores in compliance with physical distancing measures; too little customer turnover leads to a decrease in turnover between primary producers (dairy, meat, fruits, vegetables) and retail chains, by as much as 43-60%, depending on the type of goods. Since this measure has been in force, surpluses of fresh goods that should have been delivered to customers were left in the producers' warehouses, going bad and being written off in large quantities.
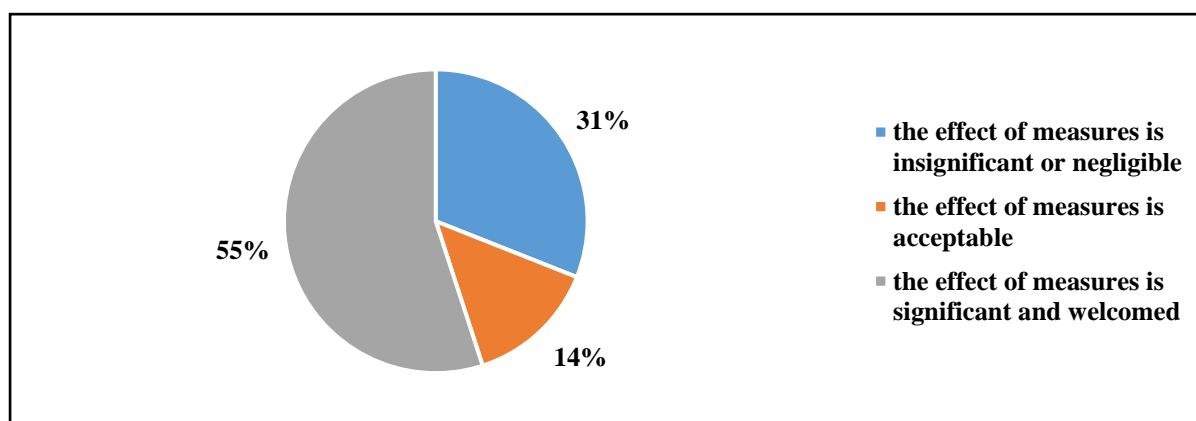
Chart 5: Please evaluate the measures of the interest group (HGK) to reduce fixed costs (Source: Author's processing)

In the total share of ratings of 69% (total sum of ratings "the effect of measures is acceptable," and "the effect of measures is significant and welcomed") the chart shows that businesses in the trade sector were satisfied with the proposed measures and effects to reduce fixed costs in business operations. However, the share (of 31%) of business enterprises that stated that the effect of the measures was insufficient or negligible is also noticeable.

7. CONCLUSION

As a general conclusion of the research, it can be asserted that companies in the trade sector during the COVID-19 pandemic in the Republic of Croatia have experienced a slight or negligible decline in revenue. The reason for this was the companies' rapid adjustment of business operations towards a stronger use of digital tools and online sales, which resulted in maintaining the stable sales turnover and revenue. Furthermore, the companies have positively evaluated the Government's measures of subsidizing salaries and fixed costs. Within the framework of this research, the positive effect in the taken measures of the Croatian Chamber of Economy was identified. In conclusion, it can be said that there had been no significant revenue decline in the trade sector and that the measures of the Government of the Republic of Croatia and the Croatian Chamber of Economy have strongly supported the trade sector. Those measures were welcomed by the trade sector since without them many business entities would have been faced with survival.

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COMPARISON OF THE LIFE CYCLE COSTS OF A NEARLY ZERO ENERGY BUILDING AND A PASSIVE HOUSE

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ABSTRACT

This article deals with the comparison of the life cycle costs of a nearly zero energy building and a passive house. Life cycle costs are addressed from the pre-investment phase to the liquidation phase of the building. The costs of acquisition, operation, maintenance and repair and subsequently of the building liquidation itself are dealt with within the total life cycle costs. Inflation, which normally ranges around 2% per year in the Czech Republic, also plays a very important role in the operational life cycle of the building. However, current inflation in 2021 has exceeded 4%, therefore, it is very important to take inflation into account in the calculation within the life cycle itself.

Keywords: *Building life cycle, nearly zero energy building (NZEB), passive house, item budget, costs, inflation*

1. INTRODUCTION

The key parameter for every decision about the investment is both the input costs and the costs associated with the entire life cycle span of the investment. The technical and legislative framework must also be taken into account in individual construction. The emphasis is mainly put on the energy savings in the operational phase of the building life cycle in the current turbulent times. The so-called passive houses (PH) have become the standard; however, the aim is to further reduce the operating costs towards zero values. However, this is not possible without increased investment costs. The aim is to look for options that are economically balanced and environmentally sustainable.

2. LITERATURE REVIEW

The presented facts and conclusions are based mainly on the valid legislation of the European Union [1, 2, 3], the related legal regulations of the Czech Republic and comments on them [4, 5, 6]. According to [7], life cycle costs can be divided mainly into 3 time intervals. The individual intervals interconnect and contain the design, implementation and operation phases, when the operational costs of the building make up 50-80% of all costs, while the preparation together with the implementation makes up only 20-50%. The costs of repair and reconstructions during the operational phase are further elaborated in [8] The issue of the fourth phase of the life cycle is dealt with mainly in [9], which, among other things, determines the necessary economic benefits.

3. CASE STUDY
3.1. Input data

The data for the analysis of the life cycle of house construction is based on the project documentation of the house. The project documentation was prepared for the construction of a house that falls into the category of NZEB (Nearly Zero Energy Building). Part of the project documentation is an energy performance certificate of the building, which is essential for

calculating energy consumption. The price of the house was determined by an itemized budget in the valid price system of CS ÚRS 2021 02 based on the project documentation. The itemized budget was developed for the NZEB. The price of the passive standard was determined based on an expert opinion with an employee of the Passive House Centre, who concluded, according to practical experience, that passive construction of houses is approximately 20% more expensive than the price of classic house construction.

3.2. Methodology

The research described in the article analyses all the costs within the life cycle of the building. The life cycle of a building is determined by four stages: the pre-investment phase, the investment phase, the operational phase and the liquidation phase. The documentation with all the permits is prepared in the pre-investment phase. In the investment phase, the construction of the building is performed and at the same time, the documentation of the actual state of construction is created. The milestone closing the investment phase is the final official approval, followed by the operational phase. The operational phase is usually the longest of all phases as well as the most expensive, however, this is the subject of comparison based on the calculated data. After 100 years of operation, it is considered that the house is no longer usable, the reality may vary, however, it is necessary to choose a certain milestone which is the time for which the life of the house is designed. The last phase is the liquidation phase, i.e. demolition of the building. As the costs of the building plot are not included within the life cycle costs, the sale of the land or any other operations with it are not considered. The rate of inflation, on the other hand, is taken into account when determining life cycle costs. The Czech National Bank targets inflation at around 2% per year, so inflation is set at 2% in the calculation, even though the inflation rate in the current year is around 4%. The costs that are regular and affected by inflation are calculated first without it and later with the inflation for comparison purposes. The calculation does not include the equipment of the flat except for the HVAC and Sanitation as this cost is quite individual and the moral service life of the equipment would be difficult to determine. On the contrary, if we did not set a price for technical equipment, it would not be possible to include it in the calculation of the energy consumption, which would significantly affect the amount of this cost.

3.3. Results

3.3.1. Calculation of the price of a house

The approximate budget costs of the building are given by the price indicator per m^3 of enclosed space and the size of the building. A price indicator for 2021 was chosen to determine the estimate of the building which is for category 803.6 and structural material characteristic 1 (vertical load-bearing structure made of brick, concrete blocks, blocks) according to JKSO 6,595 CZK/m^3. Based on the price per m^3 of enclosed space, a calculation for the NZEB building was carried out. The price per m^3 of enclosed space was considered to be 20% higher for a passive house.

Table 1: Comparison of the functional and building parts

Building type	Enclosed space [m3]	Price per m^3 [CZK without VAT]	Total price [CZK including VAT]
NZEB	792.00	6,595.00	5,223,240.00
Passive house	792.00	7,914.00	6,267,888.00

However, practical experience concludes that the price indicators per m^3 of enclosed space are not very accurate and the calculation only serves to determine the price estimate of designed works and engineering activities which do not play a significant role within the building life cycle.

3.3.2. Price estimation of designed work and engineering activities
The price of the designed work and engineering activities was calculated based on the calculated estimated price for the building according to JKSO. However, the exact price cannot be determined and can vary within hundreds of thousands. The calculation using the online calculator on the website www.cenyzaprojektanty.cz, which is considered by the Czech Association of Civil Engineers to be a relevant tool for estimating these costs was chosen for the purpose of the calculation.

Table 11: Price estimate of designed work and engineering activities of the NZEB

Performance phase	Designed work		Engineering activities	
	%	**Price [CZK]**	**%**	**Price [CZK]**
Input documentation provision	1.00	4,710.00	2.00	9,420.00
Pre-project preparation phase	5.00	23,550.00	0.00	0.00
Land planning and construction management phase	32.00	150,720.00	5.00	23,550.00
Construction implementation phase	24.00	113,040.00	2.00	9,420.00
Total	62.00	292,020.00	9.00	42,390.00

(Source: own)

Table 12: Price estimate of designed work and engineering activities of the passive house

Performance phase	Designed work		Engineering activities	
	%	**Price [CZK]**	**%**	**Price [CZK]**
Input documentation provision	1.00	5820.00	2.00	11,640.00
Pre-project preparation phase	5.00	29,100.00	0.00	0.00
Land planning and construction management phase	32.00	186,240.00	5.00	29,100.00
Construction implementation phase	24.00	139,680.00	2.00	11,640.00
Total	62.00	360,840.00	9.00	52,380.00

(Source: own)

A price estimate for the design work and engineering activities was determined based on an online calculator. The total price for the NZEB was set at CZK 334,410.00 without VAT, and for the passive building at CZK 413,220 without VAT. It is possible to say from the author's own experience that this price is high, and the price for the designed work shall be in smaller amounts, however, the percentage comparison of those two types of buildings, where the design work of a passive building is almost 20% higher than of the NZEB, is interesting.

3.3.3. Itemized budget
The itemized budget is an integral part of the preparatory phase. The itemized budget was developed based on project documentation in the price system CS ÚRS 2021 02. The itemized budget was calculated for the NZEB. The price for a passive house was estimated within a personal consultation with an employee of the Passive House Centre. Converting a building to a passive standard would mean a price increase of approximately 20%. The total price for the NZEB was CZK 6,054,775.22 without VAT according to the itemized budget developed in the price system of ÚRS 2021 02. The same building in the passive standard would cost CZK 7,265,730.26 without VAT after multiplication.

Table 13: Comparison of the total price of the NZEB and the passive house

Type of building	Building price [CZK without VAT]
NZEB	6,054,775.22
Passive house	7,265,730.26

(Source: own)

3.3.4. Financing the implementation phase
Resulting from the steep growth of prices in the Czech Republic for people's own housing in recent years, the most common way of financing housing is a mortgage, which makes it possible to obtain the necessary funds for the payment of own real estate. Mortgage interest rates similarly to real estate prices are rising sharply, which is why finances are one of the main facts when choosing a housing energy standard. A calculation using a mortgage calculator at a Czech bank, considering its own initial capital of CZK 2,000,000 was performed to determine the monthly payment. The repayment period was set at 30 years and the fixation period was 5 years. The interest rate currently resulted at 3.09%.

Table 14: Comparison of the NZEB and the passive house mortgage

	NZEB	**Passive house**
Property value [CZK]	6,962,991.50	8,355,589.80
Equity [CZK]	2,000,000.00	2,000,000.00
Borrowed amount [CZK]	4,962,991.50	6,355,589.80
Repayment period [years]	30.00	30.00
Interest rate [%]	3.09	3.09
Length of interest rate fixation [years]	5.00	5.00
Monthly payment [CZK]	21,179.00	27,121.00
Total amount paid [CZK]	7,633,962.00	9,773,394.00
Overpayment [CZK]	2,670,970.50	3,417,804.20

Note: Prices in Table 5 are including VAT.
(Source: own)

The table shows that the monthly amount of the NZEB resulted at CZK 21,179.00 including VAT, for a passive house, the monthly payment would be CZK 27,121.00 including VAT. The difference in the monthly amount is 5,942.00 CZK including VAT.

3.3.5. Subsidies

Table 15: Subsidies for the types of building standards

	NZEB	**Passive house**
Amount of subsidy [CZK]	150,000.00	450,000.00
Subsidies for documentation processing [CZK]	35,000.00	35,000.00
Subsidy execution [CZK]	26,000.00	36,000.00
Total for subsidies [CZK]	159,000.00	449,000.00

Note: Prices in Table 6 are including VAT.
(Source: own)

3.3.6. Operating costs
The longest life cycle phase, which is the operational phase, comes into play after the pre-investment and investment phases. The operational phase is considered for a period of 100 years, which is the expected service life of the building according to Decree 441/2013 Coll. Property Valuation Decree. All regular payments that are necessary for the smooth operation of the house are included in this phase. These costs include, for example, heating costs, water and sewage payments and waste collection and disposal.

3.3.6.1. Annual energy consumption
The total energy input, which is 109 kWh/(m^2 per year), for heating 72 kWh/(m^2 per year), for forced ventilation 2 kWh/(m^2 per year), for hot water 31 kWh/(m^2 per year) and for lighting 4 kWh/(m^2 per year) was determined from the Energy Performance Certificate.

Table 16: Distribution of supplied energy

Distribution of supplied energy		
Environmental energy	8.60	MWh/year
Electricity	7.90	MWh/year
Piece wood and wood chips	3.00	MWh/year

(Source: own)

The average price of electricity in the Czech Republic is around 6.12 CZK/kWh. For piece wood, the price is around 1.20 CZK/kWh. The total costs for electricity are CZK 48,348.00 and for wood CZK 3,600.00 for the NZEB. The total operating costs for energy consumption are 51,948.00 CZK/year.

Table 17: Total cost of energy consumption for the NZEB and the passive house

	NZEB	Passive house
Specific heat consumption for heating kWh / (m^2 per year)	52.00	15.00
Total price per year [CZK / year]	51,948.00	14,985.00

Note: The prices include VAT.
(Source: own)

Using specific heat consumption, the costs for a passive house were estimated, where the total energy costs are CZK 14,985.00/year.

3.3.6.2. Water and sewage rates price
The price of water consists of two parts, water and sewage rates. It is necessary to know the location of the building to determine the water and sewage rate as the price per m^3 of water and sewage in the Czech Republic varies depending on the location. The location in the city of Brno was used for the purposes of the research, where the price per m^3 of water and sewage is 80.63 CZK/m^3. Furthermore, the number of 4 people living in the house is considered for the calculation with the average daily consumption of 89 litres per person. The total consumption per year for the whole household is about 130 m^3. At the price of 80.63 CZK/m^3, the total price for water and sewage is CZK 10,477.06 including VAT. The influence of the standard does not affect the price of water and sewage, therefore the same amount is used in the calculation for both types of standards.

3.3.6.3. Waste disposal
Similarly to water and sewage rates, waste disposal rates are different depending on the location, as each municipality sets the price for collection and disposal individually. For the year 2021, the rate is CZK 670 per person. Every person who has a permanent residence at a given address is considered a taxpayer. The total costs of waste collection and disposal amount to CZK 2,680 per year for the entire household. In this case, the standard does not affect the overall price similarly to water and sewage.

3.3.7. Taxes
Taxes represent another cost during the life cycle. Land tax and real estate tax are collected in the Czech Republic. However, the price is the same for both construction standards. Tax rates are set in accordance with Act No. 338/1992 Coll., On Real Estate Tax. The land tax rate, which is marked as a built-up area and the courtyard, which is the surrounding area around the built-up area, is 0.20 CZK/m^2. Therefore, if the total land area is 1,485.00 m^2 and the built-up area of the land is 178.00 m^2, the remaining area of the land for taxation is 1,307.00 m^2. The total land tax is 261.40 CZK/year.

The basic real estate tax rate is 2.00 CZK/m^2, however, this tax base is multiplied by a coefficient within the size of the municipality. The real estate in the research is located in the city of Brno. The city of Brno falls into the penultimate category, where the coefficient is 3.5. The total price for real estate tax is 1,246.00 CZK/year.

3.3.8. Real estate and household insurance

Another cost within the operating phase may be the price of real estate and household insurance. However, this cost is arbitrary, but in the relation to the disasters that have occurred in our territory this year, it is also taken into account in the life cycle. The price of insurance was discussed and determined at a Czech insurance company dealing with property insurance.

3.3.9. General overview of annual operating costs

Table 9: Overview of operating costs of the NZEB and the passive house without inflation and including inflation

	First year [CZK]		Total for life span without inflation [CZK]		Total for life span including inflation [CZK]	
	NZEB	Passive house	NZEB	Passive house	NZEB	Passive house
Energy	51,948.00	14,985.00	5,194,800.00	1,498,500.00	16,219,843.83	4,678,801.10
Water and sewage	10,477.06	10,477.06	1,047,706.00	1,047,706.00	3,271,276.60	3,271,276.60
Waste disposal	670.00	670.00	67,000.00	67,000.00	209,195.64	209,195.64
Taxes	1,507.40	1,507.40	150,740.00	150,740.00	470,658.98	470,658.98
Real estate and household insurance	9,750.00	11,054.00	975,000.00	1,105,400.00	3,044,264.98	3,451,415.91
Total	**74,352.46**	**38,693.46**	**7,435,246.00**	**3,869,346.00**	**23,215,240.04**	**12,081,348.24**

(Source: own)

Table 10: Insurance price per year

Building type	**Insurance price [CZK/year]**
NZEB	9,750.00
Passive house	11,054.00

Note: The prices include VAT.
(Source: own)

Figure following on the next page

Figure 3: Annual operating costs of the NZEB

Annual operating costs of the NZEB

- Energy
- Water and sewage
- Waste disposal
- Taxes
- Real estate and household insurance

70% · 14% · 1% · 2% · 13%
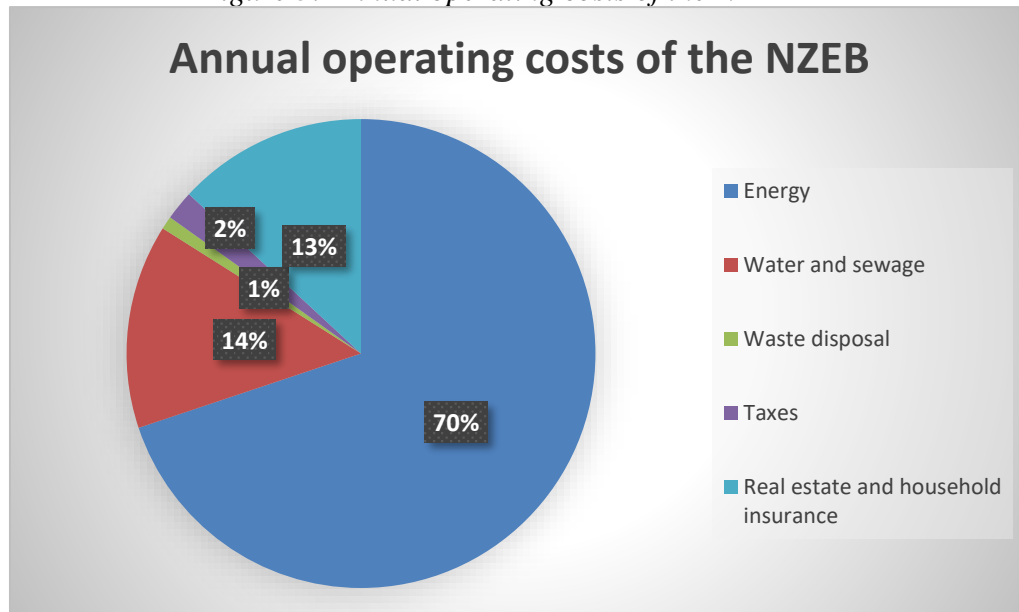
(Source: own)

Figure 4: Annual operating costs of the passive house

Annual operating costs of the passive house

- Energy
- Water and sewage
- Waste disposal
- Taxes
- Real estate and household insurance

39% · 27% · 2% · 4% · 28%
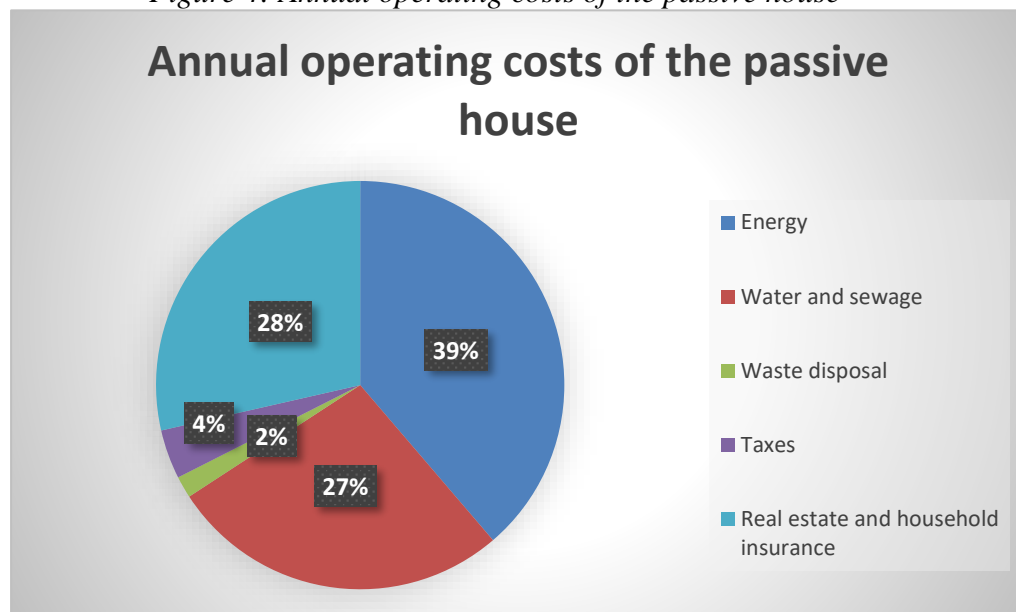
(Source: own)

Figures 1 and 2 show that the energy of the NZEB accounts for more than half of the operating costs, while the energy of the passive house accounts for 40% of total operating costs.

3.3.10. Maintenance and repair costs

During the operational phase, another significant cost occurs, however, it is not regular. These are maintenance and repair costs on the given building structures. Although the service life span of a building is assumed to be 100 years, this does not mean that every building structure will last 100 years, i.e. that some building structures will have to be replaced during their service life, some of them even several times. According to Decree 441/2013 Coll. Property Valuation Decree, Annex No. 11, Tab. 6, the individual structures are classified into groups. According to Annex 21, Tab. 7, the individual structures are assigned a service life span.

However, this classification is quite distorting and would be of no significance, as the functional parts of the price decree and the price system are not consistent within the Czech Republic. Therefore, the actual own processing of the expected costs of maintenance and repairs within the operational phase was performed.

Table 18: Estimated maintenance and repair costs

	Total price for service lifespan without inflation [CZK]	Total price for service lifespan including inflation [CZK]
NZEB	7,398,332.37	26,176,642.76
Passive house	7,768,248.99	27,485,474.89

Note: The prices do not include VAT.
(Source: own)

Maintenance and repair costs were calculated based on the individual service lifespans of the given materials and subsequently, their resulting compositions were assessed, for example, concrete screed can have a service lifespan of up to one hundred years, however since the underfloor heating has a declared service lifespan of around 30 years, the whole composition above this layer must be replaced. In the comparison between the NZEB and a passive house, the price for the total service lifespan was increased by 5%, as the differences in repair and maintenance are not as significant as within the initial costs. Inflation was considered to be 2%.

3.3.11. The building liquidation phase costs
The final life cycle cost is the cost of building liquidation. The demolition of the building was calculated according to the price system of CS ÚRS 2021 02. The building itself was demolished, including the foundation structures, the resulting waste was taken to a landfill and the foundation structures were subsequently backfilled and the site prepared for eventual sale or new construction as a part of the liquidation phase. No asset acquisition was expected within the life cycle and therefore no potential sale was considered. The demolition of the building was calculated at CZK 849,635.10 excluding VAT. The price is at the current price level, is difficult to estimate what the cost of demolition will be in 100 years, however, since the cost for liquidation of the NZEB and the passive house shall be considered to be the same, this amount does not affect the calculation.

3.3.12. Total life cycle costs
The total life cycle costs are conditioned by the large amount of costs that arise within the life cycle. These are the costs of acquisition, operating costs, maintenance, repair and operating costs, liquidation costs, all these affected by the costs of interest on a mortgage or household insurance. The total costs include all the costs affecting the calculation of construction life cycle costs.

- Costs for design and engineering activities in the pre-investment phase,
- Costs for the implementation of the building,
- Operating costs (energy, water and sewage, waste disposal and collection, taxes and insurance)
- Maintenance and repair costs,
- Other costs (mortgage, subsidies).

The construction of a passive house within the evaluated period resulted to be more advantageous. The evaluation period was 100 years.

Table 19: Overview of the NZEB and the passive house cycle costs without inflation and including inflation

	NZEB		Passive house	
	Price without inflation [CZK]	**Price including inflation [CZK]**	**Price without inflation [CZK]**	**Price including inflation [CZK]**
Designing and engineering activities	384,571.50	384,571.50	475,203.00	475,203.00
Construction	6,962,991.50	6,962,991.50	8,355,589.80	8,355,589.80
Construction with mortgage	9,633,962.00	9,633,962.00	11,773,394.00	11,773,394.00
Subsidies	159,000.00	159,000.00	449,000.00	414,000.00
Operating costs	7,435,246.00	23,215,240.04	3,869,346.00	12,081,348.24
Maintenance and repair costs	8,508,082.23	30,103,139.17	8,933,486.34	31,608,296.12
Liquidation costs	977,080.37	977,080.37	977,080.37	977,080.37
Total without mortgage	**24,108,971.59**	**61,484,022.58**	**22,161,705.50**	**53,083,517.53**
Total with mortgage	**26,779,942.09**	**64,154,993.08**	**25,579,509.70**	**56,501,321.73**

(Source: own)

3.4. Discussion

The study presented in this article was performed on only one sample of a house. The pricing of a passive house was carried out only based on an expert opinion by a passive house designer, however, in some cases, it may be sufficient to change the layout to the sides of the world for passive standard adaptation, so the cost of passive standard adaptation may be misleading. In case of further research in this field, it is possible to extend the study by further steps.

- Remake the project documentation of the NZEB to a passive standard and subsequently calculate the price using the passive standard itemized budget,
- Extension of the sample towards residential and civic buildings,
- Life cycle cost assessment for a shorter period (e.g. decades),
- Life cycle cost assessment with the sale of real estate instead of the liquidation phase.

4. CONCLUSION

The results show that the calculation of the construction of a passive house within the entire life cycle results significantly better than the NZEB. Despite the high input costs for passive construction, there is a recovery of the investment over the life cycle. When considering 2% inflation, passive construction appears to be much more advantageous than the acquisition of the NZEB. The results of the study can be used, for example, by private investors in the pre-investment phase to make the decision about what type of construction to invest in.

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NON-PRICE FACTORS OF RETAIL PRICE IMAGE

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ABSTRACT

With the strengthening of competition in contemporary retail, companies are competing with price and quality elements. Therefore, creating a price image and managing it is becoming increasingly important. The paper deals with grocery retail, in whose stores consumers very often make purchase. Nevertheless, consumers are more often guided by price perception than actual prices. Price provides information to consumers, but price itself has no meaning. It is understandable to consumers only in a certain context that includes other information such as product, brand, and/or store. Following this logic, the price image is formed not only based on prices themselves but also based on different price dimensions and non-price factors. Non-price factors can improve the understanding of how consumers evaluate prices. This paper aims to conduct a literature review on non-price factors of retail price image – product range, private label product range, design and atmosphere of the store, service level, and location, and to conclude about their role in price image perception.
Keywords: Location, Price image, Private label, Product range, Retail store, Service level, Store design, Store atmosphere

1. INTRODUCTION

Price image represents a marketing concept that belongs to behavioural research on prices. One of the most cited definitions of retailer price image is the one given by Hamilton and Chernev (2013) who define it „as the general belief about the overall level of prices that consumers associate with a particular retailer ". That consumers' general belief is formed not only based on prices themselves but also based on different price dimensions and non-price factors. Non-price characteristics of retailers have a very important role in the formation of the price image which has been emphasized by numerous authors (e.g., Baker et al., 2002; Grewal and Compeau, 2007; Mägi et al., 2017). Consumers' reliance on non-price characteristics when forming a price image may lead to the fact that they do not even notice the overall change in the price level (Mägi et al., 2017). Therefore, the aim of this paper is to conduct a literature review on non-price factors of retail price image. There has been a lack of research that considered non-price factors as potentially influential variables of retail price image perception. It is certainly expected that retailers with their non-price characteristics can influence the perception of consumers about the prices in their offer. Non-price factors can support price factors in achieving the desired price image and strengthening it, but they can also diminish the importance of price factors.

2. RESEARCH FRAMEWORK

Some of the non-price factors are also considered to be part of the cognitive process of retail store evaluation. Haryono and Sihombing (2018) state that this process is manifested through social characteristics (employees, service, appearance), design (lighting, displays), ambience (decoration, music) and assortment characteristics (type, quality) and that it occurs when the buying process is easy for the consumer and when they have positive impressions and opinions about the store. The non-price characteristics of retailers are to some extent determined by the retail format through which they operate. Koschmann and Isaac (2018) analysed how consumers associate different retail formats with different price images. They considered the level of convenience, customer service, frequency of promotions, width and depth of product range, cost structure (the perception of the consumers that "this retail format probably has more purchasing prices"), and the atmosphere during the shopping. The authors came to the result that the listed features explain 25.3% of the variance in the consumer's assessment of the price image of a particular retail format. The latter also highlights the necessity of considering the non-price factors while managing the price image, as well the necessity of academic research on it. Based on the literature (e.g., Haryono and Sihombing, 2018; Mägi et al., 2017; Hamilton and Chernev, 2013), non-price factors of retail price image include elements of the retail marketing mix. The product range is a retailer's product and by choosing it, retailers can direct the price level - for example, by choosing a higher quality and more expensive branded products. However, in recent years there has been a very strong development of products under the private label of retailers, so the product range is divided into general (with an emphasis on brands) and the range of private label products. Considering that consumers are visual beings, it can be expected that the design and atmosphere of the store where they buy, will affect the perception of price image. A nicer atmosphere and design perceived as more expensive will possibly lead to the perception of the higher price image. By the same logic, a better service level, e.g., more sales staff and more different forms of serving, can also affect the perception of the price level as higher. And finally, a better store location that consumers get to faster and easier, without the use of a car, can also point to higher prices. The following chapter provides the literature review on the described non-price factors.

3. LITERATURE REVIEW ON NON-PRICE FACTORS OF RETAIL PRICE IMAGE
3.1. Product range

The product range is one of the key marketing and identification elements for the retailer. Moreover, it represents the retailer's product. Kumar et al. (2017) define the product range as "a set of products and/or services that a retailer provides to consumers". Graciola et al. (2018) point out that the product range also expresses the identity of the retailer with its composition. Therefore, it is also related to the price image if it can have a certain symbolic meaning for consumers. The retailer's product range with its composition, width, and depth certainly affects consumers' perception of the quality of the offer. The more well-known brands of manufacturers are in the range, it is expected that the perceived quality, but also the perceived retailer's price image will be higher. In line with the definition of price image given by Hamilton and Chernev (2013), Popp and Woratschek (2017) defined the price image of a (product) brand as "a general belief about the overall price level that consumers associate with a particular brand". Since the manufacturer brand includes a smaller number of items, there is less diversity in the overall marketing communication, and it is easier for consumers to form an opinion about the price image of an individual brand. Indirectly guided by this, consumers can also create the impression of the retailer's price image given the presence of certain manufacturer brands in their product range. Given that price promotions are inseparable from the products and with a focus on well-known manufacturer brands, it is appropriate to mention that Empen et al. (2015) proved that well-known brand products are less common at price

promotions than less well-known brand products. Certainly, this fact also facilitates the formation of their price image because consumers are not confused about their quality and overall image by frequent discounts. The more low-priced products there are in the product range, it is more likely that consumers will form an opinion of the retailer's price image as that of low prices, emphasizing that this is true for consumers who have a good knowledge of prices. Those with poorer knowledge of prices rely on the ease of remembering low prices, emphasized through price communication, advertisements, and other features of low prices (Lowe et al., 2013). Given that the product range also includes a large proportion of mid-priced products, it is important to point out that mid-level products (e.g., quality, price) generally take a higher market share from lower-level products than from higher-level products (Simonson and Tversky, 1992). How this will affect consumer perception depends on their intentions, whether they have a real intention to buy the product or just look around the store. Koschmann and Isaac (2018) investigated the influence of product range width and depth on price image and regression analysis showed that the width has a statistically significant negative influence on price image, while depth, i.e., diversity in each product category, had no statistically significant influence. The same authors believe that consumers form an opinion about the availability of well-known brands and their prices at different retailers. Consumers themselves expect that a well-known brand will be more likely available at a retailer with a high price image than one with a low-price image and that they will pay more for the same branded product from retailers with a higher price image. These authors made a difference between retail formats that are not directly comparable, using a drugstore as a retail format of high price image and mass merchant format for that of low price image. For the purposes of this paper, grocery retailers are investigated and the differences between them are less highlighted. Nevertheless, the analogy is similar and leads to the conclusion that regardless of the retail format, the product range, that represents the product of the retailer, has a certain connection with the price image. Further on, Lourenco et al. (2015) state that in traditional supermarkets, the price image is affected by the diversity of quality in the product category and longer-lasting products that are purchased in larger quantities and can be stored for some time in the household. On the other hand, at hard discounters, the price image is affected by categories that contain a lot of different SKUs and categories that consumers frequently buy. Given the environmental trends and greater consumer awareness of health and nutrition, many retailers are introducing organic products into their range, especially semi-organic, i.e., those between conventional and organic (Van Herpen et al., 2015). Such products raise the quality of the retailer's offer, and in fact, for FMCG retailers are more suitable than completely organic. Completely organic are more suitable for specialized stores given the smaller segment of consumers who buy them, primarily because of their price. Van Herpen et al. (2015) showed that the choice of such products depends on the place of their display on the shelves, depending on the level of their prices. It depends on whether consumers compare them with conventional products when their price is lower and are exposed among them, or they perceive them as a separate, healthier category of products separately displayed when their prices are at a higher level. Therefore, the intensity of the presence of this type of products among different product categories can affect the perception of price image. It will certainly be perceived as that of higher prices since the prices of such products are generally higher than the prices of conventional products, but also positive because the retailer seeks to provide consumers with a healthier diet, but at more affordable prices than in specialized stores. In any case, the goal of retailers should be the best possible selection and the best possible display of products on the shelves, to achieve a recognizable identity. This facilitates the achievement of a price image that will attract consumers to stores and encourages their purchase by good exposure of products at the point of sale.

3.2. Private label product range

Retail brands or private labels (PL) have been present on the retail shelves for a long time. They have gained in importance with the consolidation of retailers whose bargaining power in the food supply chain has grown with their size. As the main advantages that PL brings to the retail market, the OECD (2014) recognizes the strengthening of competition and potentially lowering the price level, while the quality remains at the same level. On the other hand, there is a suspicion of stagnation of innovation that will depend only on manufacturers. Due to lower price levels, manufacturers could invest less in research and development, and a further increase in retailers' power could result from an increase in consumer loyalty to their stores. All these shortcomings apply to the entire supply chain, while retailers with their PL generally achieve only benefits for their business. At the beginning of PL development, their success was most often attributed to their price, in contrast to manufacturers' brands whose success is most often contributed by the symbolic value they provide to consumers (Vranešević, 2007). Rekettye and Liu (2018) believe that consumers regularly evaluate the quality of a product or offer based on price because the price is the easiest factor through which the quality can be expected. The existence of a price-sensitive consumer segment was one of the reasons for the emergence of PL focused on reducing cost (price) and quality. However, the price is no longer the only factor influencing PL performance. It is also important to point out that Vranšević (2007) believes that the image of retailers affects the image and perception of the quality of its PL products. Retailers have realized that low-quality products and prices can damage their overall image. Therefore, it can be expected that with the continuous development and growth of sales of PL products, they also affect the perception of the image and price image of retailers. The goal of retailers is no longer just to provide a (low-quality) product at a low price, but a product of equal quality at a slightly lower or even equal price of manufacturer brands. Accordingly, it can be considered that especially the retail formats of discounters have made a step forward in this because Ter Braak et al. (2013) point out that low prices of their PL products are not necessarily achieved at the expense of their quality. In addition, they believe that the producers of well-known national brands are helping them to achieve quality, but at the same time creating stronger competition for themselves. However, Ter Braak et al. (2013) state that the strongest manufacturers strictly separate the production of PL products from their brands, even by opening other companies, all to preserve their image among consumers. Retailers manage their private labels just as manufacturers manage their brands, deciding on all marketing decisions, and thus of course on the basic marketing mix - 4P. The decision that is made much easier for retailers is the one about distribution since they have secured placement in their stores. Apart from the fact that they do not negotiate the listing and locations of points of sale, they also do not negotiate on consumer prices, especially not price discounts, and other marketing activities. The quality of the FMCG retail products is somewhat easier to compare than, for example, the offer of retail clothing, precisely because they often have the same branded products of well-known manufacturers in their range. However, they often differ in the number and variety of SKUs in certain product categories, and the comparison of quality is made difficult by the presence of many PL products. Since consumers tend to buy from more than one retailer (Baltas et al., 2010) and can choose between the same manufacturer brands, PL products are one of the key differences among retailers' product ranges. PL products are never identical within different retailers, including the appearance of the packaging, product composition, and size. Therefore, the price combined with PL brand, general image, and retail price image is often the key measure of quality. Precisely because of the low prices in the absolute amount of food products and other products of everyday use, Vranešević (2007) states that it is easier for grocery retailers, which have most of these categories, to sell PL products that will be accepted by consumers.

There are numerous benefits that retailers gain by developing, managing, and selling PL products, such as achieving higher margins and reducing dependence on manufacturers of well-known brands. In addition to achieving a higher margin by managing their brand, Kumar and Kim (2014) state that retailers have introduced PL to differentiate themselves from other retailers with their offer. It is useful to point out the advantage mentioned, among others, by Vranešević (2007), which is that retailers can improve their image with positive perception and the image of their PL. The difference between both the price and quality of PL and manufacturers brands was significant in the past. Today this difference is almost non-existent. A mitigating circumstance for retailers is also that these are mostly products (FMCG products) where the symbolic value is not crucial.

3.3. Design and atmosphere of the store

In-store design and atmosphere cannot and should not be neglected given that people are generally visual beings. When shopping, consumers are exposed to numerous stimuli and experience the purchase with all their senses. Grace and O'Cass (2005) believe that the physical environment in which consumers shop has a very important role in retail because it creates a shopping experience for them and potentially encourages them to buy. The atmosphere of the store can be defined as "factors of the store's ambience that affect the purchasing mood of consumers" (Kumar et al., 2017). The better the mood, it can be assumed that consumers are also less price-sensitive, so Lowe et al. (2013) state that studies indicate that the atmosphere and environment in which consumers make purchases increase their willingness to pay. Baker et al. (1994) believe that retail marketing elements in a store such as colour, lighting, decorating style, or music may have more influence on consumer decision making than, for example, advertising (external, through the media) that is not present in the store. Baker et al. (2002) state that the atmosphere in the store provides consumers with certain information, i.e., they perceive important characteristics based on which they can form an opinion about the prices, services, or products offered in the store. To complete the notion of the above, it is interesting to cite the situation described by Rekettye and Liu (2018). Namely, they described an example in which the consumer had already chosen bananas to buy but changed his mind and gave up buying because he thought they were too expensive, concluding only based on the store appearance, without knowing the price of bananas at other retailers. Accordingly, Koschmann and Isaac (2018) presented by regression analysis how the atmosphere in the store has a statistically significant positive effect on the price image. In contrast, Haryono and Sihombing (2018) in their study did not find a statistically significant association between store atmosphere and store cognitive assessment, explaining that probably the main reason for this was a survey sample dominated by very young Z-generation consumers. O'Cass and Grace (2008) also did not prove the shopping environment and atmosphere as a statistically significant influencing variable on value for money, which can represent one dimension of the price image. Elements of store design and atmosphere have a stronger impact on consumers who do not have detailed information about product characteristics, their price, or quality (Zeithaml, 1988). Therefore, it could be expected that the more consumers are familiar with the retailers' offer, the less the atmosphere in the store will have an impact on the price image. Discounters retail formats appeared on the market with extremely modestly decorated stores, which reflected their low prices. They did not provide many services, but consumers accepted it precisely because of the low prices. However, one can also see the characteristics of the concept of the wheel of retailing, which indicates that discounters are slowly improving the shopping experience, at least in terms of design and atmosphere in the store. According to IGD (2019), Lidl in France continues to improve its stores through improved layouts and shopping experiences for consumers. A step forward in decoration and a better atmosphere in the store is visible in other countries as well, e.g. Croatia.

In the newly opened stores or redecorated ones, the floor is renewed with large modern tiles, the aisles are much wider, the interior walls are covered with warm wood panelling, and glass walls let in a lot more daylight - while prices are the same as in their other stores, that haven't been improved yet. It is to be expected that the store design and atmosphere have a certain influence on the perception of the price image of retailers, but also that it depends on how recognizable and strong other elements of the retail business are.

3.4. Service level

The service that retailers provide to consumers is very layered and could be broken down into many components, visible and invisible to consumers. It is emphasized that the level of service in retail differs significantly from other service activities and represents a combination of products and services (Mehta et al., 2000). Thus, Keh and Teo (2001) argue that retailers offer two types of products - tangible, which represent the actual products they sell, and intangible. The intangible product that retailers provide is precisely their distribution service and all the activities involved, from the locations of their stores where consumers can make their purchases, providing information, product selection, and product availability, and the shopping atmosphere achieved through the physical environment and level services. For example, as a very important component of the service level, Bouzaabia et al. (2013) point out the level of logistics service in the store such as the level of out-of-stock, returns, availability of shopping aids (e.g. baskets), ease of taking products from shelves for consumers and the level of information. For the purposes of this paper, the service level primarily refers to the store service level provided by staff, while some other features such as store atmosphere and location are addressed as separate factors. Grace and O'Cass (2005) consider the level, i.e. quality of service, to be a multidimensional feature, but also consider that in-store staff has a key role in the perception of the service provided and represents a very important element of the overall retailer offer. Their role is irreplaceable because the processes that provide retail service are performed by employees and the entire service depends on their work and behaviour (Cass and Grace, 2008). It can be said that the work can refer to those processes that are both visible and invisible to consumers, while the behaviour is primarily related to communication with consumers. The importance of staff and their role in communicating with consumers and delivering services that are in direct contact with consumers, such as providing product or price information or billing, is also emphasized by Pugh (2001) who believes that consumer perception of service provided by store staff, can have a very significant role in the overall assessment of the level of retail services. Also, the importance of the service provided is further emphasized as research has shown that the level of service, and especially service provided by staff, affects the perceived value for money provided by the retailer (O'Cass and Grace, 2008; Grace and O'Cass, 2005), a feature already mentioned as one of the possible dimensions of the retail price image. Furthermore, the price image can be compared to some extent with the corporate image because it is expected that they should be harmonized with each other. The impact of service level on the corporate image was investigated by Yu and Ramanathan (2012) and concluded that there is a statistically significant positive impact. A higher level of service improves the perception of the corporate image. Exploring different retail formats, including the level of service that included staff kindness and consumer-friendly business policy, Koschmann and Isaac (2018) concluded based on a regression analysis that the level of service has a statistically significant positive effect on price image. It is interesting to mention that Wu et al. (2011) showed in their research that the level of retail service directly affects the image of its PL products, but not the intention to buy them. Finally, the level of service is directly related to the level of prices that the retailer offers in the market. Considering that mark-up, i.e. the difference in retail price must cover all costs incurred in the company (Rekettye and Liu, 2018), a higher level of service leads to higher prices as well.

More in-store staff that consumers can talk to, more serving services (various delicatessen, fresh meat, fish, or ready-made hot dishes), or more open cash registers can suggest to consumers that because of such service level, the prices will be higher.

3.5. Location

The location has always been one of the key factors for retail business success - it is important to be in a frequent and easily accessible location. With the development of online retail, the location of physical stores has lost some importance, but this is more related to, for example, retail of electronic products, while for the grocery stores it is less expressed. Bell (2014) points out that even in contemporary retail, despite the strong development of e-commerce, location is still "everything". Since the location decision is long-term, it is made at a strategic level and is extremely important for retailers because it cannot be changed quickly, easily, and cheaply. Popkowski Leszczyc et al. (2004) state that retailers consider the location decision from two aspects - the distance of the store from the consumer and the distance from the competition. The latter has an impact on the choice of pricing strategy, as at higher average distances of competition, retailers are more inclined to use high-low (HiLo) pricing strategy (Gauri et al., 2008), given that their location is suitable for the larger trading area and less emphasis on prices. In addition, the cost of the location itself for the retailer directly affects the final price on the shelf. The cost of buying or renting store space varies significantly depending on whether it is a location in the city centre, on the outskirts of the city, in a rural or tourist-developed area. Whether retailers will adjust the sales price of the product depending on the location depends on their pricing strategy, but also on the price image they want to achieve – consistent prices and price image no matter the location or price segmentation that will probably blur and disturb the clear price image. The location of the store can often be the main reason for purchasing at a retailer, as most consumers want to reduce both the monetary (transportation cost) and non-monetary cost (time) of grocery shopping. Bell et al. (1998b) argue that location is not a sufficient explanation for choosing a store to buy. Location is part of the fixed cost of shopping because that cost exists whether consumers go shopping for one or a dozen products. Therefore, consumers may prefer stores with a high fixed cost (remote location) for their large purchases (variable cost), as this distributes this fixed cost into a larger number of products. Given that Bell et al. (1998b) point out that consumers are most likely to visit the store with the lowest total purchase cost, retailers can be considered to combine exactly that - remote store locations on the outskirts of the city that represent a high fixed cost for consumers, often have a lower variable cost than stores in better (closer) locations. Popkowski Leszczyc et al. (2004) state that there are two extremes - extremely convenient locations, such as neighbourhood stores, and much less convenient locations, such as the one on the outskirts of the city where consumers probably go by car. The location is intertwined with other retail elements, so stores in better locations will often be smaller and likely to offer better quality products and personal contact with employees. On the other hand, on the outskirts of the city are mostly large stores, with a very wide product range and lower prices, but also with less personal service. Because of all the above, it can be expected that the location itself could affect the price image of retailers. The location of the *Every Day Low Prices* (EDLP) retailers is mostly on the outskirts of the city, where more space is available and rental prices are lower. It can be said that with the higher fixed cost of the location for consumers, retailers compensate with lower prices and thus improve their competitiveness which was initially violated by the less attractive location. However, smaller EDLP stores with a limited range are also present in more convenient locations, close to residential areas (Popkowski Leszczyc et al., 2004). Examples include Aldi and Lidl opening their new retail formats in the US market - Aldi Local and Lidl Express (Wells, 2017). Store area and product range are reduced, all to be able to open their stores in more attractive locations that will attract consumers, in a busy everyday life, without a car.

It can be considered that these discounters decided on such moves only after they established their position and price image in the specified market. The intertwining of location with other retail marketing elements cannot and should not be avoided, and it is particularly visible in connection with the retail format and price (which is why the term price format is sometimes used as well – e.g. Bell et al., 1998a). Like the examples of Aldi and Lidl, Walmart also tried to adapt its business concept through Walmart Express, solely for the reason to be present in new, more attractive locations. This retail format was not successful, and the reason can be found in the fact that it differed significantly from the original Walmart stores, on which their market position was built. On the other hand, the differences between the usual and new formats of Aldi or Lidl were much smaller. From all the above, it can be concluded that the location has encouraged the emergence of new retail formats, which once again emphasizes its importance in retail. Therefore, it is to be expected that location can be an important factor in creating and managing the retail price image. Although they did not research the location on its own but as part of the convenience of shopping along with working hours, Koschmann and Isaac (2018) did not find a statistically significant impact of the location on the price image of retail formats. Nevertheless, the same authors concluded that when a retailer is opening new stores in new geographical areas, consumers rely on the retailer's price image (can be associated with the retailer's name and brand) rather than its dominant retail format.

4. CONCLUSION
Many retail elements can have a direct or indirect influence on the retail price image. Product range, as the product of retailer, could have one of the major roles since the price is understandable only when it is assigned to the product. However, the increased importance of private labels is evident. They have made significant progress in strengthening their image and it can be expected that today they are almost equal competitors to manufacturer brands in many product categories. Brand products at price promotion are considered to attract a larger consumer base, but private label products at price promotion also ensure the loyalty of consumer-friendly retailers and strengthen interconnectedness. In addition, retailers know the cost structure best and achieve the highest margins on their PL products, so in this aspect, it is easiest for them to manage regular prices and price promotions as an important factor in overall price management, price image, and retailer brand. The in-store design and atmosphere stand out as an important element in the perception of the retail price image. Consumers relatively easily create a certain impression of prices depending on the space in which the products are exposed. A pleasant atmosphere, new and modern decoration may increase the willingness of consumers to pay, but at the same time remind them to consider whether the offered price is good and whether the competitor with a less attractive store offers the same product at a lower price. Retailers need to find the optimal level of the comfortable and attractive store design. As for the service level through the role of staff in grocery retail, it could be less emphasized than in some other retail sectors that are more specialized and consumers need more communication with staff, e.g., buying electronic products or furniture. In this case, consumer communication with staff is usually reduced to the provision of service at the checkout and possibly the return of the product. Certainly, the staff and the speed and comfort of the service provided, affect the overall consumers' satisfaction with the overall service of retailers. In addition, in contemporary society more attention is given to various screens and technologies, and it is possible that the influence of the level of services, primarily staff, has been partially lost. Perhaps a higher level of services as a non-price factor could also be based on modern technology - more scanners to inform about products (e.g. price, origin, usability, etc.) or self-paying cash registers, and as such can be an influential variable on the retail price image. Location will always be an important factor when it comes to physical retail stores.

When it comes to grocery retail, the usual store density is quite high, and convenience is very important for consumers. However, if the store is not within walking distance and consumers must go by car, usually several different retailers are at equal distances and the location itself does not have a key role. It can be expected that location would be more connected with store price format, i.e. convenient/neighbourhood stores are more expensive than large stores as hypermarkets, and thus indirectly affects retail price image. This research tried to provide the foundation for understanding the role of observed non-price factors in the perception of retail price image. Limitations of this research arise from the fact that it included five non-price factors, while there could be other non-price factors as well, e.g. corporate social responsibility as an increasingly important factor in contemporary society. Future research could focus deeper on the papers from the most important databases Web of Science and Scopus. Finally, it is necessary to develop a measurement instrument and conduct comprehensive primary research on consumers, including both price and non-price factors of retail price image.

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MONITORING AGRICULTURAL POLICY USING DRONES - COMPARATIVE METHOD: SATELLITES VERSUS AGRICULTURAL DRONES

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ABSTRACT

The European Commission adopted new rules during the period 2020, which allow for the first time the use of satellite images in carrying out controls with farmers, without which they cannot collect EU subsidies, against the background of achieving the specific objectives of the Common Agricultural Policy. The satellites used shall obtain crop observation data and information that can be used as evidence when farmers verify and meet the requirements of the common agricultural policy. In this Article, using the comparative method, satellites versus agricultural drones, we will be able to obtain sufficient and conclusive information about farmers' crops and activities using data provided by satellites versus agricultural drones on the same types of land use categories.
Keywords: *sensor, unmanned aerial vehicle (UAV), precision agriculture, normalized difference vegetation index (NDVI)*

1. INTRODUCTION

One of the basic instruments of the common agricultural policy (CAP) is Regulation (EU) No 1306/2013 regarding the financing, management and monitoring of the common agricultural policy through the two main CAP funds: * The European Agricultural Guarantee Fund (EAGF) which mainly finances: A) direct payments to farmers (Regulation (EU) No 1307/2013); and b) measures to support agricultural markets (Regulation (EU) No 1308/2013). * European Regional Development Fund (ERDF) — which co-finances the national rural development programs prepared by EU countries based on the Regulation (EU) No 1305/2013. The Member States of the European Union through the authorized institutions (paying agencies according to Fig.1) will be able to check their farmers who benefit from subsidies using images provided by Copernic Sentinels satellites, without being necessary the traveling on the field of the inspectors, as it has been the case so far. The European Commission, through the rules adopted, for the first time, uses images provided by satellites to carry out the controls on farmers, without which they cannot cash up EU agricultural subsidies. The inspections on the field will only be required when the digital evidence is not sufficient to verify compliance. This new satellite technology will significantly reduce the number of inspections on the field. It will also bring benefits for the public administrations by reducing the costs of managing the controls. According to the European Commission, Member countries will have the freedom to choose whether or not to apply the new monitoring approach. Aerial images and satellite images have been used for a long time in the common agricultural policy to verify area aid, which today represents almost 80% of EU funding for agriculture and rural development.

These images usually have a very high spatial resolution, but before 2017 the frequency with which they were collected was not sufficient to allow the verification of the activities that take place on agricultural land throughout the year (harvesting, for example) (Economica.net, 2018).
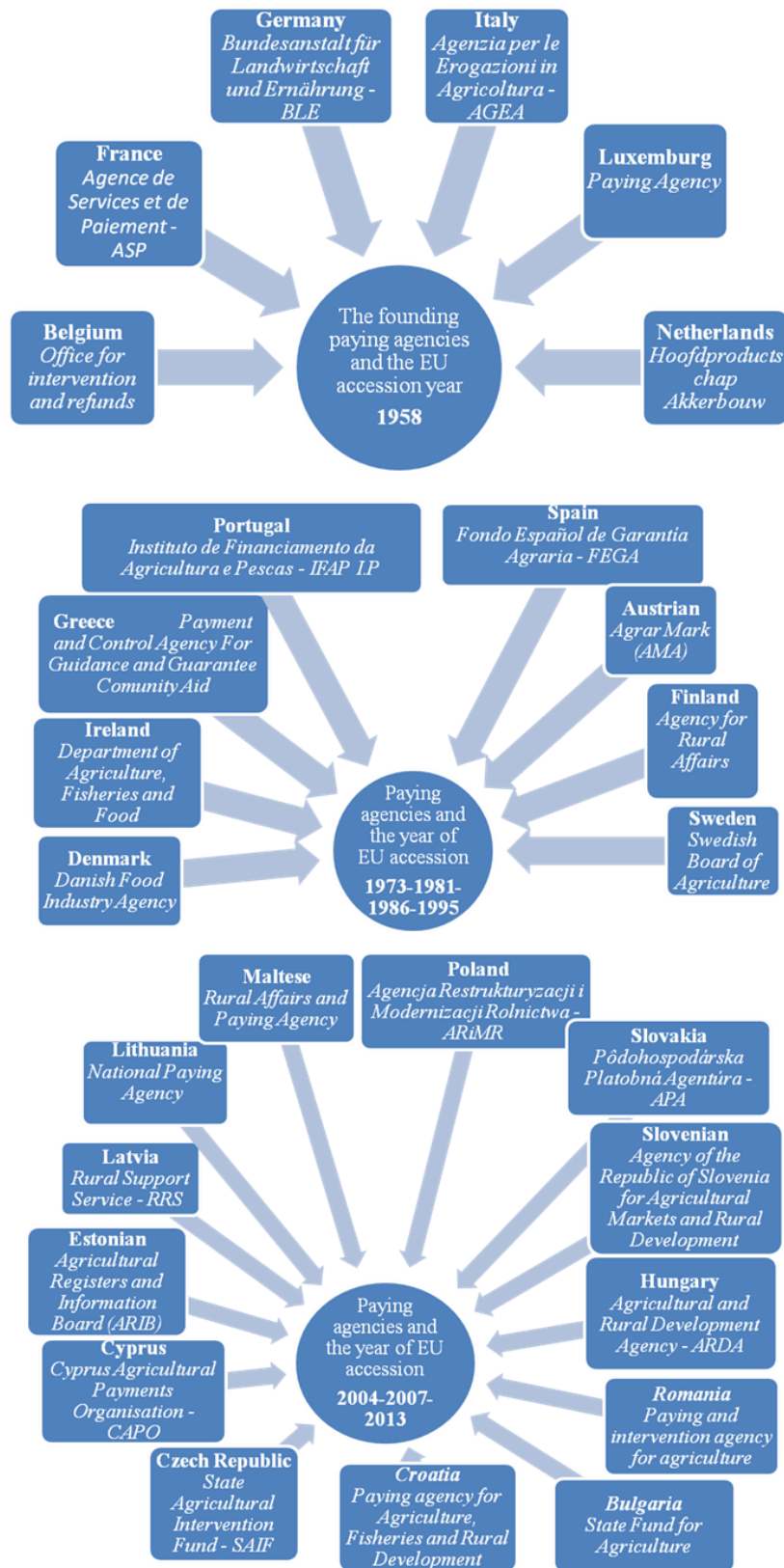

*Figure 1: The paying agencies and the years of EU accession in 1958-2013
(Source: Authors,2021)*

The use of drones in the agricultural industry is also an important factor constantly increasing and definitely an efficient example of verification and control which the Member States of the European Union through their institutions for the management of subsidies to farmers cannot do without. The use of drones represents the part of an efficient approach of the sustainable agricultural management, which allows agricultural engineers and farmers to help make their operations more efficient, using robust data analysis to obtain efficient information on their crops. Crop monitoring, for example, is simplified by using the drone data to accurately plan and make continuous improvements (Benjamin Pinguet, 2021). The increasing popularity of the agricultural drones is due to the increasing technology of agriculture, the expansion of crops, and the merging of the land that will be reached in the near future, the traditional agriculture leaving the place of smart agriculture of the future. The history of drones seems to have begun in 1907, when Louis Breguet projected a four-rotors helicopter. Then gradually, over time, a series of military drones were invented which led to the development and complexity of these devices. What we use today in all kinds of situations mostly represent wireless controlled drones. The agricultural drone market is expected to grow by 2025% with 31,1% compared to the year 2019. The market is expected to reach $5,19 billion by 2025. The increase is mainly attributed to factors such as growth, population growth and increased pressure on global food supply. Using these drones is a cheap and economical way of managing agriculture, which helps to carry out difficult tasks while reducing costs. The agricultural drone market according to Fig.2 is segmented into precision farming, animal monitoring, smart green house, irrigation, precision fish farming and other categories. Precision farming drones accounted for the highest share of the global agricultural drone market, which was used including for the weed detection, plant counting, crop health monitoring and harvest season monitoring. The rapid growth of this market is mainly attributed to the increasing global demand for drones in water and drought management. (Benjamin Pinguet, 2021).
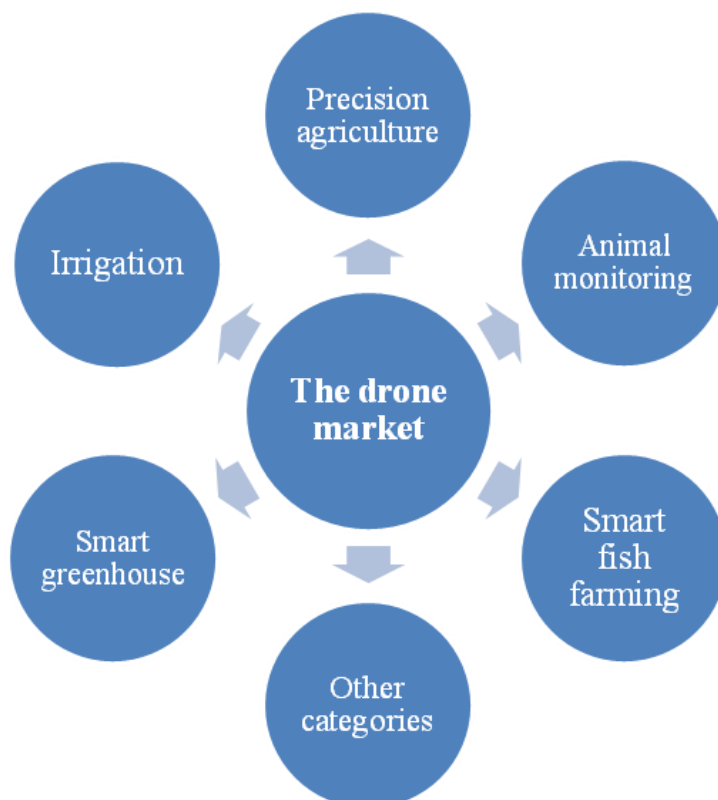
Figure 2: Agricultural drone market
(Source: Authors, 2021)

2. MATERIALS AND METHODS

The images captured by satellites as shown in Figure 3, lead to obtaining information that is automatically processed using calculation algorithms that can determine, for instance, if the fields are used (worked) or what they are planted with. As a result, the data are compared and combined with the existing information in the Agricultural Parcel Identification System (LPIS), a system for the identification of all agricultural parcels in the EU Member States that are part of the IACS - the system that ensures the management and control of the farmers' payment claims. The two Copernicus satellites pass over Europe at least every two days, which means that the latest information is available immediately. The Sentinel-2 carries high resolution cameras and the images provided by it can be used to distinguish between different crop types to evaluate crop health and to monitor the change for using the land. The new type of monitoring proposed uses the earth observation data provided by Copernicus Sentinel satellites and combines them with other observation technologies and completes them with geographically marked photographs.
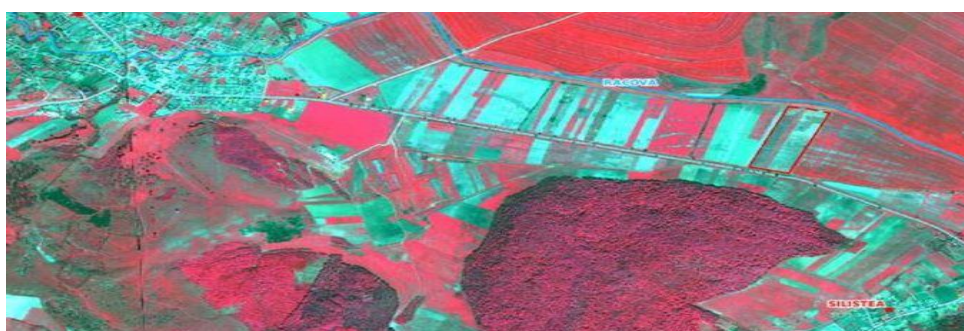
Figure 3: Images remote sensing
(Source: agrointel.ro)

Agricultural drones are a complex means of monitoring the common agricultural policy from the very beginning of their appearance. The first such model was launched in 2010 and belonged to a French brand, Parrot.

Figure 4: Model drone Parrot AR
(Source: Parrot AR 2011)

The Parrot AR model drone according to Fig.4 was fully controlled by Wi-Fi using a smart mobile phone. 2016 is the year in which DJI Phantom 4 appears, according to Fig.5, a very modern drone, capable of providing intelligent monitoring algorithms, avoiding obstacles, watching a specific target or taking pictures. Drone market: Globally, more than 800.000 units will be sold by 2021 (Stupinean,2016).

Figure 5: Model drone DJI 4 Phantom
(Source: gnex.ro,2021)

3. RESULTS AND DISCUSSIONS
3.1. Advantages of monitoring the satellite images
Aerial photographs and satellite images have been used for a long time in the CAP to verify a part of the area aids. The paying agencies use the LPIS (Land Parcel Identification System) to carry out cross-checks on all area aid applications, the aim being to verify that payments are made exclusively for eligible agricultural land and only once for a given area of agricultural land. Remote-sensing controls are indeed less costly than the conventional controls, but they still require human intervention, in the form of operators that interpret very high-resolution satellite images (VHR) using computer-assisted photointerpretation according to Fig.6 . Paying agencies and experts agree that the approach based on monitoring which uses Copernicus Sentinels data represents a major change in the management and control of the CAP. (European Court of Auditors,2020). The benefits obtained from satellite inputs for the national administrations include a process of more integrated communication with farmers, and an administrative burden reduced by decreasing the number of on-the-spot checks and a flexible application process.
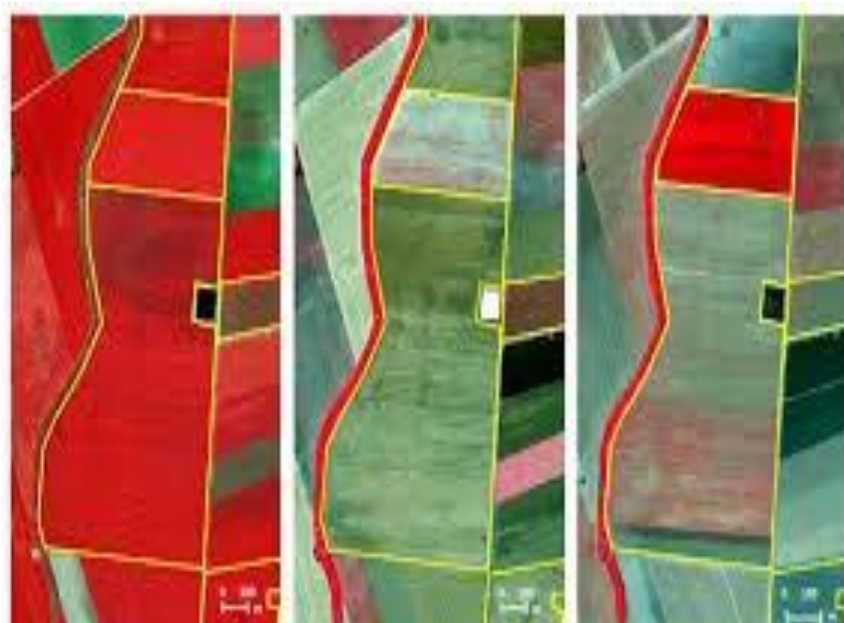
Figure 6: VHR Images (very high resolution), HHR (high resolution)
(Source: JRC,2020)

There will be significant benefits for farmers so that they could be informed on the moment in which they should carry out certain agricultural works. This will ensure the fact that farmers are able to meet their environmental and other obligations in a timely manner and thus to avoid sanctions for non-compliance with CAP rules (Common Agricultural Policy). By decreasing the number of on-the-spot checks there will be significantly reduced the time spent by farmers with inspectors in the field. Farmers will also be able to benefit from synergies with other digital technologies, such as crop monitoring and yield forecasting, in order to better manage their farms. (Benjamin Pinguet, 2021). 15 out of 66 paying agencies in five Member States implemented monitoring checks for certain areas or for all areas for which they were responsible, for all or some of the aid schemes, while seven Member States participate in the Sen4CAP project according to Figure 7.
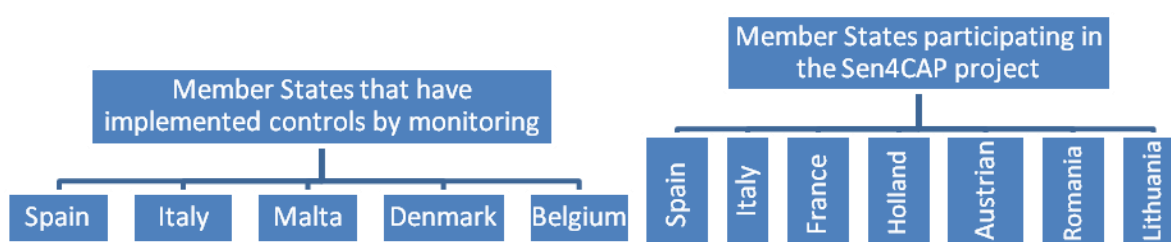
Figure 7: Use of monitoring controls and participation in the Sen4CAP project
(Source: European Court of Auditors, 2020)

The SEN4CAP project aims to offer the European and national stakeholder of CAP (Common Agricultural Policy) validated algorithms, products, workflows and best practices for agricultural monitoring relevant to the management of the Common Agricultural Policy. Particular attention should be paid to providing evidence of how the information obtained by the Sentinel can support the modernization and simplification of the Common Agricultural Policy for the period after 2020 (cs Group 2020). Other elements falling within the scope of Sentinel satellite monitoring are cross-compliance requirements and eligibility conditions for agricultural-environment-climate schemes under rural development as set out in Table 1.

| Elements that can currently be monitored using Sentinel satellites only	Elements that cannot currently be monitored using Sentinel satellites alone
• The presence of a plant layer at certain times • Crop rotation • Protective strips (over 20 m wide) • Prohibition to burn arable stubble • Maintaining of landscape features (hedges, lined trees, tree groups, etc.), according to size/width • The grazing of land on a given period (two weeks, for example) • Prohibition of ploughing	• Protective strips (less than 20 m wide) • Prohibition for the use of pesticides on protective strips • Prohibition of the cutting the hedges and trees during the mating and nesting of birds • Maintaining the landscape features (ditches, isolated trees, traditional stone walls) • Small strips that are not cultivated or on which flowers grow • Raising hay bales after mowing • Combating invasive species

Table 1: Elements falling within the scope of the Sentinels data monitoring of cross-compliance requirements and eligibility conditions for agricultural-environment-climate schemes under rural development
(Source: European Court of Auditors, 2020)

3.2. The benefits of monitoring images using drones

One of the main benefits of the drones is that they can increase the productivity of the agricultural sector. The drones meet the needs of the agricultural industry which is increasing. For example, they provide much more advanced forms of crop monitoring, faster inspections, accuracy and advanced measurement tactics, which help the inspectors of the institutions of the paying agencies to establish the crops that will result in direct payments on the surface and also help farmers to save water and chemicals. The industrial drones increase the accuracy and efficiency of any agricultural operation. If equipped with advanced thermal and geographical sensors, drones can provide information that the human inspectors cannot obtain by using the classic method (European Court of Auditors, 2020). The drone surveillance services can be used from early March to October or November and when the average temperature is at least 5-6 °C (KPMG,2021). The information about the use of drones is useful for the inspectors that carry out checks imposed on monitoring requirements of the common agricultural policy as well as for farmers in accordance with Figure 8. The factors which support and may influence the use of drones are as follows in Figure 9.
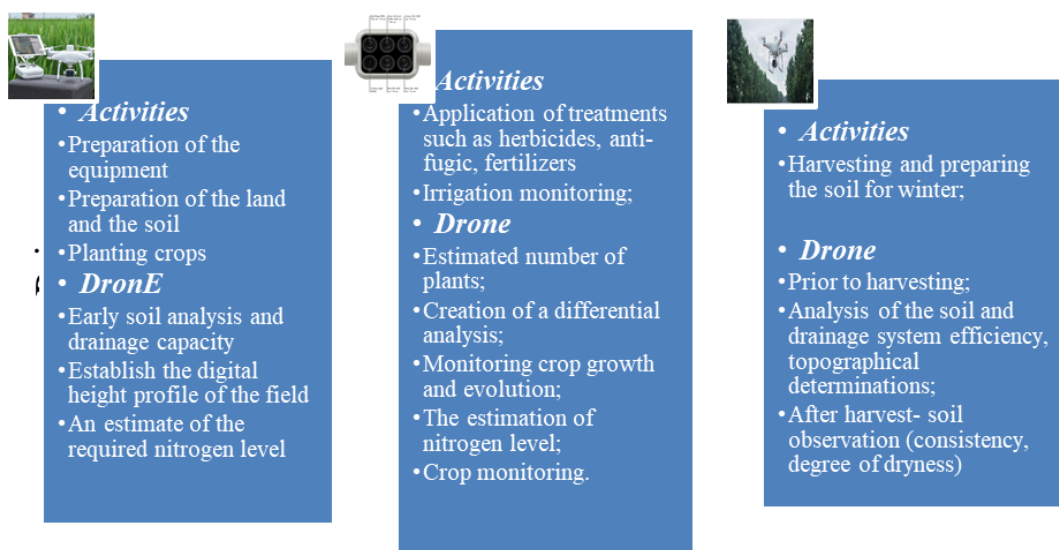
Figure 8: Drone activities over different periods of the calendar year
(Source: Authors, 2021)
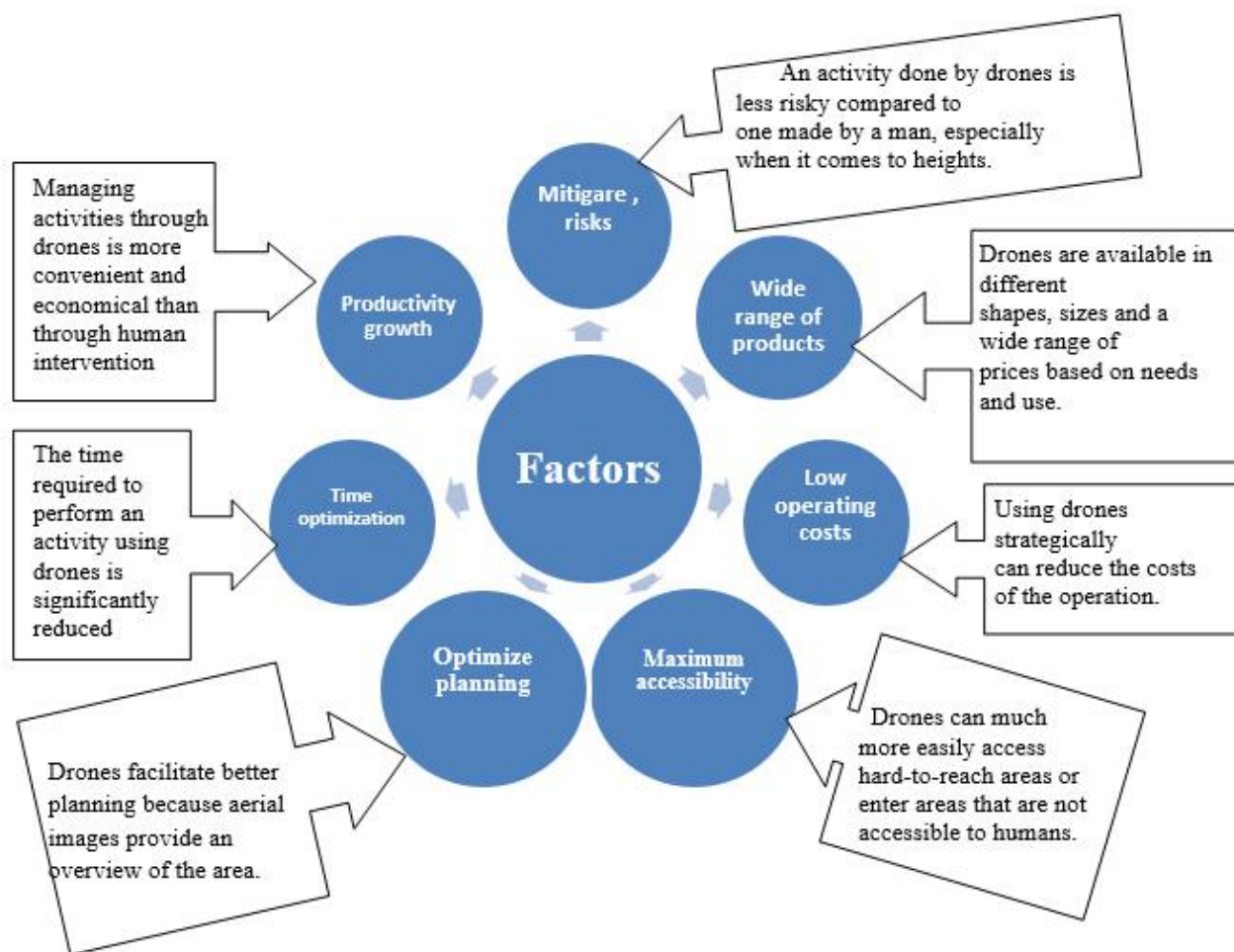
*Figure 9: Factors that support and can influence the use of drones
(Source: Authors, 2021)*

4. CONCLUSIONS

Under the common agricultural policy, the use of Copernicus Sentinel satellite data and other imagistic technologies to monitor area aids can bring considerable benefits to farmers in the form of direct payments, for the administrative authorities and the environment. The legal framework allowing the use of Sentinel data for the verification of area aids applications submitted by farmers is not as detailed as those applicable to traditional controls so that the paying agencies are awaiting additional instructions from the European Commission in order to make the right decisions and reduce risk of future financial corrections. Having in view the large area that requires topography, drones offer greater efficiency, allowing users to capture high-resolution images faster than the alternative methods. Especially in these volatile market conditions, the annual yield estimate can help at making decisions and managing expectations. In addition, UAVs are now seen as a safer option for mapping difficult areas, such as uneven or expansive fields, which can be dangerous for operators – especially compared to the terrestrial techniques that have to be performed on foot. Where satellites and pilot aircraft have been traditionally used to monitor agriculture, UAVs are rapidly becoming recognized as a more accurate and cost-effective substitute. The drone images provide a higher rate of precision and resolution – even in cloudy days. While the use of traditional terrestrial approaches to collect data in difficult weather conditions could delay projects by several days, the accurate health assessments of the crops can be made throughout the year using UAVs.

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THE IMPORTANCE OF INFORMATION AND DATA LITERACY OF LEADERS IN A TURBULENT ENVIRONMENT OF DIGITAL BUSINESS TRANSFORMATION

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ABSTRACT
The Council of Europe's "Digital Competence Framework for Citizens DigComp 2.1" defines the development of digital competences in five areas: information and data literacy, communication and collaboration, content creation, security and problem solving. The subject of this paper is information and data literacy of school principals, where, starting from the assumption that information and data literacy is extremely important in the leadership process, the aim of the research is to determine how it affects leadership processes during the COVID-19 pandemic. The research was conducted on a sample of primary school principals from three geographically and economically related counties - Varaždin, Međimurje and Koprivnica-Križevci counties, using a questionnaire containing original metrics of influential factors of information and data literacy, which examined the knowledge, skills and attitudes of principals about the importance of information and data literacy in the decision-making process. The analysis and interpretation of the results confirmed the hypothesis that information and data literacy significantly influences school management processes during COVID-19 pandemic and concludes that it, as one of the five areas of digital literacy, is extremely important for decision-makers , while the specific parameters obtained by the research are applied to the reference framework of information and data literacy in the school management process, which suggests the need for sequential and specific education of school principals in the field of information and data literacy.
Keywords: Data literacy, Digital business transformation, Information literacy, Leaders

1. INTRODUCTION
School management is a significant predictor of the success and efficiency of an educational institution. According to Article 125 of the Law on Education in Primary and Secondary Schools , principals are managerial and professional (pedagogical) school leaders, which means that they ensure the material and infrastructural functioning of the school, motivate employees, create a collaborative atmosphere, shape school culture, manage conflicts, and the aim is to improve school results. Leadership is most often defined as the process of intentionally acting by one person on other people with the goal of directing, understanding, and persuading, structuring, and reinforcing individual and collective efforts to achieve common goals. As a process of social influence, leadership has a special role that is realized through the influence of the leader on how members interpret the external event, the choice of goals and strategies to follow, the motivation of members to achieve goals, mutual trust and cooperation, distribution of resources according to activities and goals, shaping the formal structure, programs and systems, common beliefs and values of members (Yukl, 2008).

In the education system, principals represent a bridge between the internal process of improvement conditioned by reforms initiated by technological progress and modern paradigms. In line with the changes, the role and responsibility of school principals have expanded and intensified, and more recently there is a need to redefine the role of principals where it becomes imperative to respond to the requirements of the system in which digital transformation occurs (Pont, Nusche, Moorman, 2008). There are more and more skills, abilities and competences that school leaders must possess in order for the leadership process to result in achieving the common interests of all participants. Although the digital transformation in schools began in 2015 as part of the pilot project "e-Schools: complete informatization of school business processes and teaching processes in order to create digitally mature schools for the 21st century", during which measurements were made in 151 schools which were involved in the project, showed that although most schools in that period raised the level of their digital maturity, the system was not fully ready for the scenario of online teaching, digital communication, digital business and digital school management. Running a school in the classical model implies a greater proportion of daily interaction with school employees in the form of formal and informal meetings, exchange of experiences and information, interaction with business partners, the founder and parents, and the creation of strategies. In terms of the integration of information and communication technology in the business of the school, strategic thinking is extremely important and requires the development of strategic plans by analyzing the current and expected future situation (Luić, 2018). Due to the specificity and complexity of connections within the educational institution, a small part of activities related to leadership can be realized using digital technology and digital competences. The changes in society caused by the pandemic have accelerated developmental social and technological processes by shaping a discourse in which concepts related to digital are dominant in all areas, reflecting necessity and real need, not just a desire to stand out in the market. In such context, learning and developing skills in the use and understanding of information and communication technology becomes an absolute priority, and the digital environment has further emphasized information behavior and learning where individuals actively enter for seeking the information (Lasić-Lazić, Špiranec, Banek Zorica, 2012). The authors of the Framework for digital competence of users at school define information and data literacy as a set of knowledge and skills that we must possess to recognize the need for information, and to find information and critically assess its quality (Žuvić, Brečko, Krelja Kurelović, Galošević, Pintarić, 2016). Information and data literacy means knowledge and skills in storing, retrieving, efficient and ethical use of information and applying information when creating new knowledge, where data literacy is defined as a component of information literacy that allows access, interpretation, critical evaluation and ethical use of data (Calzada-Prado, Marzal, 2013, pp 123) Such view positions information and data literacy at an important place in the education process and is one of the key skills and literacy that are acquired and developed during lifelong learning. An information literate person evaluates information carefully and wisely to determine its quality by understanding and applying existing and emerging models for assessing the accuracy, usefulness, relevance, completeness and impartiality of information using the following indicators: determining accuracy, relevance and comprehensiveness, distinguishing facts, views and opinions, identifying inaccurate and misleading information, and selecting relevant information (Shield, 2004). The development of digital competences is also predicted in the Council of Europe document "The Digital Competence Framework for Citizens DigComp 2.1." which contains 5 dimensions of digital competences: information and data literacy, communication and collaboration, content creation, security and problem solving, within which 21 competences can be defined through 4 levels (basic, intermediate, advanced and highly specialized).

The Digital Competence Framework for Austria DigComp 2.2 (Federal Ministry, 2020) recognizes as a necessity zero literacy, which is a prerequisite for acquiring other literacy. Understanding the basic concepts of digitization, handling digital devices and using inclusive forms of access to digital content are elements of zero literacy, which in the Austrian framework of digital competences is called Foundations and Access. The Austrian model comprises 6 areas with 25 individual competences. The European Commission's document "2030 Digital Compass: the European way for the Digital Decade" (European Commision, 2021) contains visions, goals and paths to a successful digital transformation of Europe. The objectives of the program concretize the Union's digital ambitions through training citizens in digital skills, ensuring efficient digital infrastructure, digital transformation of business and public services in line with technological and communication progress of society, including continuing digital literacy in all segments of the social and economic environment. This paper starts from the assumption that information and data literacy is necessary for leadership processes, change management and decision-making and that during the COVID-19 pandemic, due to the exposure and openness of the education system, it was extremely important for primary school principals. Determining how information and data literacy affects school management processes during the COVID-19 pandemic is a research question, based on which a research was conducted. Starting from the problem and the research question, set a hypothesis claims that information and data literacy significantly affects the school management processes during COVID-19 pandemic.

2. METHODOLOGY
The research was conducted using the questionnaire method on a sample of primary school principals in Varaždin, Međimurje and Koprivnica-Križevci counties. The questionnaire explored the elements of information and data literacy and zero literacy using constructs created based on existing theoretical models where the description of the results can design a reference framework of information and data literacy of principals in the process of running the school during the covid-19 pandemic. In the introductory part of the survey, along with the identification of the researcher, the purpose and goal of the research are presented. The survey contains 20 questions, three of which are questions of sociodemographic structure (gender, age, years of principal experience). The closed-ended questions are a combination of multiple choice, dichotomous questions and questions composed on the principle of an interval scale (Likert scale) of assessment of attitudes of 5 degrees, where the value of 1 (one) is the lowest value and 5 (five) the highest value. The survey was created a Google form. The survey was conducted between February 23 and March 2, 2021. A link to the survey was sent to principals at their official email addresses asking them to complete a questionnaire. The principals filled out the questionnaire of their own free will.

3. RESULTS AND DISSCUSION
Based on the analysis of the results of the research, the hypothesis was confirmed, which states that information and data literacy significantly affects the school management processes during COVID-19 pandemic. All surveyed principals consider information and data literacy important and extremely important for their daily work, which is supported by the result of the frequency of using the websites as a source of information (82% of principals use the websites as an additional source of information several times a day). Out of a total of 95 principals in the three counties, the survey was completed by 68 principals, of which 54% were female and 46% were male. Of the total number of principals who completed the survey, most were aged 51-60 (53%) and aged 41-50 (28%). The lowest number of principals completed the survey was older than 60 and younger than 40 (19%).

Almost a third of principals (30%) have less than 5 years of principal experience, a smaller number of principals (15%) have 5-10 years of experience, 10-15 years of experience (22%), 15-20 years of experience (17%) and more of 20 years of experience (15%). The results show that most principals (44%) have less than 10 years of management experience, and the least (15%) have more than 20 years of management experience. Connected to the Austrian version of the European Digital Competence Framework for Austria DigComp 2.2 (Federal Ministry, 2020), which has been expanded to include 3 competences for basic IT literacy: understanding the concept of digitization, handling digital devices, using and providing inclusive forms of access to digital content, a series of initial questions the computer literacy of the principal was investigated by analyzing can it be concluded that the basic computer literacy of the principal is in accordance with the needs of the functioning of the educational institution. More than 80% of principals use a desktop computer, laptop and mobile phone in their work every day, and almost 90% of them receive official e-mail on their mobile phones. Advanced digital device management options are used by a third of principals to increase efficiency and save time, which shows that there is room in this segment for learning and acquiring skills in using digital devices. As shown in the graph in Fig. 1, the majority of principals (79%) state that they have used a laptop most often in their work since the beginning of online classes, while a smaller percentage of principals (19%) stated that they most often use a desktop computer. Only 1 principal stated that since the beginning of the implementation of online classes, he most often uses a mobile phone in his work.
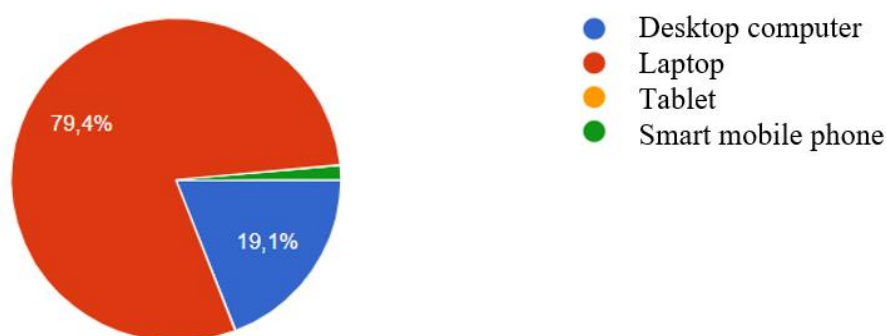
Figure 1: Frequency of using digital devices from the beginning of online teaching
(Source: own research)

Given the specifics of the organization of work in primary schools and the implementation of different teaching models (in school, combined and online), the next question explored the frequency of use of digital devices in the process of running the school during the current school year.

	every day		several times a week		occasionally		not using	
	f	%	f	%	f	%	f	%
desktop computer	34	50.0	2	2,9	10	14,7	22	32,3
laptop	52	76,4	11	16,1	5	7,3	0	0,0
tablet	3	4,4	5	7,3	20	29,4	40	58,8
smart mobile phone	56	82,3	3	4,4	7	10,2	2	2,9

Table 1: Frequency of use of digital devices during the school year 2020/2021
(Source: own research)

Principal responses on the frequency of use of digital devices shown in Tab. 1 range from "everyday" to "not using". The desktop computer is used daily by 50% of principals, and 32% of them do not use the desktop computer at all. A laptop is used daily by 76% of principals. Most principals (60%) use the tablet occasionally or not at all, while 82% of principals state that they use a smartphone on a daily basis. The results suggest that half of principals use a desktop computer in their workplace, while 80% use a laptop and a smart mobile phone in their daily work (at work, from home or where they are currently located). The results presented in the Fig. 2 provide data on the use of the voice option on mobile phones. Advanced and fast access to certain options and functions of the smartphone menu and content on the Internet is used in their daily work by only 30% of principals, with only 15% using this option even before the pandemic.
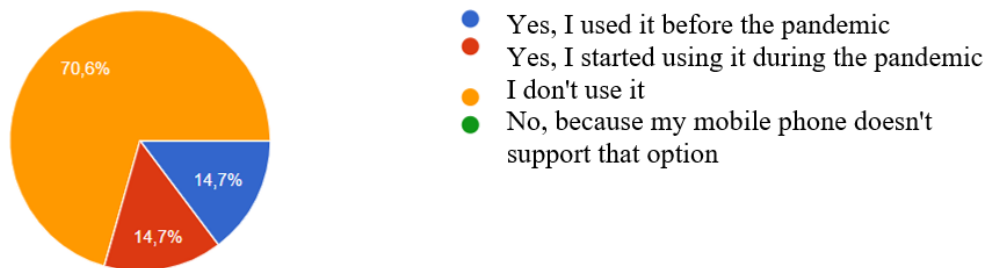
Figure 2: Use of the voice option on a mobile phone
(Source: own research)

The majority of principals (88%) in the management process, aware of the need to obtain information in a timely manner, receive e-mails sent to the official e-mail address on their mobile phones. As many as 9% of principals state that their mobile phone does not have a technical predisposition to receive e-mails, which may be due to an older mobile phone model or insufficient internet traffic. A negligible number of principals (2) do not receive emails on their cell phones because they do not want notifications to interfere with them. Insight into the results of the assessment of the importance of information and data literacy for the daily work of principals shown in Tab. 2, shows that all principals believe that information and data literacy is important and extremely important for their daily work. On a scale of 1 to 5, the average score is 4.44. In addition, the data on the percentage of individual assessments show that 100% of principals rated the importance of information and data literacy for their daily work with grades 4 and 5.

%					M	SD
1	2	3	4	5		
0	0	0	44,1	55.9	4,44	0,50

Table 2: Assessing the importance of information and data literacy
(Source: own research)

The answers to the question about the frequency of using the website as an additional source of information since the beginning of the pandemic range from "several times a day" to "rarely". At the same time, 82% of principals state that they use websites several times a day as an additional source of information, while a smaller number of principals recognize the need for information once a day, several times a week or rarely as can be seen from the graph in Fig. 3.
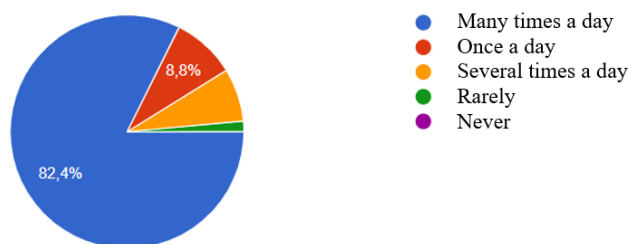
*Figure 3: Information needs recognition assessment
(Source: own research)*

The next question was intended to determine the expression of a specific information need in correlation with its recognition. The frequency of use of specific sources of information, the results of which are shown in Tab. 3, was estimated on a scale from 1 (I do not use at all) to 5 (I use it very often). The average grades of principals are the highest for the frequency of using e-mail (4.91) and the Internet (4.77) as a source of information. Whatsapp and Viber communication groups (4.33) and video calls (4.16) are frequent sources of information. The printed literature receives a medium rating of importance, while Facebook as a source of information is rated with a low average rating of 2.88.

	%					M	SD
	1	2	3	4	5		
Printed literature (books, manuals, publications)	1,4	19,1	33,8	27,9	17,6	3,41	1,03
Printed magazines (scientific, professional)	1,4	19,1	50,0	26,5	2,9	3,25	0,79
Internet (web pages, portals)	0,0	0,0	1,4	19,1	79,4	4,77	0,45
Social networks (Facebook)	27,9	14,7	17,6	20,6	19,1	2,88	1,49
Communication groups (Whatsapp, Viber)	1,4	1,4	10,3	35,3	51,5	4,33	0,83
Email (e-mail)	0,0	0,0	0,0	8,82	91,18	4,91	0,28
Video calls (MS Teams, Zoom, Meet, Yammer)	0,0	0,0	8,8	66,2	25,0	4,16	0,56

*Table 3: Frequency of use of the specific sources of information
(Source: own research)*

The following results shown by the graph in Fig. 4 provide an answer to the question of which sources of information principals use more frequently than in the pre-pandemic period. From the same sources of information as in the previous question, principals were able to select 3 used more frequently than in the pre-pandemic period. Principals estimate that 90% of them use video calls more often than before the pandemic, which corresponds to the fact that all formal and informal meetings for the purpose of cooperation with teachers, the founder and the line ministry took place through video calls. Whatsapp and Viber communication groups are used by 67% of principals more often than before the pandemic for communicating with teachers. The inability to directly exchange information, simple and intuitive user interfaces of the Whatsapp and Viber platforms, the ability to access via Internet browsers on a computer, communication speed and widespread use of these applications, proved to be the fastest and most efficient way to exchange brief information and send digital content and materials.

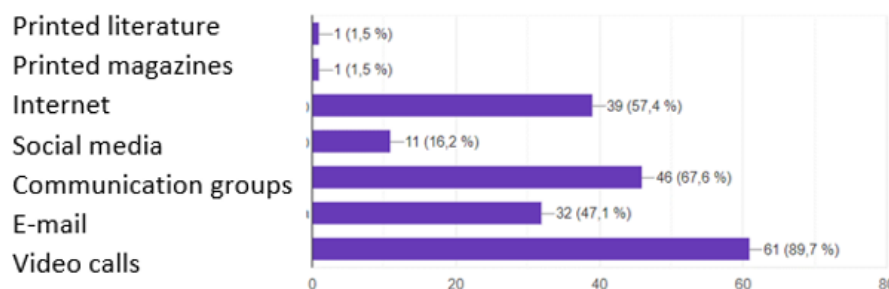As a third source of information used more frequently during a pandemic, 57% of principals cite the Internet.

Figure 4: Frequency of use of information sources in relation to the period before the pandemic (Source: own research)

According to the Manual of Digital Competence (Žuvić, Brečko, Krelja Kurelović, Galošević, Pintarić, 2016), the levels of complexity of competences distinguish between beginner, intermediate and advanced levels. Principals who use various Internet search engines (Google, Bing, Yahoo) when searching for data, information and digital content on websites are considered to have an advanced level of complexity of competences. When asked which search engines use when searching for content on the Internet, 100% of principals answered that they use only Google, while 1 principal with Google uses Bing, and 2 principals with Google use Yahoo. Based on these results, it can be concluded that in this area, principals master the initial level of complexity of competences. More than three-quarters of principals (78%) estimate that, compared to the time before the pandemic, they spend more and significantly more time searching content online. The importance of individual criteria in determining the credibility and reliability of data sources, information and content was assessed by the principals on a scale from 1 (least important) to 5 (most important). Table 4 shows that principals trust the official websites of institutions the most (average score 4.44), assess the reliability of information according to the completeness of information (4.32), while the author is slightly less important (3.91), consistency of titles and content (3.82) and the visual aspect of the page (3.45).

	%					M	SD
	1	2	3	4	5		
Websites (official websites of relevant institutions)	0,0	0,0	2,9	50,0	47,1	4,44	0,55
Author (authority in a particular field)	0,0	4,4	14,7	66,2	14,7	3,91	0,68
Title consistency and content	0,0	0,1	22,0	69,1	7,3	3,82	0,57
Content (integrity of information)	0,0	0,0	4,4	58,8	54,5	4,32	0,55
Visual aspect (content compliance)	0,1	8,8	39,7	42,6	7,35	3,45	0,81

Table 4: Criteria for determining the reliability of information data and digital content (Source: own research)

Additional criteria that principals take into account when determining the relevance of sources and content are examined by the following question, and a comparison of the results of this and the previous question can determine the level of complexity of the competence. On a scale of 1 (least important) to 5 (most important), principals assessed the importance of additional criteria that they apply in determining the relevance of sources and content and the results of which are shown in Tab. 5. The average grades of principals are relatively high for the purpose element of the educational page (4.14) and the up-to-dateness of the page (3.91). Other elements were rated with an average score of 3.5.

Given that according to the Manual of Digital Competence (Žuvić, Brečko, Krelja Kurelović, Galošević, Pintarić, 2016) these criteria belong to the medium level of complexity, it can be concluded that principals do not have enough knowledge for advanced level of relevance and content because the results show that they mainly focus on basic criteria not using sufficient elements of critical evaluation and do not have sufficient knowledge to independently and routinely search and determine the relevance of sources and content.

	%					M	SD
	1	2	3	4	5		
I only consider authors and sources that are already known to me.	2,9	2,9	54,5	47,1	10,3	3,58	0,83
I do not take into account the content for which the author cannot be determined.	5,9	4,4	33,8	50,0	5,9	3,45	0,90
Assessing the purpose of the site (educational, commercial, entertainment).	0,0	0,0	8,8	67,6	23,5	4,14	0,54
I assess connectivity with other sources and content.	0,0	0,0	23,5	69,1	7,3	3,83	0,53
I estimate the timeliness of the page (date and frequency of publication).	0,0	0,1	17,6	69,1	11,7	3,91	0,59

Table 5: Critical evaluation of data, information and digital content
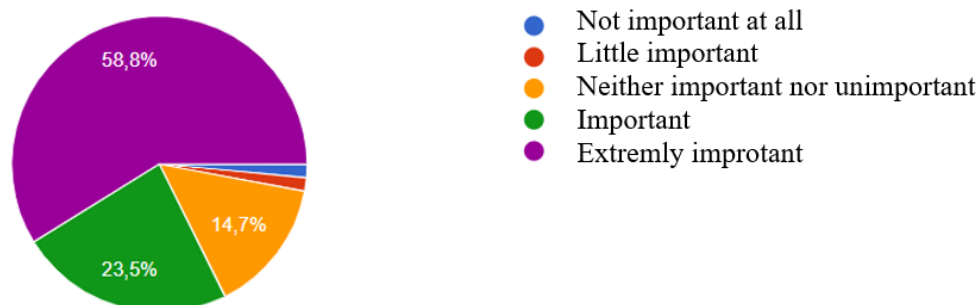*(Source: own research)*

Elements of competence related to data, information and digital content management within information and data literacy were examined by asking about the way information and content is stored and the frequency of backing up stored information, data and content. Only a third of principals (30%) use the cloud as a simple, useful, and free data storage option that also provides the ability to access data anywhere and from any device. Most principals (55%), in addition to storing documents locally on a computer, use flash memory (USB memory or external SSD) for storage. The obtained results of the question on backing up the stored information, data and content indicate the need to be aware of more frequent copying because they show that half of the principals (51%) back up the stored information several times a year. The most important digital competences in the school management process during a pandemic were assessed by principals on a scale of 1 (least important) to 5 (most important). All digital competences were rated with a high average grade (from 4.15 to 4.41), with the highest scores being given to ICT literacy, information and data literacy and digital literacy which is evident from the results shown in Tab. 6.

			%			M	SD
	1	2	3	4	5		
ICT (computer, technological) literacy (computer knowledge and skills)	0,0	0,0	0,0	58,7	41,3	4,41	0,49
Internet (network) literacy (understanding the role of network resources)	0,0	0,0	9,5	65,0	25,4	4,15	0,57
Information and data literacy (recognizing the need for information)	0,0	0,0	0,0	60,3	39,7	4,39	0,49
Media literacy (critical reflection on the media)	0,0	0,0	3,1	71,4	25,5	4,22	0,49
Digital literacy (using digital tools in the right way)	0,0	0,0	3,1	60,3	36,6	4,33	0,53

Table 6: Assessing the importance of individual digital competences in the school management process during a pandemic
(Source: own research)

As can be seen from the graph in Fig. 5, more than 80% of principals believe that information and data literacy is extremely important and important for decision-making, 15% of principals give a medium grade. Only 3% of principals believe that information and data literacy is of little or no importance for school management and decision-making processes.

*Figure 5: Assessing the importance of information and data literacy for decision-making
(Source: own research)*

4. CONCLUSION
Information and data literacy, as one of the five areas of digital literacy defined by European documents and digital literacy frameworks of citizens, is extremely important for decision-makers and school management processes during turbulent COVID-19 pandemic period. Although the basic IT literacy of primary school principals is in line with the needs of the functioning of the educational institution, research has shown that there is room and need for incremental shifts in terms of IT literacy in order to increase the quality of school management. The use of laptops, tablets and mobile phones indicate a great awareness of principals about the responsibility, even during the pandemic, of the need for access to all participants in the educational system because due to the psychological and social impoverishment of the leadership process in the COVID-19 pandemic, timely decision-making in the school management process supported by information becomes crucial. During the pandemic, due to lockdown, increased workload due to new ways of working and increased use of technology, communication practice of exchanging examples of good practice, information transfer and direct interaction with each other decreased incomparably, which we conclude from principals' estimates that 90% of them use video calls more often than before the pandemic, a way that disables communication in the nonverbal segment which with the body language component and tone of voice makes up 93% of communication. Decision-making in school is based on mutual interaction, horizontal and vertical transmission of information through live meetings. Decision-makers, deprived of such current practices, must base their decisions on other available sources, supported by the results that 78% of principals spend more and significantly more time searching the Internet. Given that principals consider IT, information-data and digital literacy to be the most important digital skills in the process of running a school in COVID-19 pandemic, the results show that in the field of data retrieval they have an initial level of complexity, while in determining the relevance of sources and content, it is necessary to introduce systematic education of school principals in the field of information and data literacy, which is also a starting point for further related research.

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ECONOMIC EVALUATION OF FORMER CHEMICAL INDUSTRIAL SCHOOL REVITALIZATION FOR CREATIVE AND ARTISTIC STUDIOS

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ABSTRACT

The paper is focused on the issue of the economic evaluation of former chemical industrial school revitalization. Buildings located in Bratislava, the capital of Slovakia, were abandoned and was considered as a brownfield, so it was decided to revitalize the area. One of the key motivations was the desire to recover the abandoned area and bring new functions to the surrounding area together with the creation of a cultural program for the public. Revitalization started at 2016 and by 2017, building has been used by 120 creative and artistic studios and non-profit organisations, which makes it the largest creative centre in Slovakia. Since the launch of the cultural program by the end of 2019, it managed to hold more than 430 events with the participation of more than 80 000 people, while the program also includes various educational and awareness-raising activities, primarily focused for youth. This new area is called "Nová Cvernovka" and has become a successful example of a community-led project, which was made possible by the use of unnecessary self-government property and can serve as inspiration for similarly oriented projects and initiatives. Revitalisation was financed by the European Investment Fund, The Bratislava City and by private companies, which provided gross value of costs. Against this value of costs, the value of profit benefit and socio-economic benefits associated with revitalization is compared, so for the overall evaluation can be used the CBA analyse. Also lot of benefits are unable to analyse, because the project is still very young, so even greater benefits are expected in the future.
Keywords: Brownfield, CBA Analyse, Economic evaluation, Former chemical industrial school, Nová Cvernovka

1. INTRODUCTION

Brownfields are a very widespread problem today, as there are still a large number of them in Slovakia and the Czech Republic after the end of industry production and mining [8]. They often carry an environmental and economic burden [1]. Fortunately, brownfield revitalization is very modern topic today, and cities and towns that have brownfields in their territory are often beginning to be in favor of brownfield revitalization. By a similar process, not only do they often remove the potential environmental burden of the brownfield, but with the right choice of focus, they can also bring a number of socio-economic benefits to society [10], [9]. The main goal of this paper is to determine how economically effective is the case study of brownfield revitalization Nová Cvernovka, which was realized in 2017 as a public project with the support of the Bratislava Self-governing Region and various private entities. In the case of positive numbers of net accumulated cash flow, it can be used as one of the example models for further revitalizations of similar objects. Some revitalizations are also a business plan of legal entities, but in that case it is possible to assume a lower value of socio-economic benefits, as the main priority of a private project is profit and not social welfare.

Based on this, a public project with main priority of socio-economic benefits over financial ones was selected. CBA analysis was used for economic evaluation, where all costs against financial and socio-economic benefits associated with revitalization will be compared. All costs and benefits are discounted in time with a discount rate often used for public projects, ie 5%. Socio-economic benefits are quantified using the eCBA.cz online software [5]. Based on the results of this analysis, ie mainly the payback period based on the accumulated net cash flow, we can assume the effectiveness of revitalization of similar objects for which a purpose and an investor can be found and thus possibly motivate the public or private sector.

2. PRESENT STATE REFERENCES
With the ever-increasing number of brownfield revitalizations, the number of papers and literature on this topic is also increasing. The basic theoretical information is based on the book by Božena Kadeřábková and Marian Piecha in the book entitled "Brownfields - how they arise and what about them." In this book it is possible to find theoretical information about the origin and distribution of brownfields, as well as the possibilities of dealing with them. Further information can be found in the book "Contemporary Forms of Use of Industrial Historical Buildings" by Martina Peřinková [8], [9]. Further information on similar revitalization processes in the European Union can be found in the articles Brownfield Redevelopment in the European Union. Smart Brownfield Redevelopment for the 21st Century and Brownfield Redevelopment in the European Union a Brownfields – the need for policy, strategy and an institutional framework [2], [7]. Information on the revitalization of this case study itself was obtained primarily directly from the foundation that contributed to the revitalization and from Internet sources [4]. The classification and evaluation of brownfields regeneration options was also processed on the uzemneplany.sk website, which distributes the potential for brownfield revitalization mainly according to its location and original intention [3]. Finka M. in Brownfield Redevelopment Planning - Territorial Conditions also talks about the approach to the potential based on the location of the brownfield [6]. These approaches may not be entirely sufficient, as it is also important for what purpose the brownfield will be revitalized. The object of the Nová Cvernovka brownfield case study is located in the suburbs of Bratislava and it is a former chemical school. So based on this methodology, not the most ideal brownfield for revitalization, but the final results of the CBA analysis suggest the opposite. Regarding the current state of the topic, similar revitalizations have also been covered by the author in various articles published at various conferences [11], [12], [13], [14].

3. METHODOLOGY
A CBA analysis that compares costs with benefits was used to evaluate the economic revitalization. The costs consists investment costs and operating costs. The benefits consists direct financial gains from rental and quantified socio-economic benefits. Socio-economic benefits were created on the basis of information about revitalization and were quantified using the eCBA.cz application [5].

These are the benefits:
- Employment development in the region (EDIR)
- Technical evaluation of monuments (TEM)
- Increase in foreign one-day visitors (IFODV)
- Increase in overnight stays of foreign visitors (IOSFT)
- Increase of one-day domestic visitors (IODDV)
- Increase in overnight stays of domestic visitors (IOSDV)
- Save visitors time with new services (SVTWNS)
- Improving the state of infrastructure for culture (ISIFC)

- Improving the state of infrastructure for sport and youth (ISIFSY)
- Improving the condition of parks and public greenery (ICPPG)
- Improving the condition of public spaces (ICPS)
- Parking time savings (PTS)
- Extension of long-distance cycling route (ELDCR)

The values of the benefits are based on the expected numbers of people affected by the benefit. They are based on the average annual number of visitors to the brownfield, the number of people employed or, possibly, the number of visitors of surrounded area for various purposes. It should be noted that in the third case, the numbers are estimated roughly based on various attributes, but the impact of these specific benefits on the results of the CBA analysis is minimal, as they have relatively low unit values compared to other benefits. All costs and benefits are spread over the specified period of time from the beginning of the revitalization to the contractually agreed end date of the rental. As the building is still owned by the Bratislava Self-Governing Region (BSR) and the Nová Cvernovka Foundation is in the rental of the building for 25 years, the end of the specified period is 25 years from the beginning of revitalization and thus from 2017 to 2041. The rental payment for BSR is 120 000 € per year and as the building is owned by BSK, it is agreed that the value of the rental will be paid out of the investment costs used for the revitalization. The agreed investment costs are a maximum of € 2 200 000. After the payment of the entire agreed investment value, a rent of € 120 000 per year will start to be paid in real terms. Some benefits are still only in the state of development, or are being prepared for the future, but since the analysed time period is 25 years, their socio-economic value is calculated from the expected year of beginning. These are mainly the benefits "Improving the state of infrastructure for culture", as a workout playground will be available from next year, and the "Extension of long-distance cycling route", which is planned for 2025. As the analysis spreads over a non-negligible period of time, it is necessary to use discounting as a tool to take into account the time value. The discount rate is set at 5% as the classic rate for a public project. Items that have had a gradual linear onset with their peak are estimated to increase linearly to their maximum in 2021. Based on these results, the annual net cash flow accumulates and it is therefore possible to get to the expected payback period of the revitalization, which is the main goal of the work.

4. RESULTS
The results are divided into 2 parts. The first part is the genesis and calculation of individual benefits, this part includes the use of methodological processes and the second part are the results of the discounted CBA analysis, which compares the costs and benefits described in the first part of the results. In 2021, the completion of the building and the area, so an approximate maximum capacity is expected.

4.1. Benefits
The benefits of brownfield revitalizations as public projects are often financially non-profit, with a socio-economic impact, but revitalization can also bring some financially profitable benefits. This revitalization has one profitable benefit, the rental of space to various art associations and studios. It also has several socio-economic benefits.

4.1.1. Rental
The rent in the current year (2021) at full occupancy is around 600 000 € per year. Since the space has not been completely rented since the opening of the building in 2017, the gradual filling by about 20% of the full occupancy per year until 2021, when full occupancy occurred, is taken into account.

4.1.2. Employment development in the region – EDIR

The revitalization has created new jobs, as the building needs to be cared for and there is a need to manage rent, finance and human resources. This is about 40 jobs in 2021. When launched in 2017, half the number of employees is expected, ie 50% of the value in 2021. Subsequently, the number increased by about 20% per year until 2021. The unit socio-economic value for one job created is about € 11 500 and was calculated using the eCBA.cz software [5]. In 2021, with 40 new jobs, the annual socio-economic value of the benefit is less than € 460 000 per year.

Number of people affected per year	Unit price of impact	Total benefit value per year
40	11 435.724	**457 429**

*Table 1: Socio-economic value of "Employment development in the region" benefit
(Source: Own Calculation, eCBA.cz, Foundation Nová Cvernovka)*

4.1.3. Technical evaluation of monuments - TEM

Many monuments of the building have also been restored by revitalization, whether the old library uses the original furniture or the original first cast floors called "Xylolite" in the former Czechoslovakia. According to information from the administrator of the Nová Cvernovka Foundation, Mr. Branislav Čavoj, MSc, the object is visited by about 40,000 people a year and at the same time it is the number of people affected per year. As the building was gradually revitalized until 2021, when it was opened in 2021, approximately 60% of the value from 2021 is expected in 2017, which gradually increases over time to its maximum in 2021. The unit value of the benefit is € 0.79 per visitor per year and was calculated using the software eCBA.cz [5]. The total socio-economic value of the benefit is approximately € 32 000 per year.

Number of people affected per year	Unit price of impact	Total benefit value per year
40 000	0.790	**31 600**

*Table 2: Socio-economic value of "Technical evaluation of monuments" benefit
(Source: Own Calculation, eCBA.cz, Foundation Nová Cvernovka)*

4.1.4 Increase in foreign one-day visitors – IFODV

Renting space to studios and various art associations has created space for art events that attract not only domestic but also foreign visitors, as the building is located in Bratislava, which is close to the borders with Austria and the Czech Republic, the assumption of foreign visitors is about 5% of the average number of total visitors, which is approximately 2 000 visitors per year. As the building was probably not so well known to the public in the year 2017, 20% of the number of visitors from 2021 is expected and the value increases over time to the value in 2021. This value then remains the same because it is assumed that due to the capacity of the building, it will not increase much. The unit value of the benefit is € 9.678 per visitor per year and was calculated using the eCBA.cz software [5]. The total socio-economic value of the benefit is more than € 19 000 per year.

Number of people affected per year	Unit price of impact	Total benefit value per year
2 000	9.678	**19 355**

*Table 3: Socio-economic value of "Increase in foreign one-day visitors" benefit
(Source: Own Calculation, eCBA.cz, Foundation Nová Cvernovka)*

4.1.5. Increase in overnight stays of foreign visitors – IOSFT

A certain number of foreign visitors are likely to associate a visit to Nova Cvernovka with a total visit to Bratislava and an overnight stay in the area, as visitors are from abroad, assuming that 50% of total foreign visitors also stays overnight (1 000 visitors per year). As with one-day foreign visitors, this value starts at 20% of the 2021 value in 2017 and increases over time to a maximum in 2021, where the approximate capacity maximum has been reached. This value then remains the same, because it is assumed that due to the capacity of the object, it will not increase much. The unit value of the benefit is € 30.178 per visitor per year and was calculated using the eCBA.cz software [5]. The total socio-economic value of the benefit is approximately € 30 000 per year.

Number of people affected per year	Unit price of impact	Total benefit value per year
1 000	30.178	**30 178**

*Table 4: Socio-economic value of "Increase in overnight stays of foreign visitors" benefit
(Source: Own Calculation, eCBA.cz, Foundation Nová Cvernovka)*

4.1.6. Increase of one-day domestic visitors – IODDV

Domestic visitors will represent the majority of visitors, but since they must be visitors, ie people coming to Bratislava to visit Nova Cvernovka (not Bratislava residents), it will be about half of the total visitors (the other half is expected as visitors directly from Bratislava), expected to be 20 000 visitors per year. As with one-day foreign visitors, this value starts at 20% of the value in 2021 in 2017 and increases over time to a maximum in 2021, where the approximate capacity maximum has been reached. The unit value of the benefit is € 3.239 per visitor per year and was calculated using the eCBA.cz software [5]. The total socio-economic value of the benefit is about € 65 000 per year.

Number of people affected per year	Unit price of impact	Total benefit value per year
20 000	3.239	**64 780**

*Table 5: Socio-economic value of "Increase of one-day domestic visitors" benefit
(Source: Own Calculation, eCBA.cz, Foundation Nová Cvernovka)*

4.1.7. Increase in overnight stays of domestic visitors – IOSDS

As there is a good connection from Bratislava and thus domestic visitors do not need to sleep in the area even when attending a night events, from all domestic visitors are expected to stay overnight about 20% and thus 4 000 visitors a year. As with one-day foreign visitors, this value starts at 20% of the 2021 value in 2017 and increases over time to a maximum in 2021, where the approximate capacity maximum has been reached. The unit value of the benefit is € 7.742 per visitor per year and was calculated using the eCBA.cz software [5]. The total socio-economic value of the benefit is approximately € 31 000 per year.

Number of people affected per year	Unit price of impact	Total benefit value per year
4 000	7.742	**30 968**

*Table 6: Socio-economic value of "Increase in overnight stays of domestic visitors" benefit
(Source: Own Calculation, eCBA.cz, Foundation Nová Cvernovka)*

4.1.8. Save visitors time with new services – SVTWNS

After the revitalization, there are several services in the building, such as shops etc. There are also other objects with shops in the local area, but there is a higher probability that the visitor of the assessed object will visit the shop directly there and thus save a certain number of minutes. It is assumed that every second visitor (20 000 visitors a year will use the store, saving approximately 2 minutes. Due to the gradual completion, the value in 2017 is calculated as 20% of the value in 2021, and gradually increases over time until 2021. The unit value of the benefit is € 0.107 per visitor per number of minutes saved and was calculated using the eCBA.cz software [5]. The total socio-economic value of the benefit is approximately € 4 000 per year.

Number of minutes saved	Number of people affected per year	Unit price of impact	Total benefit value per year
2	20 000	0.107	**4 272**

Table 7: Socio-economic value of "Save visitors time with new services" benefit
(Source: Own Calculation, eCBA.cz, Foundation Nová Cvernovka)

4.1.9. Improving the state of infrastructure for culture – ISIFC

Cultural events take place regularly in the building and it can therefore be considered as socio-economic benefit of improving the state of infrastructure for culture. This benefit is used by all visitors to the building and thus 40 000 per year. Again, due to gradual completion, the value in 2017 is calculated as 20% of the value in 2021, and over time it gradually increases until 2021, when the value is taken as the maximum. The unit value of the benefit is € 0.790 per visitor per year and was calculated using the eCBA.cz software [5]. The total socio-economic value of the benefit is less than € 32 000 per year.

Number of people affected per year	Unit price of impact	Total benefit value per year
40 000	0.790	**31 600**

Table 8: Socio-economic value of "Improving the state of infrastructure for culture" benefit
(Source: Own Calculation, eCBA.cz, Foundation Nová Cvernovka)

4.1.10. Improving the state of infrastructure for sport and youth – ISIFSY

In addition to the revitalization of the building, a workout playground is being builded in the area, which will be launched from the beginning of 2022, so it is displayed in the CBA analysis spread over time only from this year. The number of visitors to the workout playground is estimated at about 30 per day, ie about 12,000 visitors per year. The unit value of the benefit is € 0.790 per visitor per year and was calculated using the eCBA.cz software [5]. The total socio-economic value of the benefit is about € 9 500 per year.

Number of people affected per year	Unit price of impact	Total benefit value per year
12 000	0.790	**9 480**

Table 9: Socio-economic value of "Improving the state of infrastructure for sport and youth" benefit
(Source: Own Calculation, eCBA.cz, Foundation Nová Cvernovka)

4.1.11. Improving the condition of parks and public greenery – ICPPG

With the revitalization of the building, the surroundings were also revitalized. Sidewalks, benches and parks were created there. This benefit affects all visitors and therefore 40 000 per year.

Also due to the gradual completion, the value in 2017 is calculated as 20% of the value in 2021, and over time gradually increases until 2021, when the value is taken as the maximum. The unit value of the benefit is € 0.593 per visitor per year and was calculated using the eCBA.cz software [5]. The total socio-economic value of the benefit is less than € 24 000 per year.

Number of people affected per year	Unit price of impact	Total benefit value per year
40 000	0.593	**23 700**

Table 10: Socio-economic value of "Improving the state of infrastructure for sport and youth" benefit
(Source: Own Calculation, eCBA.cz, Foundation Nová Cvernovka)

4.1.12. Improving the conditions of public spaces – ICPS

At the same time, the revitalization of the building improved the conditions of public spaces. This applies to all people who move around. Since the building is located on the road that leads to Bratislava from the northeast, the assumption is that at least 500,000 people cross this road every year. That is rough number of people affected per year. As with other benefits, due to gradual completion, the value in 2017 is calculated as 20% of the value in 2021, and gradually increases over time until 2021, when the value is taken as the maximum, because the object is finished. The unit value of the benefit is € 0.030 per visitor per year and was calculated using the eCBA.cz software [5]. The total socio-economic value of the benefit is less than € 15 000 per year.

Number of people affected per year	Unit price of impact	Total benefit value per year
500 000	0.030	**14 852**

Table 11: Socio-economic value of "Improving the conditions of public spaces" benefit
(Source: Own Calculation, eCBA.cz, Foundation Nová Cvernovka)

4.1.13. Parking time savings – PTS

Along with the revitalization, 80 parking spaces were created in the area, which saves people time with parking. There are parking spaces nearby, but as it is an industrial part, there are not many. As the visitor needs to park and walk to the building, he will spend 3-5 minutes depending on the distance to the parking space. Therefore, each parking space saves about 4 minutes a day, which makes up 8044 minutes for 80 places. As the car park was built gradually together with the complex, the value in the year of launch, ie in 2017, is also calculated as 20% of the value in 2021 and gradually rises over time to its maximum in 2021. The unit value of the benefit is € 0.198 per parking space on the number of minutes saved per year and was calculated using the software eCBA.cz [5]. The total socio-economic value of the benefit is less than € 17 000 per year.

Number of minutes saved per year per car (4 minutes * 261 days)	Number of cars	Unit price of impact	Total benefit value per year
1 044	80	0.198	**16 495**

Table 12: Socio-economic value of "Parking time savings" benefit
(Source: Own Calculation, eCBA.cz, Foundation Nová Cvernovka)

4.1.14. Extension of long-distance cycling route - ELDCR

In 2025, it is planned to launch an extended long-distance cycling route through the area. Currently, the long-distance cycling route are located approximately 500 meters from the building on each side along the direct road around the building. If these two long-distance cycling routes merge, which the "Nová Cvernovka" Foundation is interested in, the expected increase in the long-distance cycling route will be approximately 1 KM. As this is a suburbs area, the number of visitors using the new part of the cycle route is expected to be at least 2 000 visitors per month. As a result, there are approximately 24 000 visitors a year. The unit value of the benefit is € 0.079 per visitor per kilometer per year and was calculated using the eCBA.cz software [5]. The total socio-economic value of the benefit is less than € 2 000 per year.

Number of new kilometers	Number of people affected per year	Unit price of impact	**Total benefit value per year**
1	24 000	0.079	**1 896**

*Table 13: Socio-economic value of "Extension of long-distance cycling route" benefit
(Source: Own Calculation, eCBA.cz, Foundation Nová Cvernovka)*

4.2. CBA analyse results

As the CBA analysis table with a complete list of benefits and costs is too comprehensive, only the table with the resulting values will be included in the paper.

Table following on the next page

Attributes			Costs		Benefits		CF	
Discounted rate	Number of years	Year	Total costs	Discounted Total Costs	Total benefits	Discounted benefits	ENCF	Cum. ENCF
1	1	2017	2019	**1092**	460	**460**	-632	**-632**
0.95	2	2018	2021	**1040**	676	**644**	-396	**-1028**
0.91	3	2019	2023	**990**	892	**809**	-181	**-1209**
0.86	4	2020	2025	**943**	1108	**957**	14	**-1195**
0.82	5	2021	2027	**898**	1324	**1090**	191	**-1004**
0.78	6	2022	2029	**730**	1334	**1045**	315	**-689**
0.75	7	2023	2031	**621**	1334	**995**	374	**-314**
0.71	8	2024	2033	**591**	1334	**948**	357	**42**
0.68	9	2025	2035	**495**	1336	**904**	409	**451**
0.64	10	2026	2037	**472**	1336	**861**	389	**840**
0.61	11	2027	2039	**449**	1336	**820**	371	**1211**
0.58	12	2028	2041	**428**	1336	**781**	353	**1564**
0.56	13	2029	2043	**408**	1336	**744**	336	**1900**
0.53	14	2030	2031	**388**	1336	**708**	320	**2220**
0.51	15	2031	2032	**370**	1336	**675**	305	**2525**
0.48	16	2032	2032	**352**	1336	**643**	290	**2816**
0.46	17	2033	2033	**335**	1336	**612**	277	**3092**
0.44	18	2034	2034	**319**	1336	**583**	263	**3356**
0.42	19	2035	2035	**304**	1336	**555**	251	**3607**
0.40	20	2036	2036	**290**	1336	**529**	239	**3846**
0.38	21	2037	2037	**276**	1336	**503**	228	**4073**
0.36	22	2038	2038	**263**	1336	**479**	217	**4290**
0.34	23	2039	2039	**250**	1336	**457**	206	**4496**
0.33	24	2040	2040	**238**	1336	**435**	197	**4693**
0.31	25	2041	2041	**227**	1336	**414**	187	**4880**

Table 14: Results of CBA analyse with discounted values
(Source: Own Calculation)

5. CONCLUSION

We can assume that the revitalization was very successful in regards of society benefits. Positive values in the CBA analysis were achieved as early as 2024, ie as early as the 8th year since its launch. Revitalization probably brings with it other benefits that have not been identified, or we are not yet able to quantify them methodologically, so it is likely that the results could be even more optimistic. A grant provided by various entities, whether private or public, in the amount of approximately € 300,000 per year, which the Nová Cvernovka Foundation currently reports, can serve as consideration for the benefits for the company. It is likely that this revitalization could serve as a good example for similar revitalizations in the area.

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MODEL OF OVERCOMING THE CRISIS IN BULGARIA CAUSED BY THE PANDEMIC

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ABSTRACT
This article considers a possibility of creating a sustainable model that would help overcome the specific crisis caused by the COVID-19 pandemic. It attempts to analyse these processes while taking into consideration their unpredictable nature. Analysing the available statistical and operational data the author looks for an opportunity to create a relatively accurate model for overcoming the crisis resulting from the pandemic. The possible solutions are divided into three groups: political, social and economic.
Keywords: Pandemic, Crisis, Pandemic, COVID-19, Bulgaria

1. INTRODUCTION
During the complex economic restructuring in Bulgaria in the late 1980s, specific conjunctural factors were generated and activated. During the first period, they suppress growth, lead to deterioration and even to individual distortions in some major macroeconomic dependencies and proportions. This period brought liberalization of trade and prices and initiated the painful and long-lasting reforms in the agricultural sector (Terziev, 2013; Terziev, 2017a).

2. MODEL OF OVERCOMING THE CRISIS IN BULGARIA CAUSED BY THE PANDEMIC
The quantitative analysis of dependence between unemployment and the gross product highlights the lagging response to the former, in other words the change in the unemployment rate is three times slower compared to the relative change in gross product. This mainly results from the three factors. If interpreted in a broader sense and updated, these factors reveal some obvious and hidden indirect signs of unemployment, employment, and labour productivity; difficult to overcome discrepancies between the statistically reported and the actual unemployment rates. These factors have the following major impacts. A more considerable and prolonged decline in production accelerates the process of dismissing workers, although it is possible that it takes place with varying pace. The unemployment rate is increasing at a slower pace (rather than similarly) because, for various reasons, fewer (and not all) of the total number of dismissed workers are additionally included in the group of unemployed. Some of the redundant relatively quickly become self-employed, entrepreneurs (most often in the field of small business), others give up participation in employment, i.e. move to the group of economically inactive persons. Every more sensitive and lasting shrinking of production affects the duration, forms and nature of employment.

The number of part-time employees is increasing. Due to the fact that the volume of production is decreasing, due to the decreasing revenues and profits, the companies are striving to reduce costs in order to overcome the situation faster. Very often, as a result, labour productivity decreases, as well as the rate of GDP growth. Part-time employment can be seen as a form of flexible employment, the realization of the freedom of individuals in terms of their working hours, and as an "intermediate" labour indicator, which is formed on the line between employment and unemployment, because human resources are not fully used, workers receive irregular, significantly smaller and unsatisfactory remuneration. Thus, although formally employed, some of the employed people may also appear as secretly unemployed. In practice, especially during the first transition period, employment in many enterprises did not meet the definition of employment: working hours, labour productivity and remunerations did not meet the established standards. The employment of these people is more limited and more precarious than normal. This happens mainly in cases of deterioration of the general economic rate of development, of production restrictions for individual enterprises (markets, supplies, cooperative supplies, etc.), as a result of which production and financial results deteriorate and the probability of more mass layoffs increases (redundancies, dismissals). Our social system, whether we acknowledge it or not, is facing a serious test. It has of course experienced far more severe hardships, especially in the years of active political and economic transformation following the change in social and political order in the late 1990s. In the period from 1989 onwards and in the following years, it was experienced crisis at least a few more times. The cyclical nature of these deformations of functioning cannot be justified, but groups of factors can be distinguished, which to one degree or another influence these changes. Largely, they depended on the ability of the economy to bear or not to bear certain burdens. In some cases, these burdens have been compensated by the natural course of certain events and processes, and in other situations a set of corrective measures and programmes have been used to restore the viability of the slowing economic processes. The social system in Bulgaria having faced a situation of rapidly changing environment has tough times reacting properly to the new and different conditions. Even with the modern mechanisms for reporting the relevant changes, at least at this stage it is not able to respond adequately and acceptably to the pandemic caused by COVID-19 (Zahariev, et al., 2021a). Experts in this field expect this to some extent, because they are well aware of the mechanism of such decisions at national and European level. This process is relatively long and not very flexible and practically does not meet the expectations of society. A combination of many factors affecting our current social system will confront it with difficult task of making emergency and quick decisions. It is widely known that making quick decisions is quite risky, because they are objectively not backed up by an accurate analysis of the situation and the seemingly positive results, we expect sometimes have negative consequences. Labour market fluctuations have already begun and they are seemingly covered up by the palliative measures of employers in order to maintain a longer state of equilibrium, which objectively is no longer the case. Even unexplored processes move with such speed and are so clearly visible that we cannot help but find the critical elements. In this regard, there is a number of examples, such as the difficult movement of people and goods, limited access to a wide range of services, including guaranteed state services (performed remotely or semi-remotely) at a slow pace, which not only prevents, but also hinders the normal development of economic processes. This is just a glimpse of the already created situation and the detailed and deep analysis would give a much clearer and more accurate picture, which would certainly show a sufficiently critical phase. Unfortunately, in crisis or emergency situations we do not have enough time to do this particularly valuable work and to achieve a good analysis that would help make informed correct and right decisions. It is accepted to call the policies with which we intervene on the labour market as passive and active. In the first group, there is a precise regulation, which in one form or another has been applied for more than 30 years.

During this period, only the mechanism of determining the amount of unemployment benefits has changed and a larger amount of cash flows (again in the form of cash benefits) has been directed to one target group or another. In the period after 1989, for example, it was accepted that young graduates should also be supported and motivated with cash benefits for a certain period (up to 6 months) to find a suitable job. Subsequently, this mechanism was cancelled and the authorities sought other ways to motivate young people. In moments of drastic increase in unemployment or mass layoffs of large groups of people the government, in order to "suppress" social discontent, paid off benefits for the entire period and it was expected to help create a small family business. Under difficult conditions, this did not happen in practice and the expected impact on the primary local labour markets was either temporary or not implemented at all. This mechanism is impractical in the current situation. Although if we seek similar solution, it should be developed to satisfy in the initial stage of the crisis those groups of people who could not cope without income – such type of benefit (survival aid). Currently, this mechanism of passive support could be improved or partially changed, but the result of these actions will not be the expected ones or will not respond at all to the emerged or emerging difficult social situation. More interesting are the impacts we would expect from a change in active social policies. In the general sense of the term, they are expected to be flexible enough to respond to expectations, critical situations or negative processes occurring. There is no time for a detailed analysis here either, but it is clear that it will affect almost all sectors of the economy directly or indirectly. The current tools of this so-called active policy rely primarily on a programmatic approach, with the possibility of a set of projects. This competitiveness created expectations and attitudes during different programme stages: for the projects to become better and more successful and for the result to become more and more influential for the respective group of users. The question now is whether this is possible in the current situation and whether we have enough time to implement such a mechanism. Experience from the recent past of temporary employment programmes (which played much more significant role in small municipalities) showed that they were both an economic and a political tool to meet the need of employing a large number of people in community service and for them to receive certain income. This provided some reassurance to both government and local authorities that those who are long out of the labour market will have some employment. Another question is to what extent the usefulness of this activity was sufficiently justified. Bulgaria still does not have registered mass layoffs of labour force on the labour market, but employers tend to use the possibilities of the labour legislation for collective paid leave or determining the situation as a downtime in manufacturing. This actually would work perfectly if it was clear that the critical situation would end in the near future. Even if we assume that in the next few months the pandemic is controlled a recovery period will follow, which will last a year and even more for some economic entities. Maintaining a relatively good situation on the labour market in Bulgaria is possible for a very short period and as these processes are already underway in full force, we can expect that a highly problematic and critical situation would occur in a month or two. Undoubtedly, people's lives and health are of paramount importance, but it is also indisputable that these people must continue their live in a certain social comfort. Both circumstances occur whether or not we anticipate them and whether we are prepared for them. And if at the moment we have serious problems with limiting the spread of a disease, trying to protect our health system from collapse, we must not forget that this system is also part of the functioning of social system and ongoing social processes. We need to think very quickly about all the other elements of our social system. It is clear to specialists, as well as to everyone else, that these elements cannot function on their own. Obviously, we take crisis decisions and measures in only one direction – the healthcare system. We have left the other elements of this system to function in the usual way and rhythm.

Even with delayed action, the processes will occur in the other elements of the system, and they are no less vulnerable, and in some cases even quite the opposite (Terziev, 2015; Terziev, 2017b). Here is another element influenced by the decisions in the social system – the education in its distant form. Some politicians and even experts say that we have made a leap that would cost us at least ten years in the normal course of events. This comment relates to the fact that the system of primary, secondary and higher education operates remotely, or at least this is the expectation of the leaders of these systems. It is difficult to accept that this "leap" is as successful as it is described to us. Without disputing the possibilities of digital education and distance learning it should be noted that in addition to technological and technical training the so-called social preparation is required – how and in what way to present the material that needs to reach the user digitally – a pupil, a student, a worker or in the most general sense an employee. Good-looking interactive methods, interactive classrooms, shared electronic spaces in general are an option, but not always the best one. Both parties must be well prepared for both the transmission and acceptance of knowledge. We are not talking about the transmission of information, but about knowledge. While this process would seem quite easy and pragmatic for people who have enough experience in this direction, traditional teachers and not only to some extent have a lack of skills in this direction (Terziev, 2020a; Terziev, 2020b; Terziev, 2020c; Terziev, 2020d). The impact of the dynamic processes that accompany the labour market in this emergency, directly influence the functioning of the healthcare system. On the one hand, the increased number of unemployed people entering the labour market are supported by the state budget, as they receive the relevant benefits established by the Social Security Code, but on the other hand, the healthcare system is forced to provide financial support to those who are not insured for this health risk (Terziev, 2020e; Terziev, 2020f; Terziev, 2020g). To analyse these processes is a challenging task considering that they cannot be predicted and the latest statistical data are incomplete and cover only the first six months of the year. Only after we have collected and analysed a sufficient amount of statistical information can we evaluate the impact on the healthcare system. By analysing the available statistical and operative data, we can create a relatively accurate model of overcoming the crisis caused by the pandemic. We can divide the possible solutions into three groups: political, social and economic. First group: political solutions are those that relate to defining specific policies during emergency management. The existing emergency management plans proved to be inapplicable in the current crisis caused by the pandemic, which created objective preconditions for political decision-making. These decisions are related to decisions of the Bulgarian parliament, government, organizing crisis management structures: operational, vaccination points and others. This creates conditions for resolving the emerging national crisis by creating an organization outside the one that has existed so far in the country – through its administrative structures. Social group of solutions includes those that relate to people's healthcare. Their variety is particularly large considering the consequences and preventive measures against the next possible pandemic waves. This group of measures includes those related to the adopted restrictions of movement of people, like the prohibition of public events and small informal gatherings (congresses, conferences, seminars, trainings, exhibitions, matches, sporting events, visits to gyms, recreational therapies, SPA centres, wellness centres enters and thalassotherapy centres, concerts, theatre performances, cinema screenings, weddings, baptisms, funerals, etc., cafés, restaurants, nightclubs, including bars and clubs, gaming halls and casinos, hotels and guest houses, commercial sites, etc.), restrictions on internal movement, online learning adopted in schools and universities, closing of nurseries and kindergartens, restrictions on activities in the personal development centres and special education support centres, extracurricular activities, hobbies and other cultural activities organized in schools and extracurricular environment, restrictions on public transport and visits to social, integrating health and social care services and healthcare facilities.

This group also includes the measures for improvement of the border health control, as well as the medical ones, i.e., creation of a qualitative and different organization – adoption of a unified protocol for diagnosis and treatment of COVID 19. Here we can mention the activities aimed at attracting investments in hospital infrastructure, provision of medicines, as well as purely organizational measures related to the provision of ICU beds and coordination of hospitalizations. Another area is related to social assistance to the unemployed due to the crisis in the form of cash benefits under the Social Security Code, as well as financial and material assistance under the Social Welfare Act and adopted specific measures and plans. Third group: economic measures – these measures are essential to keep the business environment in relatively good comfort. They are mostly targeted at helping employers keep their employees. These are the measures for the implementation of a direct state wage subsidy to cover part of the wages and social security contributions of employees in those sectors of the economy that are most directly affected by the crisis. Another possibility for implementing such a policy is related to a simplified tax policy in various sectors, for example: tourism (Zahariev, Simeonov, Zaharieva, 2021b; Zahariev, et al., 2021c). Another possibility is to support the functioning of the economy through various programmes and measures offered by the Employment Promotion Act or through special government programmes

3. CONCLUSION
Crisis action plans need to be constantly updated and expanded – this was proved by the emergency caused by the COVID-19 pandemic. This situation continues today and is caused by new waves of the infection. The taken measures and actions have certain impact on the society, but they fail to overcome the crisis that requires their modification on the move. This is not a common practice and it requires crisis decision-making without being able to analyse the current situation in detail and without being able to take into account the possible positive and negative aspects of the actions taken.

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IN-STORE ENVIRONMENTALLY RESPONSIBLE ACTIVITIES OF FOOD RETAILERS

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ABSTRACT
The paper aims to provide an overview of in-store environmentally responsible activities of food retailers based on the secondary data search. The study identified main key dimensions when reporting about retail in-store environmental practices, which are energy use, waste management and product range. The review of previous literature and positioning of the research stream can further help in the development of framework for in-store environmentally responsible activities of food retailers. In addition, results may serve as a benchmark for smaller food retailers in pursuing their internal supply chain environmental behaviour.
Keywords: *environmentally responsible activities, grocery, retailing, food retailing*

1. INTRODUCTION
Increasing concern about environmental and social issues in food production and consumption has been spreading rapidly in Europe. From the corporate social responsibility (CSR) perspective, food and agribusiness companies are frequently subject to broad interests and there is an increasing need for them to respond to the challenges and obligations posed by sustainability. Companies are facing rapid changes in the food sector due to the growing concern and rising awareness among consumers of traceability in the food chain, the origin of raw materials and food safety, environmental impacts of products and processes as well as societal isues such as animal welfare. Customers, governments, non-governmental organisations (NGOs), the media and wider society are all asking companies to provide an open and well-substantiated account on how they operate, what their impact on society is, and how they are minimising negative impacts and saving scarce natural resources *(Forsman-Hugg et al., 2013, p. 31).* Over the past couple of decades, retailers have become increasingly interested in sustainable supply chain engagement, although, initially in the focus of stakeholders were suppliers and working conditions in their factories. More recently, with the recognition of the impact of business on environment and climate change, retailers have increasingly begun to address environmental concerns as well *(RILA, 2011).* Some of the greatest sustainability issues (environmental) lie outside of the retail operations, but in many cases the greatest impacts lie within supply chain. Corporate social responsibility (CSR) developed to one of the top priorities of business over the last decade having been ranked in 2011 as the number one focus of managers in the global retail and FMCG sector *(The Consumer Good Forum, 2011).* So far intention CSR receives the business, political and research arena is primary focused on large, often multinational companies with high bargaining power in the food sector. Large multinational retailers are actively involved in CSR initiatives in the realms of environmental as well as social issues. CSR are more and more shifting from the single-firm level to supply chains and networks *(Hartmann, 2011, p. 311).* Food industry retailers must not only be prepared to offer environmentally friendly products to consumers but also demonstrate responsible environmental care practices in their supply chains *(Maloni, Brown, 2006, p. 41).* Today the world faces numerous global issues that affect people's daily lives, such as unhealthy lifestyles, economic crisis and major environmental threats. These issues closely impact our business and value chain. The research gap, that this paper seeks to addres, through the use of explaratory approach, is the lack of holistic view on green retail practices.

In order to do so, next research questions are posed:

- *RQ1. How are retailers managing environmental concerns in their in store activities?*

The contribution of this paper is that it identifies research gap and gives overview of green retail practices in order to build a more conceptual framework which would help in further research of green supply chain practices and green supply chain management among food retailers. The framework could be used for developing future research ideas in the area, with emphasis on deper research of specific processes and its influence on the environment in managing supply chains. Considering the scope of this industry, it is noteworthy to say that the potential of future researche is broad, as the area of food supply chain management is specific regarding the temperature regime as well. This framework could help academic researchers to identify further opportunities in green retail supply chain management research, and also it can contribute to practicioners in rethinking of reshaping current supply chains to become more greener, and consequently, more sustainable in the future. Retailers act as „sustainability gatekeepers" between manufacturers and consmers *(Ytterhus et al., 1999)*. Due to their purchasing power, they control whether sustainable food products are made widely awailable, in which ways they are promoted, and to whaat extent.

2. GREEN IN STORE ACTIVITIES

Retail has not traditionally been considered an environmentally important sector *(Ofori, 2000)*. *Bansal and Kilbourne (2001)* were among the first to state about the complete neglect of research into the environmental impact of retail, which they actually call a kind of research anomaly, since retailers have not traditionally been considered as environmental polluters. However, in line with the increased interest in considering environmental responsibility of companies, since the early 1990s, large food retailers have not lagged behind producers in implementing environmentally responsible activities and are starting to report on environmentally responsible activities. Retailers are often focused on the social dimension of sustainability, and emphasize social responsibility reports or sustainability reports *(Iles, 2007)*, which can be found on food retailers' websites (for example, the John Lewis Partnership Sustainability Report, Sainsbury 20x20 Sustainability Report, Cooperative, Sustainability 2.0 Asda Environmental Sustainability Goals). Of the food retailers, some of the international retail chains stand out, as they published their sustainability reports ialready in 2002 based on the guidelines of the Global Reporting Initiative (GRI) *(EuroCommerce, n /a)*. Certainly, there are differences among retailers in the duration and comprehensiveness of reporting on environmentally responsible, ie socially responsible business, which is evident from the detailed insight into these reports. Some retailers may be considered proactive in environmentally responsible activities (e.g. Walmart, Tesco), while other companies are reactive or inactive. With these reports, retailers want to show a strong persistence and commitment to reducing the "environmental footprint". It is interesting to mention that the diversity of environmentally responsible activities in the retail sector has been observed and that this diversity is considered the strength of the sector, ie it contributes to promoting a holistic approach to environmental decisions and policies of European retailers *(EuroCommerce, 2010)*. In November 2002, *The United Nations Environment Program Division of Technology, Industry and Economics* held a meeting with retailers, the aim of which was to provide retailers with a platform for dialogue on sustainability and identification of sustainable retail activities. The meeting was also attended by some of the world's leading retailers of food products, such as Walmart, Metro AG, Tesco, Ahold, Carrefour. The roundtable agreed on the need to develop sustainability indicators specifically for the retail sector *(Jones et al., 2005)*. Then, in the same year, *BRC (2006)* published the *Towards Retail Sustainability Strategy*, which aims to provide retailers with guidelines for carrying out environmentally and socially desirable retail activities.

The important role of retailers was also recognized by the *Council of the European Union*, which stated in its 2008 meeting that a voluntary code of environmentally responsible retail behavior would be a useful tool for further developing environmental responsibility. Shortly afterwards, European retailers established the *Retailers' Environmental Action Program (REAP)* in 2009, a kind of database in which retailers report annually on the goals they plan to achieve in the coming period in terms of sustainable production. and consumption (for example, statements from food retailers such as Walmart, Auchan, Carrefour, Delhaize Group, Kaufland, Lidl, Mercator, Rewe, Tesco, but also those holding a non-food range can be found here). In the Code of Environmentally Responsible Behavior, retailers have opted to implement measures to reduce the environmental footprint of retail activities in the field of:

1) procurement (will promote more environmentally responsible procurement and production),
2) resource efficiency,
3) transport and distribution of products (refers to improving the environmental responsibility of distribution, ie in case the retailer does not have its own transport fleet, cooperation in "greening" transport with transport service providers is needed),
4) waste management (refers to the practice of measures aimed at preventing or reducing the impact of waste on the environment),
5) communicating and promoting environmentally responsible behavior,
6) regular reporting on achieved goals.

The experience of retailers has shown that it is possible to reduce costs by reducing the environmental impact of the activities that take place in the retail store. In other words, it's about the environmental performance of stores. Some examples of possible activities in this area are: reduction of energy consumption, reduction of water consumption, increase of renewable energy sources, use of efficient cooling and heating systems, changes in lighting systems (increased use of natural light and / or energy efficient lighting), reduction of paper consumption, reduction of greenhouse gas emissions from own or store activities and in general, implementation of environmental management practices. *Thompson (2007)* states that when considering environmentally responsible activities, researchers focus mainly on organic food products and transport in the supply chain, while very little is written about the environmental responsibility of the retail stores. The reason lies in the fact that a large number of retailers are in doubt about how to make existing retail outlets more environmentally responsible. For retailers, reducing direct environmental impacts, such as energy and water use, waste generation and land use, are opportunities to protect the environment while reducing costs. The environmental responsibility of retailers is most directly manifested through their own operations, ie those that are directly influenced by retailers, such as energy use, water use, waste management and product range in stores *(RILA 2012c)*. That is why environmentally responsible activities of food retailers are analyzed through energy use, water use, waste management and product assortment.

2.1. Enegy use

Energy management refers to understanding energy use. The way in which energy can be used more environmentally responsibly in retail store is the installation of automation systems, replacement of old heating, ventilation and air conditioning systems, installation of low-energy lighting systems, use of daylight and natural light, and wherever possible, use of advanced cooling systems. Minimizing energy use is usually the first step towards reducing greenhouse gas (GHG) emissions. Then, as a next step, retailers usually consider using renewable energy sources.

The use of renewable energy sources in retail stores is a long-term investment that reduces energy costs, reduces greenhouse gas emissions and contributes to the reputation of retailers. Leading food retailers typically use solar energy systems on store roofs and microturbines (e.g. Walmart, Safeway). A similar example can be found in Croatia, where the leading Croatian food retailer uses solar energy systems. However, it is often not possible to generate energy in a retail store, either for financial or technical reasons. World food retailers are even buying loans to use renewable energy sources to reduce greenhouse gas emissions and move towards reducing defined emissions. According to research conducted by IGD, the emphasis on environmental friendliness and sustainability initiatives within the food retail industry continues to grow. As one of the key areas of interest, IGD states the reduction of energy consumption with the aim of reducing costs and reducing greenhouse gas emissions. Retailers, members of the Consumer Goods Forum, have also committed to the gradual withdrawal of fluorinated hydrocarbons (HFCs) from refrigeration units, which has often been mentioned as a problem area in retail. Also, IGD emphasizes that one of the most important problems of the retail industry is the waste of supply chains.

2.2. Waste management

Waste management refers to the management of the product assortment after the expiration date and the management of waste arising from ancillary retail activities. Retailers of food products must first analyze the sources of waste in stores, in order to be able to introduce waste reduction programs. As with energy use, retailers usually set waste reduction targets at the corporate level, then report them to the wider community and monitor their own achievement of the set goals. The retailer aims to continuously reduce the amount of waste, by reducing food waste, packaging waste (which makes up a large part of environmental degradation), reusing and recycling waste, reducing packaging for disposal (including plastic bags) and optimizing the packaging system with with the aim of the lowest possible impact on the environment. Waste minimization begins with the reduction and / or reuse of individual products. Retailers are continuously reviewing environmental procurement policies to minimize the amount of disposable materials. Consumers also play an important role in achieving waste reduction goals, and their behavior can greatly contribute to the set goals. Many retailers are introducing reusable bags, and some even offer incentives to use reusable bags. In the Croatian retail market, the leading retailers of food products offer bags made of recycled material and biodegradable bags. For materials that cannot be eliminated or reused, retailers maximize recycling by recycling plastics, aluminum, cardboard packaging, oil for baking products; and properly disposed food waste is used for compost or even for alternative fuels. The implementation of environmentally responsible activities of retailers also largely depends on the existing local recycling infrastructure. In particular, innovative programs direct waste from operations to producers, who later reuse it to produce products, thus repeating the cycle (closing the loop). The retailer's goal is to achieve zero waste in the long run, where all materials leaving the store will either be reused or recycled so that they can be reused. However, waste management faces a number of challenges for retailers, including the complexity of collecting and recycling different types of materials, as well as the problem of adequate logistics infrastructure. In order to achieve a zero waste rate, retailers analyze not only their own activities, but also the activities of other members in the supply chain. The Ministry of Environmental Protection, Physical Planning and Construction and the Fund for Environmental Protection and Energy Efficiency are the responsible institutions for waste management in the Republic of Croatia. Significant activities in the field of waste management began in August 2005 with the adoption of Regulation NN 97/05 which defines the legal framework for the collection of aluminum, plastic and glass bottles for milk, juices, water and alcoholic beverages *(GS1 Croatia, 2007).*

2.3. Product range

Food retailers are increasingly introducing organic food products into the range due to consumer concerns about their own health and fair trade products (*Maloni and Brown, 2006*). The goal of fair trade is to support producers and pay them fairly for their work, ie it is important to enable producers not only to avoid poverty, but also business continuity. *Jones, Comfort, and Hillier (2003)* state that Fair Trade products make up a small but fast-growing segment of the British food market.

3. OVERVIEW OF ENVIRONMENTALLY RESPONSIBLE ACTIVITIES FOOD RETAILERS PERFORM IN STORES

An analysis of existing research leads to the conclusion that research on environmentally responsible activities of food retailers was predominantly conducted by analyzing websites, either leading retailers in the field of consumer goods or leading food retailers. Furthermore, the literature identifies frequent research on environmentally responsible retail activities in the UK retail market (led by *Jones, Comfort and Hillier)*, which is not surprising given that this market is one of the most developed in the world and that British retailers are leaders in environmental responsible behavior and are proactive on all issues of environmental and social responsibility *(Sparks, 2010)*. Jones, Comfort and Hillier are continuously researching environmentally responsible activities among British retailers. So *Jones, Comfort, and Hillier (2004)* investigated British retailers'sourcing strategies, and their research suggests that retailers use both local and global sourcing strategies. *Jones et al. (2005)* seeks to link the consideration of consumerism and sustainable retail, discusses potential UK retailers' action plans and how retailers should deal with the challenges that follow. *Jones, Comfort and Hillier (2005b)* explored sustainable development in a sample of the UK's 10 largest retailers through a social responsibility report. The results of the research indicated that there is no correlation between economic impact and the level of socially responsible engagement. *Jones, Comfort, and Hillier (2005a)* identified key performance indicators for socially responsible business for the top 10 UK retailers. Although British retailers differed in the amount of information published on environmentally responsible behavior, they were involved in environmentally responsible activities such as energy reduction and waste reduction. *Jones, Comfort, and Hillier (2007a)* investigated the attitudes toward corporate social responsibility of ten of the world's leading retailers. The research identified limitations in data collection and the validity of the data presented due to the fact that retailers do not have standardized reports on corporate social responsibility. *Jones, Comfort, and Hillier (2007b)* also investigated corporate social responsibility in grocery retailers. Again, the authors conclude that the research provided only insight into corporate social responsibility given that the data provided by retailers vary significantly. *Jones, Comfort, and Hillier (2008a)* discuss the work of the Commission on Sustainable Development and the implications for British retail. The authors see difficulties in how retailers can align business strategies with such a policy of considering sustainable development. *Jones, Comfort, and Hillier (2008b)* explore three possible scenarios for how British retailers can incorporate sustainable development into their own business strategies. The level of sustainability differs significantly in all three proposed scenarios and testifies to the challenges retailers face when considering sustainability. The authors further state that many retailers follow a cost leadership strategy, while sustainability would rather be part of a retailer differentiation strategy. In addition to surveys conducted among UK retailers, *Jones, Comfort and Hillier (2011)* went a step further and conducted a survey of the world's top ten food retailers in 2009 (ranked by sales value) on how these retailers report sustainability. An exploratory analysis of the content of the website indicated that although there is variation in the structure of retailers' sustainability reports, it is possible to identify three sets of topics related to economic, environmental and social activities.

Then, when reporting on sustainability, companies focus on planned activities, specific goals and the company's progress so far towards the desired goals. Under environmentally responsible activities, retailers consider a wide range of activities, both within the store and in the supply chain. These activities relate to climate change, carbon dioxide emissions, energy consumption, water management, waste management, logistics, conservation of natural resources, organic food products. The research states that retailers report specifically on the economic, especially environmental and social components (there is no integrated approach, ie consideration of sustainability) and that in some markets retailers are "more advanced" in environmentally responsible activities compared to other markets. The authors conclude that although retailers emphasize the importance of considering environmentally responsible activities throughout the supply chain, their CSR reports suggest that they are still predominantly focused on considering environmentally responsible activities in stores, sourcing and distribution activities. *Matopoulus and Bourlakis (2011)* conduct a study on sustainable practices and indicators in food retail using a case study method on the example of four Greek food retailers (respondents were directors of logistics of food retail distribution centers). The research focused exclusively on the study of distribution activities. The results of research in the field of food distribution indicate that food retailers do not use alternative means of transport. *Ganesan et al. (2009)* state that sustainability has become extremely important for retailers and that retailers can implement environmentally responsible operations or further transparency in the supply chain. The main disadvantage and the main limitation of previous research is that empirical research has not been conducted, but researchers have obtained data by searching websites. Researchers should avoid such secondary data collection and find opportunities to overcome objective research difficulties *(Jain et al., 2010).*

4. CONCLUSION
Globalisation of the food market is leading to even more complex networks of food supply chains which poses great challenges not only to company's environmental impact, but to the environmental impact of the product too. While some retailers are quite advanced in terms of addressing environmentl performance, there is little research and understanding of the retailer perspective and the perspectivce of how to incorporate environmentalism in entire supply chain. Since small and large retailers differ in their approach and possibilities to approach environmental performance, this implies potential research stream for exploring the differences amnog them, not only in terms of processes and practices, but motives and what seems to be th most important pressures for small companies. Research on CSR with focus on the food sector is scarce. However, given the special features of the sector and the inceasing relevance of the CSR in the food business and policy arena makes such studies of great value. Needing further intention is the shift in focus from multinationl companies and large retailers to specific food supply chains, with special focus on the developing of the framework for environmentally responsible retail in store activities.

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ROAD FREIGHT MARKET IN THE EUROPEAN UNION WITH SPECIAL EMPHASIS ON THE COVID-19 PANDEMIC

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ABSTRACT
Modern society could be difficult to imagine without a proper transportation industry. The development of economy worldwide depends on the efficiency of freight operators, mostly road transport companies. In the European Union, road freight transport is also dominant in the transport of goods, and its importance has been highlighted in these pandemic times in particular. Transportation activities cannot simply stop because of the pandemic. Many essential products need to be delivered, especially pharmaceuticals, food and sanitary products. On the road freight transport market in the European Union there are many small firms that are currently forced to follow the changes more than ever due to the pandemic in order to react to them and ensure the survival on the market. While this market has been recording slight fall in demand in 2020, considering the entire EU, the situation is quite the opposite when observing the national markets. Certain markets have been facing considerable fall in demand and some have recoded a positive impact on demand. Some firms will have no choice but to close, and some will try to find a lifeline through consolidation, mergers and acquisition and/or implementation of innovations.
Keywords: *road freight market, European Union, COVID-19 pandemic*

1. INTRODUCTION

Modern society cannot be imagined without the transport system (Engström, 2016). This system requires time and resources, but in turn enables the activities relating to commerce and all types of social interaction (Alizadeh, 2021). It is the engine that drives economic development and connects countries, regions, and cities. Transportation industry is extremely important because it connects the point of production with the point of final consumption. Road transport plays an important role in both freight and passenger transport, especially for short and medium distances (Dostál and Adamec, 2011). Most developed countries rely on road transport as the main segment of the industry and this is especially true of the Member States in the European Union (Liang et al., 2019). In 2019, road transport had the share of 52% (observed together with maritime and inland shipping, in billion tkm). Since global trade has been on the rise for a while now, the importance of road transport for European economy has been growing, too (European Commission, 2021). Globalisation has prompted road transportation to grow and to aim at sustainability and operational flexibility (Kumar Dadsena, Sarmah and Naikan, 2019). On March 11, 2020, the whole world started facing the COVID-19 pandemic (World Health Organization, 11.03.2020) that caused many disruptions no one could have foreseen (Ivano and Dolgui, 2021). It is interesting how road transport has been affected by the pandemic in two different directions. While freight transport has remained relatively stable, passenger transport has suffered a considerable blow. One of the major impacts of the pandemic is the fact that many people work from home, and, logically, the number of deliveries has increased considerably (Munawar et al., 2021). This supports the idea how it would be hard to imagine our modern society without this industry and what consequences it would have for the future (Engström, 2016). Road transport market in the European Union is highly competitive. Many firms offer their services and are flexible and quick to adapt to the changes (Kurowski and Huk, 2022), which has proved to be the key feature in the times of a crisis, such as this pandemic.

Regarding the unquestionable importance of road freight transport, which has also been confirmed in this pandemic time, the topic of this paper is road freight transport market in the European Union. The paper is structured in four sections. After the introduction, there is the literature overview section which focuses on road freight transport in the pandemic times. Third section analyses the characteristics of road freight transport in the EU before and during the pandemic. Fourth section presents the conclusions.

2. OVERVIEW OF THE LITERATURE ON ROAD FREIGHT TRANSPORT DURING THE PANDEMIC

The importance of transport of goods was maybe taken for granted before the pandemic and the pandemic has shown how transportation plays a crucial role in our every-day lives (Lyons, 2021). The pandemic has brought one more revelation: transport networks, especially truck and air transport are not as reliable as they should be. All the segments of transport, the logistics and the production are interconnected and the disruptions in one segment causes disruptions in others, and soon, the entire supply chain is affected. The actual proof of this butterfly effect is the shortage of medical supplies, raw and finished goods, and every-day issues arising in the logistics departments at transportation companies. Here, digital technology could be of great help, since it can facilitate adaptation and functioning according to new rules (Vandycke, 30.04.2020). Road transport holds the highest position in Europe, and it is an important segment of economy. Without doubt, all transportation companies have been affected by the pandemic and new regulations concerning border crossings and the quarantine. This has caused slowdowns and many other disruptions placing huge challenges in front of the managers of these companies. Transport markets in Poland and Slovakia have been recording decline in demand from countries such as Germany, Italy, and Spain during the COVID-19 pandemic (Kurowski and Huk, 2021). In Poland, the situation was made more difficult due to additional controls at border crossings and insufficient implementation of 'green lanes', mandatory truck convoys and systematic quarantining of drivers (Osińska and Zalewski, 2020). In Romania, the road transport market has also been shaken, mostly due to the drop of efficiency in many other sectors that use road freight services, which has reflected in considerable decrease of volume of international traffic. The Romanian National Union of Road Hauliers has estimated that 30% of companies operating in the road transport will not survive the COVID-19 pandemic. They also project that 50% of those that survive will consider leaving Romania within 18 months. The reason for such bad prognosis is the fact that there are many small firms on the market that do not have the necessary resources to be able to overcome these challenges. Some companies will try to find escape in acquisitioning and/or mergers (Gheroghe, 2021). The disruptions caused by the pandemic have impacted the global supply chain. This fact is supported by the International Road Transport Union (IRU) which claims that almost 70% of trucks are stuck in warehouses because there are no drivers, and the companies are unable to respond to demand (Vo and Tran, 2021). There is a primary research that was conducted on 117 companies from transport sector from Asia and Australasia. It has confirmed the negative impact of the pandemic on the road freight market. The most evident impacts concerning the COVID-19 pandemic and road transport are the disruptions of current activities and reduction of revenue for transport companies (Isa et al., 2021). Marcin and Agnieszka (2021) conducted a primary research on the sample of 100 enterprises from road freight transport sector in Poland. The research confirms the destructive impact of the pandemic on the road transport activities. The consequences concern the reduction of demand followed by poor financial situation at companies from the sample. The same authors conclude that these firms have taken the survival measure of cutting the costs (Marcin and Agnieszka, 2021). The results of their research are in line with the research conducted by Łącka and Suproń (2021) on the same market. They have also confirmed the negative impact of the pandemic on the short-term activities of this industry.

It is interesting to note that once the number of people that got infected with the virus reduced, the restrictions loosened as well, and the number of road kilometres covered increased. Other countries showed the same results; the increase was higher than in the corresponding periods of previous years. This proves that there is a close connection between the transport services offered by the firms involved in the survey and the industrial production in the European Union. As it turned out, in the analysed period (2017 - 2020), the restrictions relating to economy directly impacted the demand for transport services (Lacka and Suproń, 2021). On the other hand, the results of the analysis of freight transport carried out in Australia relating to the initial period of the pandemic show that there was no significant difference in the volume of road freight transport compared to the years before 2020 (Munawar et al, 2021). The statistics for the European market (in general, not individual markets) show similar results for the same period: there was a slight drop in domestic and international road freight transport. Another research on the impact of the COVID-19 pandemic for the period from December 2019 to August 2020 was conducted by Ho et al (2021), but with the data from 13 Chinese provinces (cities). Unlike previously mentioned research, they conclude that the pandemic has had a positive impact on China's road freight transport and the road freight transport turnover increases simultaneously with the number of the infected by the COVID-19. The authors list the possible reasons for these findings:
1) People tend to hoard supplies in times of crises.
2) The COVID-19 outbreak has caused oil prices to fall.
3) The consumers' consumption patterns have changed due to fear sentiment.

In order to understand the connection between road freight industry and the economy, one must understand the contribution of the road freight to the economy and the complexity of their relationship. It is essential to use this connection to make projections and help reach right decisions about the measures that should be implemented on the national level to help improve road freight transport efficiency (Moschovou and Giannopoulos, 2021).

3. ROAD FREIGHT MARKET IN THE EUROPEAN UNION
Without doubt, road freight plays a crucial role in the logistics in the entire transportation sector. Most often, it is used as a short-distance transport service, in combination with other modes of transport, but usually at the beginning or the end of the multimodal transport chain. Moreover, oftentimes, road freight transport is the only option for door-to-door delivery. Road transport is a crucial chain link in the logistics activities because it helps the goods be delivered to their final consumer (Engström, 2016).

3.1. Road freight transport characteristics in the European Union
Road freight transport market in the European Union is extremely fragmented and there is a tendency of competitiveness being achieved through minimizing the costs (Pernestål et al, 2020). This is the dominant market in the European Union, even compared to maritime transport. Road transport enterprises in Europe are of various sizes and specialization, but they all need to meet current challenges by adapting and following new trends in the industry (Kurowski and Huk, 2021). As has already been mentioned, most firms are small, i.e., they have fewer than ten employees (over 90% of the road freight firms in the EU). That is why most of them enter the market relatively easy (Liachovičius and Skrickij, 2020). Some of the most prominent firms on the EU road freight market are DHL, XPO, United Parcel Service, DSV, and KUEHNE + NAGEL (Mordor Intelligence, 2021). However, their share on the market is still too small to be able to form prices or to exert deeper impact on the market. In 2018, there were 601 664 road freight companies, with 3.5 million of employees which equals one third of the total number of employees in the transport and storage sectors.

This market recorded a turnover of €374 531 million in 2018. According to the data from the European Commission, in the period from 1995 to 2019, the annual growth rate on the road freight market was 1.9% (European Commission, 2021: 24-26). In the period from 2015 to 2019, road transport in the EU increased by 11.5% in tonne-kilometres and most Member States recorded increases during that period (European Commission, October 2021). In the last 15 years, the market of the European Union has expanded because more countries became members. This growth reflects positively on transportation companies because they have the opportunity to expand their business internationally. New EU members tend to become highly competitive because they are forced to think and operate outside their domestic market (Liachovičius and Skrickij, 2020). The issues in the focus concerning transportation today are a bit different than in the period before the pandemic. In the pre-pandemic times, transportation's main issue was congestion because almost one third of all CO_2 emissions in EU 27 is generated by the transportation sector, by the road transport sector in particular. The statistics say that in 2019, it generated 783.5 million tonnes of CO_2 emissions which is the share of 71.65% in the entire transportation sector and almost one quarter (24.55%) of the total CO_2 emissions (European Commission, 2021: 150). This is why the European Commission adopted the Transport White Paper in 2011. This document proposes that 30% of the road freight traffic in distances longer than 300 km by year 2030, and over 50% by 2050, be transferred to other modes, such as rail or inland waterway/sea. Here, too, technological achievements could play a crucial role because electric, hydrogen and hybrid technologies can help reduce air pollution, as well as noise pollution. One of the possible solutions could be that road traffic should be in operation during night hours and in this way avoid congestion during peak hours in the mornings and afternoons (European Commission, 28/3/2011). Liachovičius and Skrickij (2020) emphasise four challenges this market is facing: development of electronic businesses, the driver shortage, market digitalisation and the shift from road transport to rail. Although the Transport White Paper was adopted still in 2011, the volume of road transport has been continuously growing. The question is whether the growth would be even more significant if there were not for the various measures encouraging the use of rail for longer distances.

3.2. Road freight transport in the European Union during the pandemic

Almost all segments of all industries have suffered some sort of shock when the COVID-19 pandemic first broke out. Road freight transport is no exception. However, road transport has the role of keeping everything going during this crisis (Gheorghe et al., 2021). It cannot simply stop with the activities because there is a pandemic. Road transport has the responsibility of delivering the necessary goods, especially pharmaceuticals, food and sanitary products (Osińska and Zalewski, 2020). After a long time, the European Union market recorded a drop in road freight transport of goods. In 2020, the sector recorded 1 803 233 million tonne-kilometres (Table 1), i.e. 0.9% less than in 2019. The year 2020 was highly affected by the coronavirus restrictions, and so, the number of tonne-kilometres realized in road freight transport in the EU in the second quarter of 2020 fell by 7.9% compared to the first quarter of the same year. During the COVID-19 pandemic almost two thirds of the transported goods on the national territory of the European Union (measured in tonnes) was performed together by Germany, France, Spain, Italy and Poland, continuing the same trend as before the pandemic. Restrictions during the pandemic have been implemented by all the Member States in the EU (Eurostat, March 2021) and they have affected all the non-essential travels and traffic. These restrictive measures have impacted the international transport on a large scale, recording the growth rate of -3.8%, while the national growth rate recorded a drop of 0.9% in relation to 2019 (Eurostat, October 2021). The first wave of the COVID-19 pandemic affected everybody, the European road freight transporters included. But after that initial shock, they gradually recovered towards the end of 2020.

This recovery was largely encouraged by retail sales of industrial and food products and e-commerce. The first half of 2020 was devastating for the car industry, too, which managed to recover on some markets during the second quarter. If compared to the year before, the sales of vehicles fell by 28.8% during the first nine months of 2020 in the EU overall sales (Beguerie, 18.12.2020). The European Union is aware of the fact that road transport plays the key role in the functioning of the internal market, especially in fighting the current crisis (European Commission, N/A). The European Commission aims at ensuring that road freight transport is functioning and with this in mind has outlined four goals (European Commission, N/A):

1) 'green lane' border crossings that should take a maximum of 15 minutes, including any checks or health screenings. See the general advice for public health measures and screening at points of entry.
2) 'green lanes' should be open to vehicles carrying any type of goods. Our supply chains in Europe are closely integrated. We need to ensure free circulation of all goods.
3) National governments should suspend restrictions wherever possible – for instance bans to drive during the weekends or at night. Flexibility is essential.
4) Reduce the paperwork for transport workers of all nationalities, to enable them to cross borders more rapidly.

	2015	2016	2017	2018	2019	2020
Belgium	36 078	35 192	34 220	32 685	34 829	34 379
Bulgaria	32 297	35 409	35 150	26 950	20 551	32 556
Czech Republic	58 715	50 315	44 274	41 073	39 059	56 090
Denmark	15 500	16 094	15 502	14 998	14 991	14 686
Germany	314 816	315 774	33 149	316 772	311 875	304 613
Estonia	6 263	6 716	6 189	5 775	4 794	4 279
Ireland	9 900	11 616	11 836	11 600	12 444	11 424
Greece	19 764	20 874	28 377	29 729	28 197	25 161
Spain	209 390	216 997	231 109	238 994	249 559	242 268
France	153 580	155 483	167 691	171 875	174 061	169 663
Croatia	10 439	11 337	11 834	12 635	12 477	12 255
Italy	116 820	112 637	119 687	124 915	137 986	133 265
Cyprus	563	703	826	892	858	709
Latvia	14 690	14 227	14 972	14 997	14 965	13 705
Lithuania	26 485	30 974	39 099	43 590	53 117	55 292
Luxembourg	7 849	8 297	8 092	6 800	7 381	6 176
Hungary	38 353	40 002	39 684	37 948	36 951	32 224
Netherlands	68 900	67 779	67 533	68 876	68 923	67 219
Austria	25 458	26 138	25 978	25 763	26 444	25 910
Poland	260 713	290 749	335 220	315 874	348 952	354 927
Portugal	31 835	34 877	34 186	32 963	31 014	24 241
Romania	39 023	48 176	54 704	58 762	61 041	55 027
Slovenia	33 540	36 139	35 411	35 586	33 941	31 634
Slovakia	17 909	18 707	20 814	22 225	24 011	22 662
Finland	24 488	26 846	27 966	28 345	28 848	29 671
Sweden	41 502	42 673	41 851	43 478	42 604	43 187
TOTAL EU	**1 614 870**	**1 675 091**	**1 765 354**	**1 763 650**	**1 819 873**	**1 803 233**

Table 1: Road freight transport, Member countries (million tonne-kilometres)
(Source: Eurostat (2021). Road freight transport by journey characteristics)

The European Union suffered a huge blow to the industrial production in March 2020. There was a decline in the kilometres covered recorded in April 2020, but also a revival after the lockdown in May of the same year (Lacka and Suproń, 2021: 326).

On the other hand, the passenger segment has faced a huge fall in demand caused primarily by the restrictions implemented by the governments, and, in smaller part, by the fear of getting infected when using the public transport services (Sung and Monschauer, 27.05.2020).
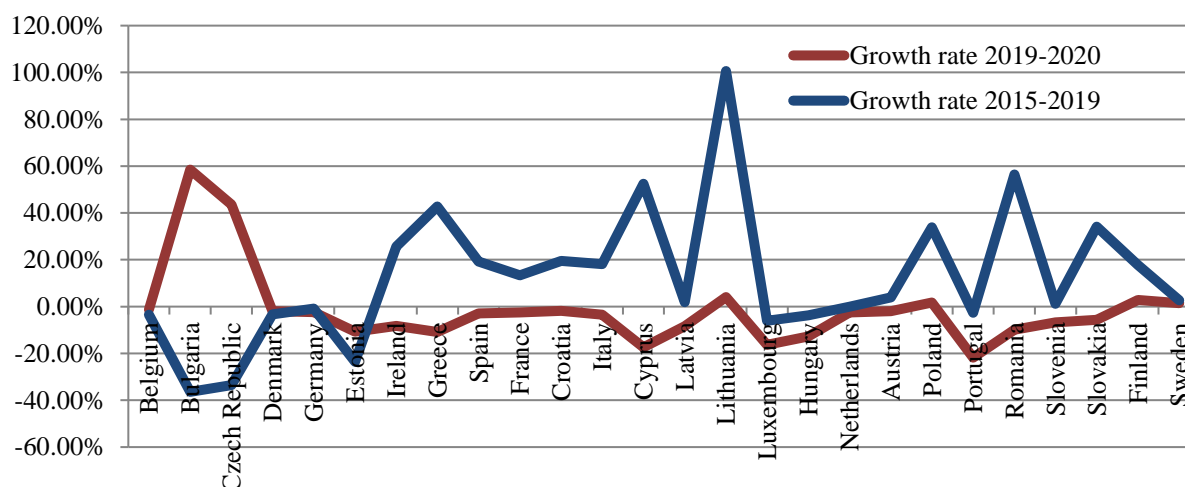

Figure 1: growth rates (%) of the road freight transport in the EU Member States, 2015-2019 & 2019-2020
(Source: Eurostat (2021). Road freight transport by journey characteristics)

Unlike in other sectors of the transportation industry, including other industries that have been recording two-digit negative growth rates, the situation on the road freight transport market is quite different. In 2020, the drop of only 0.9% was recorded for the EU in relation to 2019 (Eurostat, October 2021). However, the situation is considerably different when the Members are observed separately (see Figure 1). In Bulgaria and the Check Republic, the growth rates were extremely high. Bulgaria recorded the highest growth rate of 58.5% compared to 2019. Some states recorded slight drops, like Belgium (-1.3%), Croatia (-1.8%) and Denmark (-2.0%), being close to the rate of the EU average. But, six Members recorded two-digit negative growth rates, the highest of -21.8% in Portugal. This should not come as a surprise because Portugal, together with Greece, Italy and Spain was facing a period of negative economic growth and generally unstable markets even before the outbreak of the COVID-19 pandemic (Moschovou and Giannopoulos, 2021). It is expected that companies operating on this market will continue to adapt and respond to the challenges of the pandemic and post-pandemic period. Since most of the companies on the market fall in the categories of small and medium-size companies, liquidity is the most urgent issue they need to address in the pandemic. The subsidies that Member States are paying to the firms are not enough to keep them afloat and it can be expected that many will go bankrupt. This can be avoided only if they receive urgent support in the form of cash subsidies, flexibility over insurance payments and ongoing reductions on taxes and social charges (Beguerie, 18.12.2020). Poland can be taken as an example of good practice: the road transport companies have been offered relief in the tax payments, deferment of leasing instalments and on-line working system for the company administration (Osińska and Zalewski, 2020). There are also options concerning technology that can help reduce the impact of the pandemic on the road freight transport industry. Artificial intelligence and digitalization can provide a safe haven for those in difficulty. By using technology, companies can improve efficiency and reduce costs (Pernestål et al., 2020). This sector can be transformed with the use of technologies such as 3D printing and autonomous vehicles (Liachovičius and Skrickij, 2020). Digitalisation and smart use of new data can make drastic changes and contribute to the survival on the market.

Besides the use of technology, there are some other solutions and options. Lacka and Suproń (2021) have highlighted that COVID-19 will lead to numerous mergers, acquisitions, and consolidations in the industry of road freight transport.

4. CONCLUSION
Road freight transport on the European Union market has been holding a leading position for decades, whether we are to observe only land transport, or transport by sea and inland waterways as well. Despite the efforts to reduce the volume (in line with the goals outlined in the Transport White Paper) of road transport and establish a more sustainable industry, the volume of road transport has been continuously growing. The exception is the year 2020, when negative growth rate was recorded for the first time, but still by a small percentage according to the data from the EU as a whole. However, if we are to observe Member Sates individually, we notice how some national markets are affected considerably more and are recording two-digit negative growth rates. Road freight transport has confirmed its unquestionably highly significant role in the pandemic times and normal functioning of the entire economy would not be possible without the availability of the road freight services. The road freight transport market in the European Union is highly competitive and there are mostly small companies operating and new competitors can easily enter the market. The COVID-19 pandemic has brought more insecurity and instability to these small companies, and it is expected that many of them will experience liquidity issues. It is necessary for the institutions to get involved and offer help through various measures (cash subsidies, flexibility over insurance payments and ongoing reductions on taxes and social charges) and in this way ensure their survival. The pandemic has confirmed the need for high level of flexibility because companies are forced to adapt quickly to rapid changes in their environment and disruptions on the market. Some of the solutions to these challenges can be seen in digitalization and the implementation of innovative technologies.

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