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TABLE OF CONTENTS

EDITORIAL. INNOVATION FOR ORGANISATIONAL PERFORMANCE: APPROACHES AND APPLICATIONS

Dear readers,

aiming to provide additional discernments into creating and sustaining innovative business practices and sustainable development, this thematic issue of INDECS represents articles and research results on several issues related to information systems and technology, circular economy, ethical and corporate social practice as well as aspects of technological advancements, managerial and corporate performance that can help to sustain innovative business and long-term organizational sustainability.

Some of the latest trends, approaches and research results in this field were presented at the 6th Enterprise Research Innovation Conference (ENTRENOVA) virtually held from Zagreb Croatia, from 10-12 September 2020. ENTRENOVA is an international scientific conference organized by IRENET, Society for Advancing Innovation and Research in Economy, in cooperation with the Faculty of Tourism and Hotel Management, Kotor, Montenegro and the University North, Varaždin, Croatia. It is a multi-disciplinary conference dedicated to examining, comprehending and discussing the art in the theory and application of innovation, knowledge management and R&D issues in the business settings, especially related to ICTs. At ENTRENOVA 2020 more than 150 authors, from 25 countries, participated with 75 abstracts and 60 papers.

Beside for participants of ENTRENOVA 2020, open call for this thematic issued of INDECS was for all other interested authors, researchers and practitioner from the field of economics, organization and management science, information technology and different managerial aspects in relation to innovative business practices and sustainability.

Ten submissions for thematic issue of INDECS were received, some of them being extended journal version of short articles from proceedings. Articles in this issue were accepted after review by guest editor and a blind review process by two independent reviewers. A short description and contribution of each article is provided in the following lines.

Innovation and Invention in the EU Business Sector: the Role of the Research and Development Expenditures, the article by Huňady, and Pisár investigates the problems of business innovation and inventions in the EU countries, focusing on the potential effects of business R&D expenditure. The authors accentuate the importance of business R&D expenditure in creating innovations, in the same time presenting R&D expenditure as a risk of failure due to its long-term nature and complexity. Therefore, the authors explore the short-run and long-run relationship between business R&D expenditure, an invention, and innovation. For obtaining the results, the authors use

the tests of Granger causalities and panel cointegrated regression on macro-level data. Moreover, the authors investigate the structure of R&D expenditure in EU countries. Research results reveal a positive relationship between business R&D expenditure and innovation activities and the positive causal influence of business R&D expenditure on patenting in the long run.

Article *Measuring Returns on Investment in Education: Lessons for Sustainable and Innovative Education Policy*, by Jahic, and Pilav-Velic, stresses the importance and complexity of the relationship between education and the labour market. The empirical part of the paper employed two methods: Earnings function and Short-cut method, based on the Mincer equation to estimate private and social returns on investment in primary, secondary and tertiary education in selected old and new member states of the European Union (EU). Analysed results show no statistically significant difference between the estimated private and social returns on investment in primary, secondary, and tertiary education in groups of old and new EU members. Additionally, the obtained results imply the low and negative returns on investment existence in education, both in old and new EU members. Therefore, this article contributes to the literature that studies the universality of conclusions on returns on investment in education and applied methodology.

In their article *Employment of Economics Graduates: do Grade Point Averages Matter?*, authors Mehmetaj and Zulfiu Alili discuss the importance of young people's educational attainment and skills level on economic activity and employment rates. Also, the authors of the article consider the index of mental ability related to job performance and successful outcomes, named as grade point averages (GPA) metric of undergraduate studies, relevant selection tool in the employment process. The authors conducted their empirical research using survey analyses of tertiary graduates of economics programs at Luigj Gurakuqi University (LGU) in Albania and South-East European University (SEEU) in North Macedonia. In this article, the authors focused their comparative analysis on the determinants of the employability of economics graduates in the last decade, using qualitative and quantitative analyses for each university. Based on their research results, obtained by using logistic regression, the authors indicate that the GPA of the bachelor program is a significant factor in the graduate's employment. Also, the obtained results proved that additional variables such as gender, time of graduation, and obtaining a master’s degree play a crucial role in being employed at LG University. To conclude, the authors of this article note how developing educational attainment by modernizing educational and vocational curricula considering market demands would advance the school-to-work transition of youth.

Radlović, Hunjet, and Kozina, in their paper *Entrepreneurship during the Times of the Coronavirus Pandemic in Republic of Croatia*, discuss the issue of entrepreneurship and various economic activities that have been slowed down or entirely stopped due to the coronavirus pandemic. Furthermore, the authors of this article stress the importance of the entrepreneur’s proactivity and adaption to the new situation in the Republic of Croatia and other countries during this extraordinary situation. For this purpose, the authors of this article investigate the entrepreneur’s position in the Republic of Croatia and identify the main problems entrepreneurs face during the coronavirus pandemic. Based on the results, the authors indicate that the coronavirus pandemic has drastically changed business activity conduction and entrepreneurship. Moreover, results show that enterprises are forced to adapt their supply to market

demands and introduce new information technology into businesses during the pandemics. Also, results indicate that enterprises lower the prices of their products and services as well as invest more in human resources to survive new challenges caused by coronavirus pandemics.

In the article named *The Impact of Covid-19 Crisis on a Company's Internal Communication*, authors Bojadjiev and Vaneva identify whether the COVID-19 crisis influence the company's internal communication – both from the leader's and organization member's perspective. Namely, the authors want to compare the leaders' perceptions of their leadership and communication style on the one hand, with the organization members' perceptions of the communication model they use with same-level colleagues and the descriptions of their leaders' philosophy on the other. To conduct this case study, authors use their own designed two questionnaires: one for leaders and one for organization members. Therefore, research is focused on two targeted hierarchical levels in a privately-owned company in North Macedonia. Based on the results, the authors indicate the emergence of virtual meetings, frequent shorter meetings, and leaders involved by giving feedback during the COVID-19 crisis in both examined groups. However, the difference is noted in the leadership model in which leaders maintained that their leading was by example in both periods, while organization members claimed that their leaders' priority was the work-life balance after the COVID-19 crisis start.

Strategic and Digital Marketing in Cultural Institutions and the Impact of the COVID-19 Pandemic – a Comparative Analysis of Two Case Studies, the article by Krajnović, Vrdoljak-Raguž, and Perković, explores the influence of the coronavirus pandemic COVID-19 on marketing within cultural institutions, particularly in the digital marketing field. Therefore, the article aims to show how COVID-19 affects digital strategies, marketing communication, and the presentation of cultural programs. The authors focus their research on the sample of customers in Croatia. In the empirical part of this article, the authors employ semi-structured in-depth interviews with managers in two cultural institutions in Zadar and Dubrovnik at the end of 2020. Moreover, to explore how cultural institutions have adapted to the COVID-19 crisis, the authors of this article conduct a qualitative descriptive analysis. The research results show a certain degree of flexibility in adapting to the new conditions like marketing communication adjustments, cultural programs performance modification, and budget adaptation for cultural activities. Also, the research results reveal the crucial role of marketing digital communication, which proves that cultural management adopted the digital-first paradigm, modelled on the for-profit companies in the COVID-19 pandemics era. Accordingly, the authors conclude that culture will continue its activity after the crisis, but in an inventive way.

In the article, *The Relationship between Corporate Social Responsibility, Corporate Reputation and Business Performance*, authors Božić, Kolić Stanić, and Jurišić examine how corporate communications managers of successful retail enterprises in Croatia perceive the relationship amongst corporate social responsibility, reputation, and business operation. In this article, the authors use the in-depth interview as a research method intending to investigate the corporate communications manager's attitudes of successful enterprises in the retail market on the relationship among corporate social responsibility, reputation, and business performance. Analysed results reveal that the surveyed public relations experts notice a positive relationship between corporate social responsibility and reputation. Also, according to the obtained results,

public relations experts observe a positive relationship between corporate social responsibility and business performance.

Ernszt and Marton, in their article *An Emerging Trend of Slow Tourism: Perceptions of Hungarian Citizens*, discuss the trend of slow tourism as a possibility for people who would like to live their life in a different way even during their travels: giving respect to the environment and the local people. Moreover, the authors explain the slow tourism trend as putting local culture, traditions, gastronomy, sustainability, the well-being, and interests of the inhabitants of the destination in the centre. Therefore, the authors of this article aim to examine the attitudes and perceptions of respondents towards different slow tourism elements. By conducting an online survey, Ernszt and Marton collect quantitative data on a sample of 386 Hungarian respondents. The authors of this article also employ a multidimensional scaling model and principal component methods to uncover the perceptions and attitudes of the respondents towards slow elements. The results suggest that the "local" elements of a journey are important for the respondents while the personalized services, the spirituality of the destination, and the sustainable approach are not. The analysed results also reveal that traveling to hidden places is not a favourite holiday option for the majority of Hungarians due to the small proportion of respondents who avoid crowded locations. Still, the authors indicate how pandemics can strengthen the demand for this tourism product due to more tourists who want to avoid crowded places during the COVID-19 pandemics. Besides, Ernszt and Marton state how service providers can benefit from the research results, concentrating on the key elements for Hungarian travellers.

Budak, Rajh, Slijepčević, and Škrinjarić, in their article named *Theoretical Concepts of Consumer Resilience to Online Privacy Violation*, aim to present in detail the theoretical concepts, possibly applied in the unexplored research field of consumer resilience to online privacy violation. Therefore, the main objective of this article is to establish future research frontiers in investigating consumer resilience to online privacy violations. Accordingly, this article contributes to the privacy resilience debate. It also lays the groundwork for developing a conceptual model of online consumer resilience that would examine how individual behaviour is influenced after online privacy violation occurs. By developing a conceptual model of consumer resilience to online privacy violation that would include a set of individual and environmental variables, this article contributes to the current comprehension of resilience at the intersection of psychology, economics, and privacy studies. Additionally, this article develops awareness of adaptive responses of resilient individuals to privacy breaches in an online environment. Also, it provides an understanding of processes by which resilience influences adaptive responses of consumers in the particular context of online privacy infringements.

In the article *Different Tax Preferences? Old vs. New Europe*, Botrić, Broz, and Jakšić investigate the factors behind citizens' specific tax burden preferences between the EU Member States. To achieve the main article objective, the authors conduct comparative analysis amongst two groups of countries: New and Old Europe, formed on the International Social Survey Programme (years: 2006 and 2016) data. In the article, Old Europe is consisted of the following countries: Germany, Denmark, France, Spain, Finland, and Sweden, while New Europe comprises Czech Republic, Slovenia, Latvia, Hungary, and Croatia. The results of the initial examination of the preferences for more progressive taxation reveal how citizens in most countries of both groups would

favour the higher redistributive role of the state. Furthermore, the analysed results of the factors contributing to individuals' preferences for progressive taxation show how older cohorts in New Europe are not disproportionally inclined to progressive taxation. Also, the results indicate how political orientation and union membership are more important in Old than in New Europe. Besides, the results of the conducted analysis point out that there are no significant changes in the patterns resulting from the latest financial crisis.

Zagreb 20th June 2021

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INNOVATION AND INVENTION IN THE EU BUSINESS SECTOR: THE ROLE OF THE RESEARCH AND DEVELOPMENT EXPENDITURES

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ABSTRACT

The article deals with the problems of business innovation and inventions in the EU countries with a focus on the potential effects of business R&D expenditure. Since the business is considered an essential sector concerning innovation, business R&D expenditure can play a significant role in their creation. However, several obstacles hinder the successful transformation of R&D expenditures into invention or innovation. R&D expenditures as any other type of business investments are associated with a certain risk. In this case, the risk of failure can be even higher due to their long-term nature and complexity. The article aims at an examination of the short-run and long-run relationship between business R&D expenditure, on one hand, an invention, and innovation on the other. To achieve this, the tests of Granger causalities and panel cointegrated regression has been applied on macro-level data. Furthermore, the structure of R&D expenditure in EU countries has been also examined. The results suggest a positive correlation between business R&D expenditure and innovation activities as well as the positive causal effect of business R&D expenditure on patenting in the long run.

KEY WORDS

innovation, business R&D expenditure, invention, business innovation, patenting

CLASSIFICATION

JEL: M21, O30, O31

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INTRODUCTION

Research and development (R&D) expenditures are currently often considered as one of the key drivers of economic growth and increasing productivity. Several studies found positive economic effects of R&D expenditure. From the macroeconomic point of view, most of the studies found evidence of the positive impact of R&D expenditure on economic growth [1-3] as well as on productivity [4, 5]. Furthermore, innovation activities of enterprises are often considered as the key driver of technological change and long-term growth [6]. On contrary, the short-term effect on employment can be negative due to the potential substitution of labour for capital [7]. From the microeconomic point of view, business R&D expenditure, as well as other types of R&D expenditure, can act as the facilitator of business innovation, which is further reflected in better business economic performance and sustainability [8, 9]. Innovativeness of the firm has also positive effect on its overall operational performance [10], Hence, based on the recent knowledge, we can say that business R&D expenditure is still perceived as a very desirable type of investments due to its assumed effect on businesses themselves and the economy in general.

Business innovation activities can be to some extent determined by the amount of R&D spending. Firms with the intention to bring new innovative state-of-the-art goods or services to the market mostly need to apply the findings from R&D activities, which can be either performed in house by own capacities or acquire from other subjects such as public and private research institutions. However, this is not always necessary. First of all, many types of innovation do not necessarily require research and development. A large proportion of innovation activities can be considered as non-R&D innovation [11, 12] and this is not only typical for the smaller firms or firms in the low-tech industries [13]. Secondly, financial support of R&D or direct investment into R&D not always turns into commercially successful innovation. The classic linear model of innovation assumed the existence of several intermediate steps leading from basic research to innovation and its diffusion while creating the invention represents one of these steps [14]. Hence, we can say that the innovation process is a rather complex issue and the way from funding to actual innovation is not always straightforward. There are several factors affecting successful innovation. Based on the Triple Helix and Quadruple helix model, we can assume that the cooperation between business, government, higher education and the public is crucial. The role of such cooperation in the innovation process has been emphasised for example by Stojcic [15]. According to Pegkas et al. [16] the EU should strengthen the cooperation between business, public and higher education R&D.

However, less attention is paid to the transformation of R&D expenditure into innovation. In line with this fact, our research is primarily focused on the relationship between a firm's commitment to research and development and its innovative outcomes. Hence, our main scientific aim is to examine the relationship between business R&D expenditure, invention and innovation. We assume that this kind of effects works mostly in the long run. Hence, we decided to use panel data and apply cointegration tests and linear cointegration regression models. Furthermore, we analyse the extent and structure of business R&D expenditure in the EU countries as well.

Some of the recent studies found a positive effect of R&D financial support or R&D business expenditures on innovation using mostly micro-level data [16, 17]. Most of the studies used patents as a proxy for innovation and only a few of them used the cointegration approach. In our case, we used macro-level panel data for EU countries and we combine the short-run and long-run approach in order to get more complex results. Moreover, we take into account labour productivity as one of the variables indirectly capturing the effects of R&D. The article to some extent builds on our previous results described in our conference paper [18].

The next section of the article provides the literature review dealing with the problem so far. It is followed by a section that briefly describes the data and methodology applied in the analytical section. The results are further disused and conclusions are made in the final section of the article.

LITERATURE REVIEW

As we mentioned several studies are dealing with R&D and its effects. R&D expenditure is the key input into the innovation process. In line with the triple helix model, the innovation itself can be seen as the results of activities and cooperation between business, universities and government [19]. Hence, there are at least three different types of subjects which are funding or providing R&D activities. R&D expenditure can be therefore classified according to the source of funds or based on the subject of performance. In our case, we take into account the second type of classification Hence, we are focused especially on R&D expenditure used in the business sector. These can be mostly founded from their own resources or government support. The potential relationship between these two sources of business R&D activities is often discussed in the literature. However, most of the studies found the complementarity between these two R&D funding sources [7, 20, 21].

The main goal of spending money on R&D in business is mostly to enhance innovation performance and finally improve the competitiveness of the firm in the market which can be reflected in firms' economic situation. Some studies found a positive effect of R&D spending on the growth of the firm [22]. It is likely that business R&D expenditure also positively affects business economic and financial performance, such for example profitability [8, 9, 23] apparent labour productivity and value-added [24] or turnover [25]. R&D investment is crucial especially for the development of high-tech products [26]. Therefore, they are also considered as the main growth drivers of high-tech industries [27, 28], which include for example aerospace, computers, pharmaceutical or electronics and telecommunications industries [25]. High technology companies are more dependent upon the intellectual property and except for their own sources, they are often using external sources [29]. These external sources can be provided to the business by universities, research institutions, or the government. Scientific knowledge provided by public researchers has a significantly positive effect on both inputs and outputs of the firms' innovation process [30]. However, this is only true in the case when firms have enough research capabilities to absorb and use this knowledge. Hence, funding of in-house research capacities also enables a firm to use, and understand acquired knowledge [31]. Current trend of digital transformation describes for example in [32] involves usage of new digital technologies and their interconnections. For example, data mining [33] and blockchain technology [34] are becoming increasingly popular digital innovation in business processes in recent years. Hence, R&D expenditures are mostly inevitable for these types of digital business innovation.

While business and government R&D expenditure can be measured directly, their effect on innovation performance is more difficult to capture. Zachariadis [35] argues that R&D expenditure is mostly reflected in the number of patents, and patents have a positive effect on the development of technologies which raises economic growth. A similar effect of patents on growth is also shown for example by Hudson and Minea [36]. Hasan and Tucci [37] base their research on a sample of 58 countries for the period 1980-2003 to indicate the positive effect of quality and quantity of patents on economic growth. Furthermore, the positive effect of patents on the development of new technologies and high technology exports has been shown by Orviska et al. [38]. However, in economic literature patents are often considered more as an invention rather than innovation itself. Grant [39] characterizes an invention as the creation of new products and processes through the development of new knowledge or the

combination of existing knowledge. Innovation is defined as the commercialization of an invention by producing and marketing a good or service or by using a new method of production. Hence invention is more about new ideas, while innovations are more focused on new commercial products or services. The effect of R&D expenditure on technology development and also innovation can be reflected by the number of patents. On one hand, patents are the outputs of the production system of knowledge. On the other hand, patents can also be interpreted as input to the economic process of innovation [40]. Patents are therefore often used as a proxy for inventions and they can then be seen as the first step towards innovation [41] Compared to academic publication or most of the other research outputs patents are closer to innovation and technological development [42]. Despite mentioned potential differences, several studies are considering the number of patents as a direct indicator of innovation performance [17, 43].

We assume that effect of R&D expenditure on patents could be positive because the internal research capabilities, particularly those focused on basic research are crucial for the firm to generate creative outputs [41]. For example, Cardinal and Hatfield [44] examined firms with different intensities of R&D expenditures and observed that firms with higher R&D spending experienced significantly more inventions proxied by the number of patents. Similarly, Peeters and van de la Potterie [45] found that firms with more focus on research activities produce significantly more patenting output. On the other hand, Acs and Audretsch [46] argue that the relationship between R&D expenditure and intensity of patenting is more complex and firms can often experience decreasing returns to their R&D investment. Some empirical papers have also shown that increasing levels of R&D spending over a certain threshold is ineffective or even counterproductive for innovation outputs [47]. The role of patenting in the innovation process was also emphasized by Demirel and Mazzucato [48]. They found the positive impact of R&D on firm growth is conditional upon the firms' activity in patenting and persistence in patenting. For small firms, R&D increases their growth for only a subset of firms that patent persistently for a minimum of five years. The effect of the R&D subsidy program on innovation has been examined for example by Bronzini and Piselli [17]. Innovation has been in this study proxied by the number of patents. The authors conclude that the R&D subsidy program in Northern Italy has a positive and significant effect on the number of patent applications. The benefits of the program have been especially evident for smaller firms.

There are significant differences in characteristics of innovation system among EU countries. Countries with different innovation levels differ in the adoption of broadband, adoption of e-commerce as well as the adoption of the internal processes support within information systems [49]. In general, we can say that the importance of R&D for innovation depends on the dominant type of innovation model. On one hand, firms can innovate by the exchange of formal or codified knowledge, which mainly originates in research and development and patenting. On the other hand, innovation can also steam from tacit knowledge, which is mainly based on experience and informal interactions [50]. Based on this fact, there are at least two significant types of innovation modes. Firstly, we distinguish scientific and technology-based innovation (STI) mode, which mostly relies on research outputs and their dissemination [51]. Secondly, there is so-called learning-by-doing, by-using, and by-interacting (DUI). In reality, both types of innovation modes are often combined to get results. According to González-Pernía [52] the final effect of both depends on the type of innovation. While the combination of STI and DUI is beneficial for product innovation, single DUI mode appears to be characteristic especially for the process innovation.

METHODOLOGY AND DATA

The main aim of the article is to examine the potential relationship between business R&D expenditure, invention and innovation. The analysis has been focused especially on the business

sector as one of the main innovation producers in the economy. In the first part of the analysis, we examine the extent and structure of R&D expenditure in EU countries. The cross-sectional data for the latest available year have been used for this comparison. Data have been retrieved from the Eurostat database. Firstly, we compare the total level of R&D expenditure in the country expressed in PPS per inhabitant as well as in percentage of GDP. Secondly, we compare intramural R&D expenditure (GERD) in the business enterprise sector of EU member states.

We also graphically illustrate potential relationships between the R&D expenditure share of innovative firms and patenting activity in the country. In the next part of the analysis, we use panel data for EU member states. Panel correlation analysis between selected variables capturing innovation and R&D expenditures has been done based on data within the period 2011-2018 for all EU member states. As it can be seen the time availability of data was rather limited in this case. In this first part, we mostly focused on the share of innovation firms as the main output variable. Mostly due to the better data availability in the next part of the analysis we used the number of patent applications as the main dependent variable. Hence, panel Granger causality test, cointegration analysis as well as panel cointegrated regression have been applied to data with a longer time frame (from the year 2007 to 2017). All main variables used in the analysis are described in more detail in Table 1.

Table 1. Description of variables used in the analysis (authors' work based on the data from Eurostat database).

Variable	Description
Patents	Count of the patent applications to the EPO per 10 million inhabitants.
Business R&D exp.	Intramural R&D expenditure (GERD) in the Business enterprise sector as % of GDP)
	Intramural R&D expenditure (GERD) in the Business enterprise sector (of GDP) in PPS per inhabitant
GDP per capita	Real GDP per capita in PPS
Apparent labour productivity	Value-added at factor costs divided by the number of persons employed (in thousands of euros per person employed).
SMEs introducing innovations	The share of SMEs who introduced a new product or a new process to one of their markets on the total number of SMEs (in %).
SMEs innovating in-house	Share of SMEs with in-house innovation activities on all SMEs (both innovators and non-innovators). This indicator does not include new products or processes developed by other firms.
Employment in High tech. and medium-tech	Employment in High technology and medium technology firms as % of total employment. The definition of high- and medium-high technology manufacturing sectors and of knowledge-intensive services is based on a selection of relevant items of NACE Rev. 2 on the 2-digit level and is oriented on the ratio of highly qualified working in these areas.

The dataset used in the analysis consists of panel data. Thus, variables include a cross-sectional (country) dimension as well as a time dimension. It includes the data for EU28 countries.

In line with our main aim, we tested the potential relationship between business R&D spending and patenting in the economy. To fulfil the goal, we decided to use the cointegration approach as the main method. The transformation of R&D expenditure into invention (proxied by the number of patents) or innovation usually takes a rather long time. The effect will be probably not visible in the same period and using longer lags will significantly decrease the number of available observations. Moreover, there is likely a long-run causal relationship arising from R&D spending to patenting activity.

Firstly, variables used in the models were tested for weak stationary and the order of integration for all variables, which we want to use in the cointegrating regression model. Several different panel stationarity tests were applied [53-57].

Then we have tested the potential short-run causalities in Granger sense and their directions by using panel Granger causality tests. However, as mentioned above, we assume that potential causalities should be more evident in the long run. To test long-run causalities, we apply panel cointegration analysis. GDP per capita was used mainly as a control variable.

The long-run equations will be further estimated as:

$$\text{Patents}_{\text{it}} = \text{f(Business R\&D expenditure}_{\text{it}},\ \text{GDP per capita}_{\text{it}}\text{)}. \tag{1}$$

After we have managed to satisfactorily demonstrate the same level of integration for selected variables by unit root tests, we test for the existence of cointegration by panel cointegration tests. Cointegration between the dependent and independent variables has been tested for using panel cointegration tests developed by Pedroni [58] and Kao [59], which are both widely used in the empirical literature. Both are testing the null hypothesis of no cointegration between selected variables. The Pedroni cointegration test uses seven different statistics. Four of them are panel cointegration statistics based on the within the approach and three of them are group-mean panel cointegration statistics which are based on the between approach. Kao's test tests the null hypothesis that the residuals from the estimation are non-stationary.

The panel cointegration tests allow us to identify the presence of cointegration, but cannot estimate any long-run causalities or effects. For this purpose, we use panel cointegrating regression models. The long-run parameters are estimated by the fully modified OLS (FMOLS) panel cointegration estimator.

Here we briefly describe the essence of the estimator. FMOLS is based on standard OLS considering the simple fixed-effects panel regression model that can be written as:

$$Y_{\text{it}} = \alpha_{\text{i}} + \beta_{\text{i}} X_{\text{it}} + u_{\text{it}}, \text{i} = 1,\ \ldots,\ N,\ t = 1,\ \ldots,\ T, \tag{2}$$

where Y_{it} is a vector of the dependent variable and β is a vector of coefficients. αi is an individual fixed effect and the unit are stationary disturbance terms.

It is assumed that X_{it} has integrated processes of order one for all i. The FMOLS estimator then is written as follows:

$$\hat{\beta}_{\text{FMOLS}} = \left[\sum_{\text{i}=1}^{\text{N}} \sum_{\text{t}=1}^{\text{T}} (\text{x}_{\text{it}} - \bar{\text{x}}_{\text{i}})'\right]^{-1} \left[\sum_{\text{i}=1}^{\text{N}} \left(\sum_{\text{t}=1}^{\text{T}} (\text{x}_{\text{it}} - \bar{\text{x}}_{\text{i}})\, \hat{\text{y}}_{\text{it}}^{+} + \text{T}\hat{\Delta}_{\epsilon\mu}^{+}\right)\right], \tag{3}$$

where $\hat{\Delta}_{\epsilon\mu}^{+}$ is a serial correlation term that gives the covariance matrix of the residuals corrected for autocorrelation and $\hat{y}_{\text{it}}^{+}$ is the transformation of the dependent variable y_{it} to achieve the endogeneity correction.

We used especially the pooled FMOLS estimators which were based on the "within dimension" of the panel. The pooled FMOLS estimator is proposed in [60]. The estimator is robust concerning to the potential problems of serial-correlation and endogeneity, which are potential problems with common OLS panel data estimators [61]. It solves this problem by nonparametric corrections.

RESULTS

First of all, we analyse the extent and structure of R&D expenditure in EU countries. This will allow us to assess the current situation and differences among EU member states. In Figure 1 we compare the actual size of total R&D expenditure in the EU in the year 2018. In the analysis, we used total intramural R&D expenditure expressed as a percentage of GDP

(left axis) as well as in PPS per capita (right axis). As it can be seen, the highest overall R&D expenditure in both expressions is in Sweden, Austria, and Germany. As expected smaller countries such as Luxembourg and Ireland have significantly higher R&D expenditure per capita compared to their share of GDP. Romania, Malta, and Cyprus are the worst-performing countries in the EU concerning this indicator.

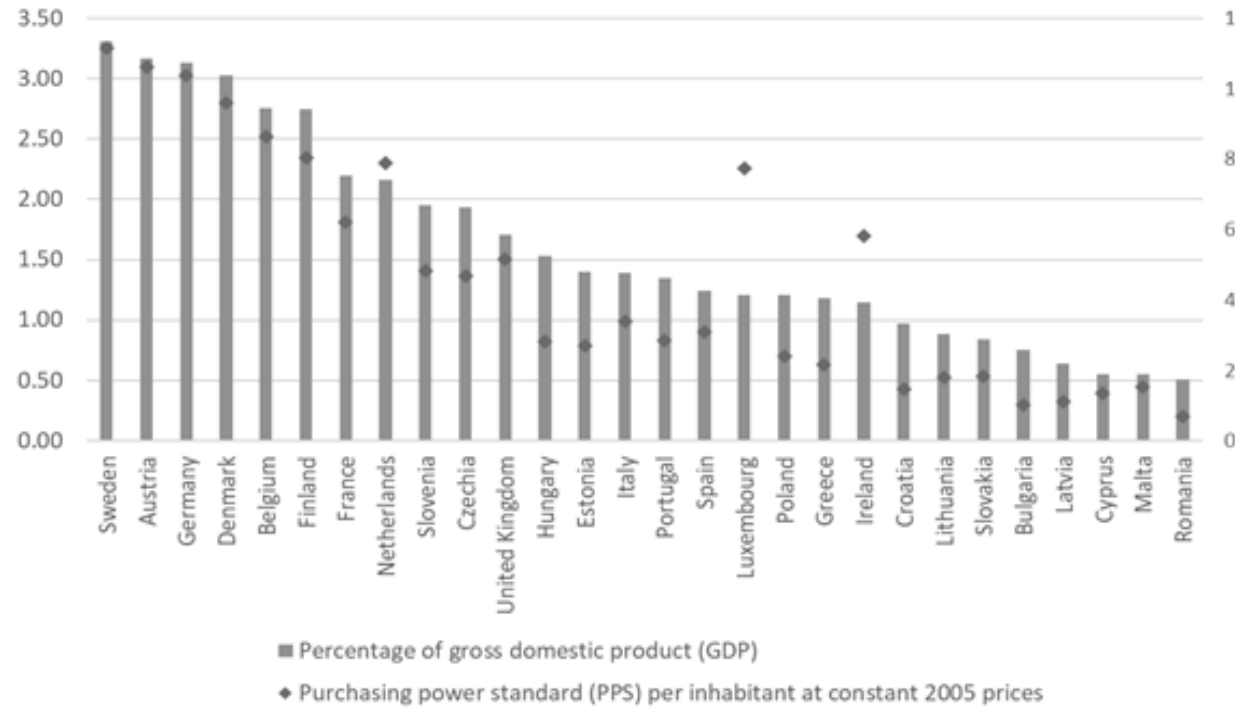

Figure 1. Total Intramural R&D expenditure (GERD) in all sectors in 2018.

As mentioned in our analysis we further focused only on business R&D expenditure which in some countries represent the major share of total R&D expenditure. The share of business intramural R&D expenditure on GDP in the years 2018 and 2008 is shown in Figure 2. This time the differences among countries appear to be even more significant than in the previous case. However, leading countries remain the same. Sweden, Austria, and Germany are followed by Belgium, Denmark, and Finland. When we compare the result to Figure 1 it is evident that the majority of total R&D expenditure can be assigned to the business enterprise sector in all leading countries. Hence R&D in top-performing countries is driven mostly by the business sector. Most of the countries experienced slight growth in business R&D expenditure during the ten years since 2018. However, many countries are stagnating over this period. Moreover, business R&D expenditure drops significantly during this period in three EU countries namely Finland, Luxembourg, and Sweden.

The R&D expenditures showed in Figure 2 are those spent and used in the business enterprise sector. These expenditures can be founded either from business or from government or other subjects. Direct or indirect government support of business R&D expenditure is considered an essential part of innovation policy in most developed countries. In Figure 3 we look more in detail at this kind of funds for business R&D investments. It is expressed as a percentage of GDP (right axis) as well as in PPS per capita in years 2007 and 2017. The highest governmental support of business R&D per capita can be seen again in Sweden. However, the share of governmental support on GDP is the highest in Hungary followed by France and

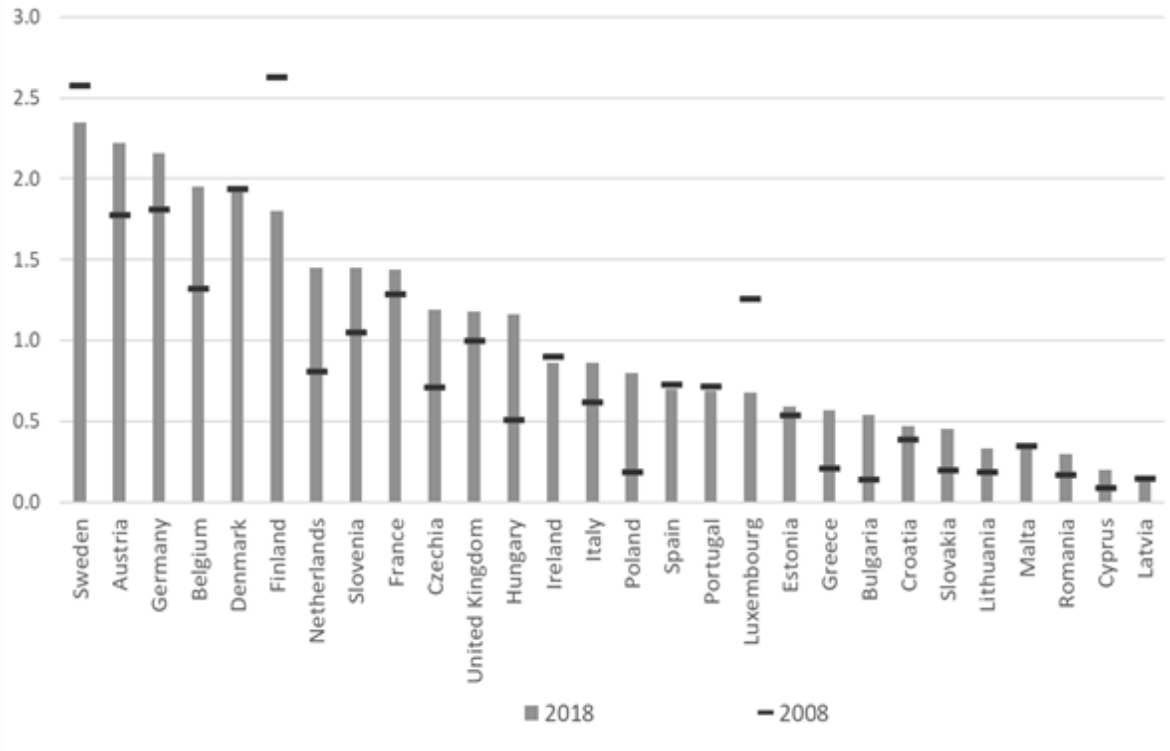

Figure 2. Intramural R&D expenditure (GERD) in business enterprise sector as percentage of GDP in years 2018 and 2008.

Sweden. Business R&D expenditure per capita financed by the government decrease between the years 2007 and 2017 the most in Austria, Spain, and Romania. On the other hand, Poland, Hungary, and United Kingdom have experienced significant growth.

In the next part of our analysis, we in more detail examine potential relationships between selected variables. Our main focus is on the relationship between R&D expenditure, invention, and innovation. The relation between business R&D expenditure share of innovative firms and number of patents per inhabitants in EU countries is illustrated in Figure 4. We take into account the most recent available cross-sectional data for the year 2018. The high number of patent applications per inhabitant can be seen in Germany, Sweden, Austria, Denmark, or the Netherlands. These countries experienced also a very high level of business R&D expenditure and most of them are also leaders in the share of innovative firms. On the other hand, countries such as Romania, Bulgaria, Latvia, Poland, or Slovakia lie on the other side of the scale and performed rather poorly in all three dimensions. Countries performing well in one indicator usually performing also in the other two indicators and vice versa. Despite some few exemptions such as in cases of Greece or Portugal the results suggest the existence of a positive correlation between all three selected indicators.

We further examined similar correlations based on panel data for all EU member states in the period 2011-2018. Results are shown in Table 2. This time we used variables capturing the share of SMEs innovating products and services as well as the share of SMEs innovating in-house. Furthermore, employment in high and medium technology sectors was used as a measure of technological advancement in the industry. We assumed that higher employment in these sectors can also imply more innovative firms in the economy. However, this assumption was not supported at all by the empirical data in our case. Hence, it could to some extent mean that high and medium technology industries are not the main drivers of products

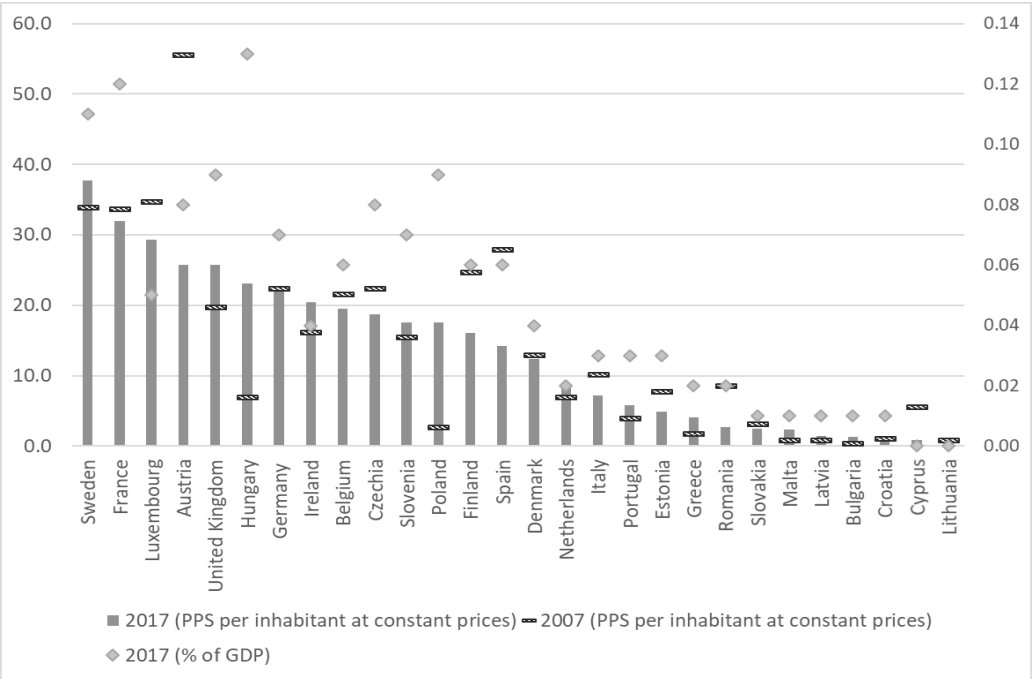

Figure 3. Intramural R&D expenditure (GERD) financed by the government and used in business enterprise sector in PPS per inhabitant and % of GDP in years 2017 and 2007.

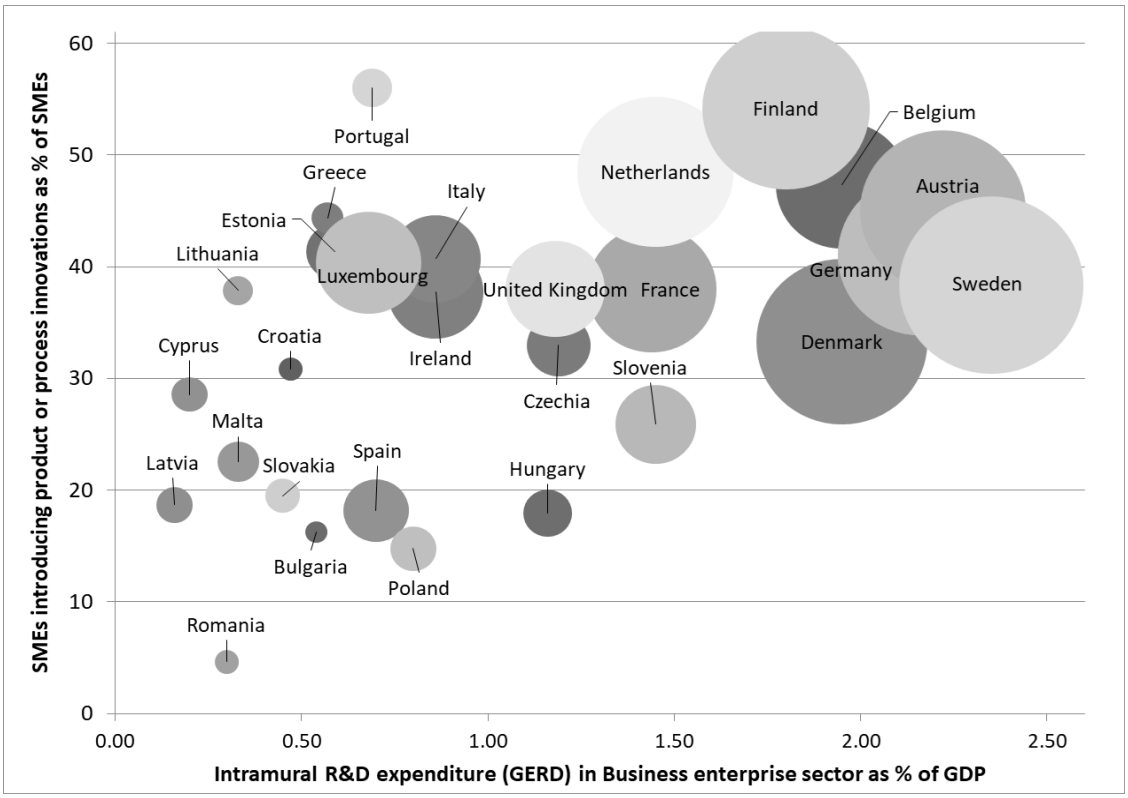

Figure 4. Business R&D expenditure, the share of innovative SMEs and number of patent applications to the EPO per 1 million inhabitants (circle size) in the EU countries in 2018. The size of the circle means the number of patent applications to the EPO per 1 million inhabitants.

and services innovation in most of the EU countries, but of course, more research is needed to prove this possible explanation. The correlation between business R&D expenditure and the share of innovative firms is positive and significant but not particularly strong.

Table 2. Panel correlation analysis between selected indicators for EU countries in the period 2011-2018 (Pearson pair correlation coefficients).

	SMEs introducing product or process innovations, %	SMEs innovating in-house, %	Business R&D exp., % of GDP	Employment in high- and medium-tech., %
SMEs introducing product or process innovations, %	1,000	0,964	0,577	–0,017
SMEs innovating in-house, %	0,964	1,000	0,528	–0,089
Business R&D exp., % of GDP	0,577	0,528	1,000	0,070
Employment in high- and medium-tech, %	–0,018	–0,089	0,070	1,000

To proceed further in our analysis, we test potential short-run and especially long-run causalities we used patents as a dependent variable and business R&D expenditure as a percentage of GDP as the main independent variable in our analysis.

Firstly, we want to test potential short-run effects in both ways. Hence, we applied the Granger causality test. We also used apparent labour productivity in all sectors as the variable in the analysis. We assume that business R&D could lead to patents and patents could have a later positive effect on labour productivity. The results of the panel Granger causality test are shown in Table 3. As it can be seen results suggest the existence of statistically significant casualty in Granger sense arising from Business R&D expenditure to the number of patents per capita, while the effect in opposite direction is not found. The mentioned relationship is significant when taking into account one-year and two-year lags. There is also a little bit weaker evidence for the effect of patents on apparent labour productivity after the three years lag. This relationship is statistically significant at a 5 % level of significance.

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Based on the results we can conclude that we found some evidence for the short-run relationship between Business R&D expenditure and the number of patents per capita. We identify the direction of these potential effects, but we are not able to identify whether this effect is positive or negative as well as its power. Hence, after the Granger causality tests, we look more in detail at a potential long-run causal effect, which could be very likely more important in this case due to the nature of long-lasting innovation processes. We assume that there can be a long-run relationship between business R&D funding and inventions measured by the number of patents per capita.

The number of patents can be also to a certain degree affected by the economic development in the country. Therefore, we also used GDP per capita as the control variable. The cointegrated regression approach allows us to determine long-run causalities. It is robust for

Table 3. Results of Pairwise Panel Granger causality tests.

Number of lags	1	2	3
H0: Business R&D exp. (% GDP) does not Granger Cause Patents	11,03***	5,28***	1,99
H0: Patents does not Granger Cause Business R&D exp. (% GDP)	0,54	2,76	0,09
H0: Apparent labour productivity does not Granger Cause Patents	0,02	0,44	0,59
H0: Patents does not Granger Cause Apparent labour productivity	2,98	2,18	3,28**
H0: Apparent labour productivity does not Granger Cause Business R&D exp. (% GDP)	0,003	1,13	0,30
H0: Business R&D exp. (% GDP) does not Granger Cause does not Granger Cause	0,83	0,48	0,52
Observations	252	224	196

**statistically significant at 5 %
***statistically significant at 1 %

Table 4. The results of panel unit root tests – variables calculated as percentage of GDP.

	Null Hypothesis: non-stationarity				
	LLC test	Breitung	IPS test	ADF test	PP test
Patents – intercept & trend	–6,17***	–0,77	–0,39	64,03	89,89***
ΔPatents – intercept & trend	–23,25***	–5,92***	–5,04***	162,5***	234,5***
Business R&D exp. (% GDP) – intercept & trend	–4,44***	–2,22	–0,244	64,8	88,2***
ΔBusiness R&D exp. (% GDP) – intercept & trend	–10,6***	0,115	–2,25**	109,2***	183,9***
GDP_per_capita – intercept & trend	–29,95***	4,29	–7,53***	133,2***	69,58
ΔGDP_per_capita – intercept & trend	–28,38***	–4,7***	–6,52***	212,8***	266,3***

**statistically significant at 5 %
***statistically significant at 1 %

both non-stationarity problems and most of the endogeneity problems. However, the number of control variables is limited in this case, because all variables used in the mode must be cointegrated. To test the same level of integration or the cointegration of selected variable we firstly need to use panel unit-root test. We applied five different panel unit-root tests. The results mostly suggest that all three variables are very likely non-stationary at their levels but they are stationary when using the first difference. This means that the first necessary condition for cointegration of these variables has been met.

The existence of cointegration between these three variables has been further tested by Pedroni and Kao panel cointegration tests. All results are shown in Table 5 and Table 6. In the first part showed in Table 5 we test cointegration among all three variables. Despite slightly mixed results, the majority of tests confirm the existence of statistically significant cointegration at least at a 5 % level of significance. Thus, based on the results we can proceed further to cointegrated regression analysis.

In Table 6 we tested cointegration only between the number of patents per capita and share of business R&D expenditures on GDP. This time the results are even more convincing. Based on the majority of tests we can conclude that there is cointegration between these two variables.

Table 5. Results of panel cointegration tests among all three variables.

Cointegration: Patents, Business R&D expenditure (% GDP), GDP per capita / Intercept			
Null Hypothesis: no cointegration		**Statistic**	**Weighted Stat.**
Pedroni test (Engle-Granger based) tests – individual intercept, lag length selection based on SBC	Panel v-Statistic (within dimension)	1,21	-0,73
	Panel rho-Statistic (within dimension)	0,67	0,33
	Panel PP-Statistic (within dimension)	0,001***	-6,70***
	Panel ADF-Statistic (within dimension)	–4,42***	-6,78***
	Group rho-Statistic (between dimension)	2,54	
	Group PP-Statistic (between dimension)	–9,77***	
	Group ADF-Statistic (between dimension)	–7,83***	
Kao coint. test	ADF-Statistic	–2,30**	
Cointegration: Patents, Business R&D expenditure (% GDP), GDP per capita / Intercept & trend			
Pedroni tests (Engle-Granger based) – individual intercept & trend, lag length selection based on SBC	Panel v-Statistic (within dimension)	–2,58	–3,27
	Panel rho-Statistic (within dimension)	3,83	3,57
	Panel PP-Statistic (within dimension)	–0,01	–7,71***
	Panel ADF-Statistic (within dimension)	–1,94**	–6,84***
	Group rho-Statistic (between dimension)	5,32	
	Group PP-Statistic (between dimension)	–13,6***	
	Group ADF-Statistic (between dimension)	–9,11***	

**statistically significant at 5 %
***statistically significant at 1 %

Table 6. Results of panel cointegration tests between Patents and R&D expenditure.

Cointegration: Patents, Business R&D expenditure (% GDP) / Intercept			
Null Hypothesis: no cointegration		**Statistic**	**Weighted Stat.**
Pedroni test (Engle-Granger based) tests – individual intercept, lag length selection based on SBC	Panel v-Statistic (within dimension)	2,18**	0,016
	Panel rho-Statistic (within dimension)	–0,82	–1,33*
	Panel PP-Statistic (within dimension)	–2,88***	–5,36***
	Panel ADF-Statistic (within dimension)	–4,06***	–6,28***
	Group rho-Statistic (between dimension)	0,76	
	Group PP-Statistic (between dimension)	–6,90***	
	Group ADF-Statistic (between dimension)	–6,98***	
Kao coint. test	ADF-Statistic	–2,56***	
Cointegration: Patents, Business R&D expenditure (% GDP), GDP per capita / Intercept & trend			
Pedroni tests (Engle-Granger based) – individual intercept & trend, lag length selection based on SBC	Panel v-Statistic (within dimension)	–1,96	–3,02
	Panel rho-Statistic (within dimension)	2,28	1,85
	Panel PP-Statistic (within dimension)	–0,68	–6,40***
	Panel ADF-Statistic (within dimension)	–2,40***	–7,54***
	Group rho-Statistic (between dimension)	3,53	
	Group PP-Statistic (between dimension)	–6,96***	
	Group ADF-Statistic (between dimension)	–6,72***	

**statistically significant at 5 %
***statistically significant at 1 %

After the cointegration tests, we can finally proceed to panel cointegrating regression models. To check the robustness of the results we applied FMOLS estimator with different specifications as shown in Table 7.

Table 7. Results of panel cointegrated regression models. Long-run variances calculated based on Bartlett kernel and Newey-West bandwidth have been used for coefficient covariances; A – FMOLS (pooled estimator), constant included, coefficient covariance matrix with homogenous variances; B – FMOLS (pooled estimator), constant included, coefficient covariance matrix with heterogeneous first-stage coefficients; C – FMOLS (pooled weighted estimator), coefficient covariance matrix with homogenous variances; D – FMOLS (pooled estimator), constant &linear trend, coefficient covariance matrix with homogenous variances; E – FMOLS (pooled estimator), constant and linear trend as an additional regressor, coefficient covariance matrix with homogenous variances.

Dependent variable: Patents					
Pooled estimator (within dimension)					
	(1) ^{A}	**(2)** ^{B}	**(3)** ^{C}	**(4)** ^{D}	**(5)** ^{E}
Business R&D exp. (% of GDP)	11,29* (1,84)	8,33** (2,21)	7,09*** (232,34)	12,38** (2,01)	8,82*** (2,34)
Log(GDP per capita)	3,88 (0,25)	0,53 (0,06)	5,41*** (219,4)	5,65 (0,42)	1,07*** (0,13)
R2	0,99	0,99	0,99	0,99	0,99
Adj. R2	0,98	0,98	0,99	0,99	0,99
Long-run variance	203,1	76,44	11,81	11,83	11,81
Observations	280	280	280	280	280

*statistically significant at 10 %
**statistically significant at 5 %
***statistically significant at 1 %

The long-run positive effect of business R&D expenditure on the number of patents is statistically significant at least at a 10 % level of significance in all five models. Moreover, this effect is also significant at a 5 % level in four out of five models. Hence, we can conclude that our results strongly suggest that there is a positive long-run effect of business R&D expenditure on inventions which could likely also further lead to innovation in the business sector. Likely, higher R&D expenditure in the business enterprises sector will increase also innovation performance. The long-run effect of GDP per capita on patenting was in our case insignificant in almost all models except one. The effect of GDP can likely be more evident in the short-run rather than in the long run.

DISCUSSION

Our result can have several interpretations and implications. Firstly, there are several issues related to using the number of patents as the main dependent variable. On one hand, several previous studies such as [17, 43] have used patents as a direct measure for innovation. On the other hand, patents are also often used as the proxy for invention [39, 41] rather than innovation. For example, Artz et al. [41], argue that patents are commonly seen as innovation, which is further leading to actual innovation. Similarly, Lin et al. [62] used sales arising from patents as the alternative measurement of innovation output. This study was focused on Taiwanese manufacturing firms. Hence, in this case, most of the firms were likely focused on the innovation of high-tech or medium-tech products. In such conditions, patents can be a very good proxy for innovation. Typical business innovation is not always based on patents. There are several types of innovation such for example innovation of products, services or processes and most of them are not related to patenting. In our case, we accepted both approaches and assume that patents are representing part of inventions and can be also to some extent considered as the proxy for the specific type of innovations. This is especially true for product and process innovation. However, it is still important to notice that the

number of patents cannot be considered as an exact measure of either invention or innovation. As argued by Thomas et al. [63], not all inventions are patented or can be patented and not all patents are useful for innovation, even though patents are still considered the most common indicator of innovative output. Albeit the indicator is a good proxy for measuring innovation only the part of technological knowledge is shared by patents [64].

Despite mentioned disadvantages of this indicator, we decided to use patents as the main variable capturing invention and innovation in our analysis. In the absence of economy-wide data on innovations, the number of patents is currently used as the standard measure of innovation [65]. Within this context, Leydesdorff et al. [40] argue that despite the well-known limitations patents can be used for analysing patterns of the invention.

In our case, we are using the R&D expenditure as the most important independent variable. The existence of the potential relationship between R&D and invention or innovation has been discussed in the introduction and literature review. Based on our results, we can conclude that we found empirical evidence for the positive effect of business R&D expenditure on the number of patents in the short-run as well as in the long run. A higher level of R&D expenditure should increase R&D activities and these in ideal circumstances can scale up patents and innovation. Despite most of the previous studies have been focused more on the short-run causalities, the length of the whole innovation process from spending to innovation and innovation indicates that the effects should be visible more in the long-run. Hence, our study is primarily focused on examining potential long-run causalities by using an integrated approach. However, we found both types of effects. In the short-run are results indicate the existence of Granger causality between R&D expenditure and patents.

These results are in line with theoretical assumptions as well as with previous empirical research. We found that this effect is has been to some extent found even in the short run. Our results are in line with some other previous studies. For example, Zachariadis [35] assume that R&D expenditure is mostly reflected by the number of patents in the economy which is further transformed into different types of new technologies. Peeters and van de la Potterie [45] found that firms with more focus on research activities produce significantly more patenting output. Our results also suggest that the innovation process in EU countries mostly follow the science and technology-based innovation path (STI) described for example by Jensen et al. [51]. According to this assumption, we can state that innovation outputs are mostly based on R&D expenditures. Taking into account this fact, business innovation also requires higher investments into high-skilled human resources and highly skilled scientific human resources and advanced technologies and infrastructures. Hence, the cooperation of business, higher education institution and government is often inevitable to reach a sufficient volume of innovation. Especially research centres, universities and foundations play important role in STI mode in the acquisition of knowledge the diffusion of scientific research [66]. Of course in our sample, there can be also several countries where STI mode is not dominant. We can assume that especially firms some countries in central Europe or Eastern European countries are more focused on non-R&D innovation. Furthermore, following the results obtained by Kravtsova and Radosevic [67] we can also assume that Eastern European countries have in general less efficient national systems of innovation which are generating lower numbers of science and technology outputs such as patents compared to other countries. Our results confirm this fact. We found that the share of innovative enterprises, as well as the number of patents, is mostly lower in EU countries from the eastern part of the Union. Firms from, Romania, Poland, Latvia, Bulgaria, Hungary and Slovakia are significantly less innovative compared to other EU member states. This is in line with much more complex data from the European innovation scoreboard [68] where mentioned countries are based on all dimensions

captured in the scoreboard classified only as modest and moderate innovators. Hence, we believe that more attention should be paid to them in future research as well.

Our research is focused on the problem that has been previously investigated by several studies. However, we believe that its economic importance and specificity requires even more in-depth examination. Our research brings some new empirical insight into this problem by using original methodology and data. Most of the research so far has been focused on certain specific countries and it mostly examined the short-run causalities. However, there are few studies with a similar methodology. For example, Pegkas et al. [16] have also analysed the long-run relationship between innovation and R&D expenditure in European Union countries. Similar to our results, they also found the co-integration relationship between innovation and R&D and the existence of a positive effect of business, public and higher education R&D on innovation. They also argue that the business R&D expenditure has the highest positive effect on innovation. Compared to our approach they are using a different methodology to examine long-run causalities. We also additionally perfumed the short-run Granger causality test. Furthermore, they are using data until the year 2014, while we are using novel data over the period 2011-2018. Despite differences in methodology and dataset, the results are to some extent similar. Furthermore, our results are also in line with those found by De Rassenfosse and van Pottelsberghe de la Potterie [69]. They examined the relationship between R&D expenditure and the number of planets over the period 1980–2007, in Europe, the US and Japan and concluded that R&D expenditure has a positive effect on the number of patent applications.

Despite our effort to achieve the most relevant results, our approach has also certain limitations. First, the patenting used in the analysis can be seen only as a proxy for invention or innovation. Secondly, we assumed that the effect of business R&D expenditure is largely localized in the same country where these funds have been used. Thus, we do not account for potential cross-border spill-overs or indirect effects. The scope of the data has been limited by the data availability. Moreover, the FMOLS estimator can be also used only on cointegrated variables. These two facts limited the number of control variables. Even though the problem of endogeneity has been to a large extent solved by using panel FMOLS estimator, more control variables might further improve the robustness of our results. Our approach does not allow us to capture differences between countries. Moreover, based on our data we are not able to distinguish between the different business sectors or research areas. Hence, potential further research can be aimed at the differences between different sectors or countries. In the article, we used macro-level data and a sectoral approach. Further analysis of this problem based on the level of firms could be complementary to our results.

CONCLUSIONS

In this article, we examined business Intramural R&D expenditure in EU countries and identify their short-run and long-run on the number of patents. Based on the mentioned results we can make several concussions and provide some implications. Firstly, it can be concluded that investments in research and development appear to be important for the the creation of invention and innovation. Business R&D expenditure on GDP has a positive effect on invention expressed by patents. This seems to be especially true in the long run. However, we also found some empirical evidence for short-run causality in the Granger sense between both selected variables. A positive correlation has been detected also between business R&D expenditure and the share of innovative firms in the countries. This is valid also for firms innovating products in services in general as well as for those firms innovating in-house.

Furthermore, we found that countries with higher business R&D expenditure on GDP also mostly experienced a higher share of innovative firms as well as higher patenting activity.

Concerning all three indicators, countries such as Sweden, Germany, Austria or Finland represent good practice. All four countries also experienced the highest R&D expenditure in the business enterprise sector in the EU. The systems of innovation support in these countries are usually considered as ones of the best in Europe. Government financial support of business R&D is very high in Sweden, France and Luxembourg. On the other hand, countries such as Latvia, Romania and Cyprus have a low level of business R&D expenditure. Overall R&D expenditure in the economy is also very limited in these countries.

Turning to the dynamics of business R&D expenditure we can conclude that not all EU countries increase them in selected ten years' period. There were significant drops in Finland, Sweden and Luxembourg. However, in most of the EU countries, we noted a slight increase. The decrease in government funding of business R&D during the period 2007-2017 was even more significant in many EU countries. This could mean that governments can more recent period effort, in general, less expenditure dedicated to the support of R&D activities in the business enterprise sector compared to the situation before the last financial and economic crisis. However, the role of non-R&D innovation expenditure should not be neglected as well. Especially in the countries with the dominant DUI mode, rising R&D expenditure can be less effective in increasing the level of innovation. In this case, the improvement of the external business environment such as regulation can be at least equally important.

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REFERENCES

[1] Gumus, E. and Celikay, F.: *R&D Expenditure and Economic Growth: New Empirical Evidence*.
Margin – The Journal of Applied Economic Research **9**(3), 205-217, 2015,
http://dx.doi.org/10.1177/0973801015579753,

[2] Akcali, B.Y. and Sismanoglu, E.: *Innovation and the Effect of Research and Development (R&D) Expenditure on Growth in Some Developing and Developed Countries.*
Procedia – Social and Behavioral Sciences **195**, 768-775, 2015,
http://dx.doi.org/10.1016/j.sbspro.2015.06.474,

[3] Falk, M.: *R&D spending in the high-tech sector and economic growth.*
Research in Economics **61**(3), 140-147, 2007,
http://dx.doi.org/10.1016/j.rie.2007.05.002,

[4] Blanco, L.; Gu, J. and Prieger, J.E: *The Impact of Research and Development on Economic Growth and Productivity in the U. S. States.*
Southern Economic Journal **82**(3), 914-934, 2015,
http://dx.doi.org/10.1002/soej.12107,

[5] Nekrep, A.; Strašek, S. and Boršič, D.: *Productivity and Economic Growth in the European Union: Impact of Investment in Research and Development*.
Naše gospodarstvo/Our Economy **64**(1), 18-27, 2018,
http://dx.doi.org/10.2478/ngoe-2018-0003,

[6] Czarnitzki, D. and Delanote, J.: *Young innovative companies: the new high-growth firms?*
Industrial and Corporate change **22**(5), 1315-1340, 2013,
http://dx.doi.org/10.1093/icc/dts039,

[7] Křístková, Z.: *Analysis of private RD effects in a CGE model with capital varieties: The case of the Czech Republic*.
Czech Journal of Economics and Finance **63**(3), 262-287, 2013,

[8] Apergis, N. and Sorros, J.: *The Role of R&D Expenses for Profitability: Evidence from U.S. Fossil and Renewable Energy Firms.*
International Journal of Economics and Finance **6(**3), 8-15, 2014,
http://dx.doi.org/10.5539/ijef.v6n3p8,

[9] Shen, K.Y.; Yan, M.R. and Tzeng, G.H.: *Exploring R&D Influences on Financial Performance for Business Sustainability Considering Dual Profitability Objectives.*
Sustainability **9**(11), 1-21, 2017,
http://dx.doi.org/10.3390/su9111964,

[10] Phorncharoen, I.: *Influence of market orientation, learning orientation, and innovativeness on operational performance of real estate business.*
International Journal of Engineering Business Management **12**, 2020,
http://dx.doi.org/10.1177/1847979020952672,

[11] Hervas-Oliver, J.L.; Sempere-Ripoll, F.; Boronat-Moll, C. and Rojas, R.: *Technological innovation without R&D: unfolding the extra gains of management innovations on technological performance*.
Technology Analysis & Strategic Management **27**(1), 19-38, 2015,
http://dx.doi.org/10.1080/09537325.2014.944147,

[12] Xie, X.; Wang, H. and Jiao, H.: *Non- R&D innovation and firms' new product performance: the joint moderating effect of R&D intensity and network embeddedness.*
R&D Management **49**(5), 748-761, 2019,
http://dx.doi.org/10.1111/radm.12369,

[13] Lee, Y.N. and Walsh, J.P.: *Inventing while you work: Knowledge, non-R&D learning and innovation.*
Research Policy **45**(1), 345-359, 2016,
http://dx.doi.org/10.1016/j.respol.2015.09.009,

[14] Godin, B.: *Invention, diffusion and linear models of innovation: the contribution of anthropology to a conceptual framework.*
Journal of Innovation Economics Management **15**(3), 11-37, 2014,
http://dx.doi.org/10.3917/jie.015.0011,

[15] Stojcic, N.: *Collaborative innovation in emerging innovation systems: Evidence from Central and Eastern Europe*.
The Journal of Technology Transfer **46**(2), 531-562, 2021,
http://dx.doi.org/10.1007/s10961-020-09792-8,

[16] Pegkas, P.; Staikouras, C. and Tsamadias, C.: *Does research and development expenditure impact innovation? Evidence from the European Union countries.*
Journal of Policy Modeling **41**(5), 1005-1025, 2019,
http://dx.doi.org/10.1016/j.jpolmod.2019.07.001,

[17] Bronzini, R. and Piselli, P.: *The impact of R&D subsidies on firm innovation.*
Research Policy **45**(2), 442-457, 2016,
http://dx.doi.org/10.1016/j.respol.2015.10.008,

[18] Hunady, J. and Pisar, P.: *Business Spending on Research and Development and its Relationship to Invention and Innovation.*
ENTRENOVA - ENTerprise REsearch InNOVAtion Conference (Online), 10-12 September 2020, 542-552. IRENET - Society for Advancing Innovation and Research in Economy, Zagreb,

[19] Etzkowitz, H. and Leydesdorff, L.: *The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of university–industry–government relations.*
Research Policy **29**(2), 109-23, 2000,
http://dx.doi.org/10.1016/S0048-7333(99)00055-4,

[20] David, P.A.; Hall, B.H. and Toole, A.A.: *Is public R&D a complement or substitute for private R&D? A review of the econometric evidence.*
Research policy **29**(4-5), 497-529, 2000,
http://dx.doi.org/10.1016/S0048-7333(99)00087-6,

[21] Lanahan, L.; Graddy-Reed, A. and Feldman, M.P.: *The Domino Effects of Federal Research Funding*.
PLoS ONE **11**(6), 2016,
http://dx.doi.org/10.1371/journal.pone.0157325,

[22] Pieri, F.; Vecchi, M. and Venturini, F.: *Modelling the joint impact of R&D and ICT on productivity: A frontier analysis approach.*
Research Policy **47**(9), 1842-1852. 2018,
http://dx.doi.org/10.1016/j.respol.2018.06.013,

[23] VanderPal, G.A.: *Impact of R&D Expenses and Corporate Financial Performance.*
Journal of Accounting and Finance **15**(7), 135-149, 2015,

[24] Hunady, J.; Pisar, P. and Durcekova, I.: *R&D Investments in the European ICT Sector: Implications for Business Performance.*
Business Systems Research **11**(3), 30-44, 2019,
http://dx.doi.org/10.2478/bsrj-2020-0025,

[25] Park, J.H., et al.: *Relation of R&D expense to turnover and number of listed companies in all industrial fields.*
Journal of Open Innovation: Technology, Market and Complexity **4**(1), 1-15, 2018,
http://dx.doi.org/10.1186/s40852-018-0093-4,

[26] Sandu, S. and Ciocanel, B.: *Impact of R&D and innovation of High-tech Export.*
Procedia Economics and Finance **15**, 80-90, 2014,
http://dx.doi.org/10.1016/S2212-5671(14)00450-X,

[27] Wang, D.H.M.; Yu, T.H.K. and Liu, H.Q.: *Heterogeneous effect of high-tech industrial R&D spending on economic growth.*
Journal of Business Research **66(**10), 1990-1993, 2013,
http://dx.doi.org/10.1016/j.jbusres.2013.02.023,

[28] Karahan, Ö.: *Intensity of Business Enterprise R&D Expenditure and High-Tech Specification in European Manufacturing Sector.*
Procedia – Social and Behavioral Sciences **195**, 806-813, 2015,
http://dx.doi.org/10.1016/j.sbspro.2015.06.180,

[29] Stankevice, I. and Jucevicius, G.: *Institutional vs. sectoral dimension of innovation strategies of firms.*
Technological and Economic Development of Economy **19**(1), S360-S382, 2013,
http://dx.doi.org/10.3846/20294913.2013.879752,

[30] Herrera, L.; Muñoz-Doyague, M.F. and Nieto, M.: *Mobility of public researchers, scientific knowledge transfer, and the firm's innovation process.*
Journal of Business Research **63**(5), 510-518, 2010,
http://dx.doi.org/10.1016/j.jbusres.2009.04.010,

[31] Penner-Hahn, J. and Shaver, J.M.: *Does international research and development increase patent output? An analysis of Japanese pharmaceutical firms.*
Strategic Management Journal **26**(2), 121-140, 2005,
http://dx.doi.org/10.1002/smj.436,

[32] Tomičić Furjan, M.; Tomičić-Pupek, K., and Pihir, I.: *Understanding Digital Transformation Initiatives: Case Studies Analysis.*
Business Systems Research: International journal of the Society for Advancing Innovation and Research in Economy **11**(1), 125-141, 2020,
http://dx.doi.org/10.2478/bsrj-2020-0009,

[33] Topalović, A. and Azzini, A.: *Data Mining Applications in SMEs: An Italian Perspective.*
Business Systems Research: International journal of the Society for Advancing Innovation and Research in Economy **11**(3), 127-146. 2020,
http://dx.doi.org/10.2478/bsrj-2020-0031,

[34] Juričić, V.; Radošević, M., and Fuzul, E.: *Optimizing the Resource Consumption of Blockchain Technology in Business Systems*.
Business Systems Research: International journal of the Society for Advancing Innovation and Research in Economy **11**(3), 78-92, 2020,
http://dx.doi.org/10.2478/bsrj-2020-0028,

[35] Zachariadis, M.: *R&D Innovation and Technological Progress: A Test of Schumpeterian framework without Scale Effects.*
Canadian Journal of Economics **36**(3), 566-586, 2004,
http://dx.doi.org/10.1111/1540-5982.t01-2-00003,

[36] Hudson, J.; Minea, A.: *Innovation, intellectual property rights, and economic development: A unified empirical investigation.*
World Development **46**, 66-78, 2013,
http://dx.doi.org/10.1016/j.worlddev.2013.01.023,

[37] Hasan, I.; Tucci, C.L.: *The innovation–economic growth nexus: Global evidence.*
Research Policy **39**(10), 1264-1276, 2010,
http://dx.doi.org/10.1016/j.respol.2010.07.005,

[38] Orviska, M.; Hunady, J.; Pisar, P. and Hudson, J.: *From Academic Publications and Patents to the Technological Development of the Economy: Short and Long Run Causalities.*
Quality Innovation Prosperity **23**(1), 74-101, 2019,
http://dx.doi.org/10.12776/qip.v23i1.1166,

[39] Grant, R.M.: *Contemporary strategy analysis: Text and cases edition*.
John Wiley & Sons, Chichester, 2016,

[40] Leydesdorff, L.; Alkemade, F.; Heimeriks, G. and Hoekstra, R.: *Patents as instruments for exploring innovation dynamics: geographic and technological perspectives on "photovoltaic cells".*
Scientometrics **102**(1), 629-651, 2015,
http://dx.doi.org/10.1007/s11192-014-1447-8,

[41] Artz, K.W.; Norman, P.M.; Hatfield, D.E. and Cardinal, L.B.: *A longitudinal study of the impact of R&D, patents, and product innovation on firm performance.*
Journal of product innovation management **27**(5), 725-740, 2010,
http://dx.doi.org/10.1111/j.1540-5885.2010.00747.x,

[42] Breschi, S.; Lissoni, F. and Montobbio, F.: *From publishing to patenting: Do productive scientists turn into academic inventors?*
Revue d'économie industrielle **110**(1), 75-102, 2005,
http://dx.doi.org/10.3406/rei.2005.3073,

[43] Löfsten, H.: *Product innovation processes and the trade-off between product innovation performance and business performance*.
European Journal of Innovation Management **17**(1), 61-84, 2014,
http://dx.doi.org/10.1108/EJIM-04-2013-0034,

[44] Cardinal, L.B. and Hatfield, D.E.: *Internal knowledge generation: the research laboratory and innovative productivity in the pharmaceutical industry.*
Journal of Engineering and Technology Management **17**(3-4), 247-271, 2000,
http://dx.doi.org/10.1016/S0923-4748(00)00025-4,

[45] Peeters, C. and De la Potterie, B.V.P.: *Innovation strategy and the patenting behavior of firms.*
Journal of Evolutionary Economics **16**(1-2), 109-135, 2006,
http://dx.doi.org/10.1007/s00191-005-0010-4,

[46] Acs, Z.J. and Audretsch, D.B.: *The determinants of small-firm growth in US manufacturing.*
Applied Economics **22**(2), 143-153, 1990,
http://dx.doi.org/10.1080/00036849000000058,

[47] Graves, S.B. and Langowitz, N.S.: *R&D productivity: a global multi-industry comparison.*
Technological Forecasting and Social Change **53**(2), 125-137, 1996,
http://dx.doi.org/10.1016/S0040-1625(96)00068-6,

[48] Demirel, P. and Mazzucato, M.: *Innovation and firm growth: Is R&D worth it?*
Industry and Innovation **19**(1), 45-62, 2012,
http://dx.doi.org/10.1080/13662716.2012.649057,

[49] Bach, M.P.: *Exploring information and communications technology adoption in enterprises and its impact on innovation performance of European countries.*
Ekonomický časopis **62**(4), 335-362, 2014,

[50] Lundvall, B.Å.: *National systems of innovation: Toward a theory of innovation and interactive learning.*
Anthem press, London, 2010,

[51] Jensen, M.B.; Johnson, B.; Lorenz, E. and Lundvall, B.Å.: *Forms of knowledge and modes of innovation.*
Research Policy **36(**5), 680-693, 2007,
http://dx.doi.org/10.1016/j.respol.2007.01.006,

[52] González-Pernía, J.L.; Parrilli, M.D. and Peña-Legazkue, I.: *STI–DUI learning modes, firm–university collaboration and innovation.*
The Journal of Technology Transfer **40**(3), 475-492, 2015,
http://dx.doi.org/10.1007/s10961-014-9352-0,

[53] Levin, A.; Lin, C.F. and Chu, C.S.J.: *Unit root tests in panel data: Asymptotic and finite sample properties.*
Journal of Econometrics **108**(1), 1-22, 2002,
http://dx.doi.org/10.1016/S0304-4076(01)00098-7,

[54] Im, K.S.; Pesaran, M.H. and Shin, Y.: *Testing for unit roots in heterogeneous panels.*
Journal of Econometrics **115**(1), 53-74, 2003,
http://dx.doi.org/10.1016/S0304-4076(03)00092-7,

[55] Breitung, J.: *The local power of some unit root tests for panel data.*
Nonstationary Panels, Panel Cointegration, and Dynamic Panels **15,** 161-77, 2000,
http://dx.doi.org/10.1016/S0731-9053(2001)15,

[56] Choi, I.: *Unit root tests for panel data.*
Journal of International Money and Finance **20**(2), 249-72, 2001,
http://dx.doi.org/10.1016/S0261-5606(00)00048-6,

[57] Maddala, G.S. and Wu, S.: *A comparative study of unit root tests with panel data and a new simple test.*
Oxford Bulletin of Economics and statistics **61**(S1), 631-652, 1999,
http://dx.doi.org/10.1111/1468-0084.0610s1631,

[58] Pedroni, P.: *Panel cointegration: asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis.*
Econometric theory **20**(3), 597-625, 2004,
http://dx.doi.org/10.1017/S0266466604203073,

[59] Kao, C.: *Spurious regression and residual based Tests for cointegration in panel data.*
Journal of Econometrics **90**(1), 1-44, 1999,
http://dx.doi.org/10.1016/S0304-4076(98)00023-2,

[60] Phillips, P.C.B. and Moon, H.R.: *Linear regression limit theory for nonstationary panel data.*
Econometrica **67**(5), 1057-1111, 1999,
http://dx.doi.org/10.1111/1468-0262.00070,

[61] Pedroni, P.: *Fully modified OLS for heterogeneous cointegrated panels.*
Advances in Econometrics **15**, 93-130, 2000,
http://dx.doi.org/10.1016/S0731-9053(00)15004-2,

[62] Lin, E.S.; Hsiao, Y.C. and Lin, H.L.: *Complementarities of R&D strategies on innovation performance: evidence from Taiwanese manufacturing firms.*
Technological and Economic Development of Economy **19**(sup1), S134-S156, 2013,
http://dx.doi.org/10.3846/20294913.2013.876684,

[63] Thomas, V.J.; Sharma, S. and Jain, S.K.: *Using patents and publications to assess R&D efficiency in the states of the USA.*
World Patent Information **33**(1), 4-10, 2011,
http://dx.doi.org/10.1016/j.wpi.2010.01.005,

[64] Voutsinas, I.; Tsamadias, C.; Carayannis, E. and Staikouras, C.: *Does research and development expenditure impact innovation? Theory, policy and practice insights from the Greek experience.*
The Journal of Technology Transfer **43**(1), 159-171, 2018,
http://dx.doi.org/10.1007/s10961-015-9454-3,

[65] Moser, P.: *Patents and innovation: evidence from economic history.*
Journal of Economic Perspectives **27**(1), 23-44, 2013,
http://dx.doi.org/10.1257/jep.27.1.23,

[66] Fitjar, R.D. and Rodríguez-Pose, A.: *Firm collaboration and modes of innovation in Norway.*
Research Policy 42(1), 128-138, 2013,
http://dx.doi.org/10.1016/j.respol.2012.05.009,

[67] Kravtsova, V. and Radosevic, S.: *Are systems of innovation in Eastern Europe efficient?*
Economic Systems **36**(1), 109-126, 2012,
http://dx.doi.org/10.1016/j.ecosys.2011.04.005,

[68] European Union: *European Innovation Scoreboard 2020*.
http://dx.doi.org/10.2873/6063,

[69] Rassenfosse, G.D. and Potterie, B.V.P.D.L.: *On the price elasticity of demand for patents.*
Oxford Bulletin of Economics and Statistics **74**(1), 58-77, 2012,
http://dx.doi.org/10.1111/j.1468-0084.2011.00638.x.

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MEASURING RETURNS ON INVESTMENT IN EDUCATION: LESSONS FOR SUSTAINABLE AND INNOVATIVE EDUCATION POLICY

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ABSTRACT

The relationship between education and labor market is significant and complex. Education increases employment opportunities and reduces the chance of occurrence and duration of unemployment. Earnings, among other things, represent private returns on investment in education and are in the center of the analysis of this article. The main aim of this article is to estimate private and social returns on investment in primary, secondary and tertiary education in selected old and new member states of the European Union (EU) by using two methods (Earnings function and Short-cut method) based on the Mincer equation. Results have shown that there is no statistically significant difference between the estimated private and social returns on investment in primary, secondary and tertiary education in groups of old and new EU members. New members converge towards the old members, at least when it comes to returns on investment in these three education levels. The results also indicate the existence of low and negative returns on investment in education in both old and new EU members. Thus, this article with its new findings contributes significantly to the literature that studies the universality of conclusions on returns on investment in education and the methodology that is used.

KEY WORDS

education, education policy, investment, return, Mincer equation, European Union

CLASSIFICATION

JEL: I20, I26, I28

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INTRODUCTION

The analysis of the relationship between human capital and economic growth has been in the center of attention of scientists since the second half of the last century. However, it is only with New Economic Growth Theories, especially Human Capital Theory, that human capital becomes involved and becomes one of the key factors in explaining the process of economic growth as seen in [1-9] and others. Undoubtedly, a significant contribution is reflected in the promotion of the idea that investing in human capital has multiple positive effects on both the individual and society as a whole. These effects have been termed human capital externalities in research [10-12] also point out that investing in human capital leads to technological progress and innovation, and ultimately increases the productivity of other factors in the growth process. In addition, [13] sees the greatest contribution of the new models in the fact that economic growth can grow indefinitely because the returns on investment in human capital will not fall with the growth and development of the economy as assumed in earlier theories. [14] who emphasizes the "economic importance of human capital, especially education," in economic growth and who believes that "only a small portion of growth and income can be explained by available physical capital", and [15], for whom education is a key factor which leads to the realization of different levels of wages in the labor market (growth of individual investments in education, regardless of gender and race will lead to increase in wages) are among key authors of Human Capital Theory. The state appears to be the most important investor in education through appropriate institutions that are part of the public spending system. However, individuals also invest in education. [1, 15-18], and [19-20] argued that all consumption aimed at improving productivity is an investment in human capital. [20; p.161] states that of all these investments, the most important is the investment in education and that "rates of returns are the best and most comprehensive way to measure the economic effects of education".

Main aim of this article is to empirically estimate the rates of returns on investment in education for three levels of education (primary, secondary and tertiary) in old and new members of European Union (EU). The old EU members are considered to be the EU15, i.e. 15 countries that gained full membership before 2004, while the new members are considered to be the countries from the last three enlargements, namely those from 2004, 2007 and 2013, i.e. 13 new members of the European Union. The defined time period for which the return on investment in education is estimated is from 1985 to 2014. For the purpose of empirical analyses, the data for the member states of the European Union in the defined period of time are available in International Social Survey Program (ISSP) database. Estimates of the return on investment in education have been made by using two methods based on the Mincer equation [18] which has its theoretical background in the Human Capital Theory. Those methods are Earnings function and Short-cut method. This article seeks to examine the universality of the conclusions on returns on investment in primary, secondary and tertiary education and the effects of the chosen methodology on the estimation. In addition, unlike most research on this topic, this research recognizes the need to assess returns on investment in education in Central and Eastern European countries during the transition process and transition reforms, and for the first time estimates returns on investment in education during and after the transition process of the new members of the EU. This has been the main motivation for this research.

The article is structured as follows. The next section provides a theoretical basis for investigation and discusses the existing empirical literature. Detailed elaboration of the important aspects of the conducted empirical analysis that includes the data used, variables, models and methods is provided in section 3 of this article. Discussion of the results and conclusion are provided in sections 4 and 5 respectively.

THEORETICAL FRAMEWORK: THE RELATIONSHIP BETWEEN EDUCATION AND LABOUR MARKET

From the aspect of theoretical framework, three directions have been identified to deal with the analysis of the relationship between education and certain aspects of labour market. The first deals with the analysis of the relationship between education, employee productivity and wages. Authors such as [18, 21, 22] viewed education as part of Human Capital Theory by analysing the contribution of education to productivity growth and earnings. [18] analysed the returns on investment in education through wage growth, while [23] analysed wage adjustments due to existing (different) characteristics of work. Other authors have also investigated different levels of earnings relative to completed education [23-28]. In literature, this is known as the returns on investment in education analysis. The authors grouped in the second direction analysed the connection between education and employment opportunities. It was shown in [29] that education increases employment opportunities and that educated workers are more productive than less educated ones, whose level of productivity is limited to specific jobs. [30] showed that education reduces the possibility of the occurrence and duration of unemployment, while [31] showed that unemployment increases the demand for education. Lastly, the third direction in theory deals with the analysis of the problem of mismatch of education and labour market skills and the existence of asymmetric information on labour market, which leads to sending wrong signals to companies and individuals looking for employment. Within this group, authors have analysed phenomena such as migration and brain drain [32], overqualification [33], and lack of education [34]. Authors such as [35-38] and [39] are also included in this theoretical direction, whose research is focused on the effectiveness of active labour market policies in reducing unemployment.

In case of investment in education, costs and benefits can be analysed on the same principle as when investing in some other sectors, projects, etc. According to [18], private benefits are measured by individual earnings. The easiest way to calculate private returns on investment in education is to monitor individual wages in labour market. Wages or salaries are the value paid for normal working hours that includes the basic wage, living expenses and other guarantees and payments. It does not include overtime work, bonuses, family allowances and other social benefits and payments that the employer pays directly to employees [40]. Thus [41] showed that one additional year of completed formal education brings an increase in earnings of 6 % to 10 %. A positive effect of investing in education at the individual level has been demonstrated in all the leading studies [18, 42]. In calculating private returns on investment in education, only opportunity costs are observed in most cases, while in estimations of public returns on investment in education, social costs imply government spending on education. However, benefits for society are also non-monetary (non-financial) benefits for individuals, the so-called externalities of education that include benefits such as improving health, social mobility, reducing inequality, etc. which have been most often cited [43, 44; p.148, 45].

Research often shows different and even contradictory results when it comes to all education levels and private and social rates of returns on investment in education. Estimates by authors such as [46-52] dealt with estimates of returns on investment in education in OECD countries, then the United States, the United Kingdom, Sweden, etc. However, literature dealing with estimates of returns on investment in education in developing countries has been less available. [53] focused on the return on investment at three levels of education in Turkey, [54] estimated the return on investment in education in China, [55] in South Africa and [56] in Colombia. One of the factors that has led to a relatively small number of studies on the return on investment in education in developing countries has certainly been a limited availability of data needed for quantitative analyses. There is an even greater gap in the available scientific literature in

terms of estimates of returns on investment in education in EU Member States, especially in the new Member States during the transition process. [57] included 39 studies and 11 countries in the their meta – analysis. The authors concluded that the speed of economic transformation (speed of the reform process) and the degree of economic imbalance measured by economic volatility are key factors in explaining the differences in rates of returns on investment in education in the analysed countries. [58] estimated the returns on investment in education for eight countries in transition for the period from the beginning of the transition process (1992 for all countries), with the exception of Hungary where returns are estimated from 1986 to 2002. The authors concluded that the evidence for the existence of a significant increase in returns in transition countries during the analysed period was weak. The gap in scientific literature regarding the comprehensive analysis of returns on investment in education in these countries, using a unique methodology in its assessment as well as the need for this type of research, is the key argument for justifying the research in this article. Additionally, this article bridges the gap by using the identical methodology and data from the same databases to answer the research questions.

A dominant methodology for estimating the return on investment in education is the one based on the Mincer equation, noting that in scientific literature there are different methods for estimating parameters and variations in the use of different variables in estimation. The use of the least squares method is visible in the work of [8] Harmon et al.; Quantile regressions in [8] and [59]; Instrumental variables in [60] and [61] and Heckman's two-stage model in [62]. Also, the analysis showed the existence of significant differences and contradictory conclusions regarding the estimates of return on investment in education. Authors in [28] also stated that there had been attempts to determine patterns of return on investment in education, but that this had proved impossible because studies used different models, patterns, and coverage, making them further incomparable. One of the most significant contradictions is found in the works of Carnoy and Psacharopoulos. [5, 6, 63] based on the analyses of the United States and Korea, state that rates of return on investment in primary, secondary, and tertiary education increase with the country's level of development. Authors in [64; p.71] point out that returns on investment in lower levels of education may fall faster than returns on investment in higher levels of education, especially in periods of rapid growth and industrialization. This could further mean that, for example, investing in tertiary education will have a greater impact on growth when a country reaches higher levels of development. Unlike Carnoy, other authors [2, 24-28] conclude that rates of return on investment in primary education are always the highest regardless of the level of development the country is at. Thus, rates of return on investment in education fall with the growth of the country's level of development. Some authors [65, 66] disagree with Psacharopoulos's theses and argue that concentrating investment in primary education would only further increase inequality and poverty. Likewise, the study on returns on investment in education in China [67] shows that returns on investment in secondary education and higher levels of education are higher than returns on investment in primary education. The same conclusions were reached in the analysis of the return on investment in education in Nigeria [68], and earlier [69] in the case of Papua New Guinea. On the other hand, we find scientific research that proves Psacharopoulos's thesis that the returns on investment in primary education are always the highest no matter what level of development the country is at. Works of [70] on the example of Thailand, [71] on the example of China and [72] on the example of Singapore show the greatest returns on investment in primary education. In addition to the aforementioned dominant view of returns on investment in education, we also encounter a group of authors whose conclusions are in the middle, that is, they have elements of both Carnoy's and Psacharapoulos's ideas. Conclusion in [73] is that the rate of return on investment in education during the first years is almost zero until it begins to grow rapidly until the age of 12 when it falls again. Authors in [23] also came to similar conclusions considering that

returns on investment in secondary education are much higher than those in primary and tertiary education. Individual country studies such as the analysis of returns on investment in education in Sweden [48], Turkey [53] and Colombia [56] also present similar conclusions. The analysis of the existing scientific literature provides insight into another important feature of research on the impact of human capital on economic growth, and that is the analysis of the effects of different levels of education (primary, secondary, tertiary) on economic growth. However, regardless of the level of education observed and the variables used, science is unique in the view that the development of human capital is a prerequisite for economic progress and that this should be taken into account at all stages of defining development and other policies. The gap in the scientific literature regarding the comprehensive analysis and estimation of returns on investment in education in selected countries and using a unique methodology in their assessment are key arguments for justifying the research focus of this article.

METHODOLOGY

DATA SOURCES

The core database used is ISSP. Authors in [73-75] used the ISSP [76] database for the purpose of estimating the return on investment in education. Sampling methods vary from country to country and change from year to year. Methods vary and some countries use a simple random sample while other countries apply systematic sample selection, namely a stratified random sample. This article also employs data from the World Bank's Development Indicators database and the EUROSTAT.

STATISTICAL ANALYSIS

We use the Earnings function and the Short-cut method, both based on the Mincer equation [18] to estimate the return on investment in education in selected EU member states. However, as proposed by [24], we employ the Extended Mincer equation or the Earnings Function which includes dummy variables PRIM (primary education), SEC (secondary education) and TER (tertiary education) for the three education levels. By including different levels of education in the Mincer equation, the assumption of equal returns on investment in education for all levels of education is avoided. The dependent variable lnW_{ij} denotes the logarithmic value of an individual's earnings j in time or year i and as such allows the analyses of the percentage change and the impact of independent variables in the model. The variable S_{ij} from the basic Mincer equation (represents the total number of years an individual j has spent in formal education) has been replaced by three dummy variables denoting the three levels of education. The variable Exp_{ij} denotes the years of work experience of an individual j in time (year) i, i.e. it enables the inclusion of the labour market segment in the analysis. The value of this variable is obtained by subtracting from the number of years spent in formal education and the number of years (age) at the beginning of education. Finally, the variable Exp^2_{ij} represents the squared value of the variable Exp_{ij} (years of work experience). Accordingly, we specify the following models to be estimated:

$$lnWij = \beta_0+\beta_1 \cdot PRIM+\beta_2 \cdot SEC+\beta_3 \cdot TER+\beta_4 \cdot Exp_{ij}+\beta_5 \cdot Exp_{ij}^2+\beta_6 \cdot GENDER+\beta_7 \cdot MARRIAGE+YR+\varepsilon_{ij}. \quad (1)$$

Equation (1) also contains additional dummy variables: GENDER – dummy variable denoting gender; MARRIAGE – dummy variable indicating marital status and the variable YR which indicates the year of the research, i.e. the year for which the return on investment in education is assessed. According to the International Standard Classification of Education (ISCED), each level of education is assigned an appropriate number of years of formal education. Private returns on investment in primary education (r_1) are calculated using the following equation:

$$r_1 \text{ (primary education vs. illiterate)} = \beta_1/S_p, \quad (2)$$

where β_1 is the regression coefficient with the variable PRIM and S_p is the number of years of education for the level of primary education**.** Private returns on investment in secondary education (r_2) are calculated using the following equation:

$$r_2\,(secondary\ vs.\ primary\ education)=(\beta_2-\beta_1)/(S_s-S_p), \quad (3)$$

where β_2 is the regression coefficient with the variable SEC, β_1 is the regression coefficient with the variable PRIM, S_s is the number of years of education for the level of secondary education, and S_p is the number of years of education for the level of primary education. Ultimately, private returns on investment in tertiary education are calculated as follows:

$$r_3\,(tertiary\ vs.\ secondary\ education)=(\beta_3-\beta_2)/(S_t-S_s), \quad (4)$$

where β_3 is the regression coefficient with the variable TER, β_2 is the regression coefficient with the variable SEC, S_t is the number of years of education for the tertiary education level and S_s is the number of years of education for the secondary education level. In order to estimate the regression coefficients with three variables of interest (PRIM, SEC and TER), a multiple regression analysis was performed as defined by equation (1). As one of the arguments in favour of using the Mincer extended equation, [26] cites a problem that may arise when estimating returns on investment in primary education. He states that there is a significant asymmetry when estimating returns for this level of education. Namely, students attending primary education (in most cases 6 to 12 years of age) are not able to earn during the same period, so it is wrong to calculate opportunity costs (as lost earnings) for the entire period. Further, articles [77] and [26] state that this problem is most effectively solved by using the extended Mincer equation because in that case a shorter period of time can be assigned to opportunity costs.

The Short-cut method is considered to be a simpler form of the Earnings function because the estimation using this method requires the average wage earned in labour market with a certain level of education in the year *i* [18]. In the Short-cut method for estimating the return on investment in education, private returns on investment in education in the year *i* are calculated as follows [18, 24]:

$$r_{ki}\,(private)=\frac{\overline{Y}_{ki}-\overline{Y}_{(k-\Delta S)}}{S_k*\overline{Y}_{(k-\Delta S)}} \quad (5)$$

The variable $r_{ki}(private)$ in (5) refers to private returns on investment in education for the level of education *k*, where *k* = 1 for primary education, *k* = 2 for secondary education and *k* = 3 for tertiary education in time (year) *i*. The variable $\overline{Y}_{ki}$refers to the average earnings of an individual with a completed *k* level of education in a year *i* while the variable $\overline{Y}_{(k-\Delta S)}$ is the average earnings of an individual with a completed first lowest level of education. Ultimately, the variable ΔS is the difference in years of education between *k* and the first lowest level of education and the variable S_k is the number of years of education corresponding to the level of education *k*. One of the disadvantages of this method is the absence of a variable that includes years of work experience (*Exp*).

The Short-cut method also allows calculation of social returns on investment in education in the year *i*, as follows:

$$r_{ki}\,(social)=\frac{\overline{Y}ki-\overline{Y}_{(k-\Delta S)}}{Sk*(\overline{Y}_{(k-\Delta S)}+G_{ki})} \quad (6)$$

In the equation (6), $\overline{Y}_{ki}$ represents the average earnings of an individual with completed *k* level of education in the year *i*, *Sk* is the number of years of education corresponding to the level of education *k*, ΔS is the difference in years of education between *ki* of the first lowest level of education, while *Gki* represents government spending per pupil for the level of education per year *i*. Social returns on investment in education in the Short-cut method are estimated by additional inclusion of government spending (G_k) for the *k* level of education. Using both methods, returns on investment in primary, secondary and tertiary education are estimated.

RESULTS

REGRESION ANALYSIS

Our methodological approach is multiple regression analysis based on the Mincer earnings function and Short-cut method as defined in equation (1) and equations (5, 6), respectively. The obtained regression coefficients are shown in table below.

Table 1. Regression analysis (old and new member states).

		Unstandardized Coefficients		Standardized Coefficients	*t*	Significance
		Unstandardized partial regression coefficient (B)	Std. Error	Beta		
New members EU	Constant	–204,7	0,614		–333,617	0
	PRIM	0,21	0,015	0,088	13,716	0
	SEC	0,458	0,016	0,17	28,472	0
	TER	0,724	0,017	0,18	41,951	0
	Exp	0,01	0,001	0,15	19,595	0
	Exp^2	0	0	–0,241	–30,932	0
	Gender	0,275	0,005	0,12	60,054	0
	Marriage	0,042	0,005	0,018	8,472	0
	YR	0,104	0	0,693	338,306	0
Old members EU	Constant	–49,349	0,407		–121,313	0
	PRIM	0,559	0,008	0,338	69,667	0
	SEC	0,937	0,009	0,503	109,633	0
	TER	1,2	0,009	0,527	133,025	0
	Exp	0,031	0	0,675	96,766	0
	Exp^2	0	0	–0,656	–95,425	0
	Gender	0,357	0,003	0,216	115,225	0
	Marriage	0,042	0,003	0,025	12,624	0
	YR	0,027	0	0,256	132,012	0

According to the results of the regression analysis, each additional year of work experience in the group of new members of the European Union brings an increase of about 1 % of salary, while in the group of old members it is 3,1 %. Men in the new EU member states earn on average about 27 % more than women, while the difference in the group of old members is about 37 %.

ESTIMATES BASED ON THE EARNINGS FUNCTION

PRIM, SEC and TER from Table 2 are the results of regression estimates with the above three variables and are needed to calculate private returns on investment in primary (r_1), secondary (r_2) and tertiary education (r_3).

Table 2. Regression coefficients and private returns on investment in education estimated by the Earnings Function in the old and new members of the EU, 1985 - 2014, (%).

	PRIM	SEC	TER	r_1	r_2	r_3
Old EU members	0,559	0,937	1,200	9,3	6,3	6,6
New EU members	0,21	0,458	0,724	3,5	4,1	6,6

The largest gap between the old and new members of the EU, according to the estimates obtained using the Earnings Function, is visible at the level of primary education and it

decreases when the level of education increases. The results of the estimated returns on investment in education in the group of old members are in line with the thesis in [26] that returns on investment in education are highest at the level of primary education regardless of the level of development of the country. The pattern of return on investment in education in the old EU member states is in line with a previous research [78] who points out the existence of the highest returns on investment in primary education, followed by a decline in returns on investment in secondary education and a slight increase again in tertiary education. The authors call this a U-shaped pattern. However, the estimated returns on investment in education in the group of new EU members show a different pattern. Namely, the returns in this group are more in line with previous researches [67-69], which pointed out the existence of the highest returns from investing in secondary and tertiary education. The ideas in [25, 26] are partly applicable to both groups of countries analyzed, at least as far as the pattern of return on investment in education is concerned. Namely, the author believes that it may come from a slight increase in return on investment in education in the transition from secondary to tertiary education. The average return on investment in education in the group of old members is 7,4 %, which is close to the OECD average (7,5 %) according to [28], while the average return on investment in education in the group of new EU members was lower than the estimated returns in the group of old members and amounted to 4,7 %.

Table 3. Regression coefficients and estimated private returns on investment in education by the Earnings function in the old member states of the EU, 1985 - 2014, (%).

Country	*PRIM*	*SEC*	*TER*	r_1	r_2	r_3
Austria	–0,097	0,219	0,269	–1,6	5,3	1,3
Belgium	0,187	0,456	0,743	3,1	4,5	7,2
Denmark	–0,09	0,126	0,37	–1,5	3,6	6,1
Finland	–0,077	0,212	0,479	–1,3	4,8	6,7
France	0,226	0,55	0,878	3,8	5,4	8,2
Germany	0,19	0,473	0,781	3,2	4,7	7,7
Ireland	–0,027	0,289	0,602	–0,4	5,3	7,8
Italy	–0,169	0,224	0,466	–2,8	6,6	6,0
Netherlands	0,161	0,336	0,556	2,7	2,9	5,5
Portugal	0,36	0,78	1,193	6,0	7,0	10,3
Spain	0,162	0,451	0,754	2,7	4,8	7,6
Sweden	0,006	0,182	0,404	1,0	2,9	5,6
United Kingdom	–0,592	0,3	0,592	–9,9	14,9	7,3

Private returns estimated by the earnings function in this group of countries were highest at the level of tertiary education in all countries except the United Kingdom, Austria and Italy as seen in Table 3. Earlier estimates of returns on investment in education in the United Kingdom have shown significant differences when compared to other countries. Namely, [23] estimated returns on investment in education for the United Kingdom between 7 % and 9 % (OLS estimates) and 11-15 % (estimates using instrumental variables), while estimates for other countries averaged around 6 % (OLS estimates) and 9 % (estimated using instrumental variables). [74] also point to relatively higher estimates of return on investment in education in the United Kingdom (8-10 %) than the average of other countries (6,5 %). Table 3 also shows negative returns on investment in education, exclusively at the level of primary education. According to the literature [73, 79] the occurrence of negative returns on investment in education is not uncommon as they are the same indicators of the existence of low returns for a certain level of education. The same applies to the results presented in Table 4.

Table 4. Regression coefficients and private returns on investment in education estimated by the Earnings function in the new EU member states, 1985-2014, percentage.

Country	*PRIM*	*SEC*	*TER*	r_1	r_2	r_3
Bulgaria	0,077	0,345	0,484	1,3	4,5	3,5
Croatia	0,094	0,367	0,66	1,6	4,6	7,3
Cyprus	–0,186	0,429	0,481	–3,1	10,3	1,3
Czech Republic	–0,07	0,098	0,319	–1,2	2,8	5,5
Estonia	–0,104	0,053	0,365	–1,7	2,6	7,8
Hungary	0,282	0,575	0,849	4,7	4,9	6,9
Latvia	–0,09	0,175	0,365	–1,5	4,4	4,7
Lithuania	–0,129	0,1	0,368	–2,2	3,8	6,7
Poland	0,028	0,221	0,655	0,5	3,2	10,9
Slovakia	0,152	0,364	0,665	2,5	3,5	7,5
Slovenia	0,047	0,45	0,731	0,8	6,7	7,0

The highest private returns on investment in tertiary education were recorded in all countries except in two cases: Bulgaria and Cyprus, where the highest returns on investment in secondary education were estimated. Estimated returns on investment in education in the new members of the Union show the highest average returns on investment in Hungary, Poland and Slovenia (above the average of the new members). These results are in line with the results of individual studies of these countries, namely: a growth in return on investment in education in Hungary during 1989-1996. [80]; a growth in return on investment in education in Poland during 1992-1995 [81] and a growth of returns on investment in education in Slovenia during 1993 [82]. [58] cite the example of Hungary and Poland as the countries with the highest returns on investment in education among the eight transition countries analyzed. The authors cite structural reforms and institutional frameworks as possible explanations for higher returns in Hungary and Poland, specifically citing a planned and structured education reform during the transition process as an important success factor. The estimate also shows the lowest average returns on investment in education (including old and new members of the European Union) in Austria (1,7 %). Authors [83] emphasize the existence of low returns on investment in education in Austria, citing the period 1981-1997 as the period of the largest decline in return on investment in education. Low average returns on investment in education in the group of old EU member states were also recorded in Sweden. [48] analyses the decline in returns on investment in education in Sweden.

ESTIMATES BASED ON SHORT-CUT METHOD

Estimated private returns on investment in primary, secondary and tertiary education in the new EU member states by the Short-cut method are highest at the tertiary education level, as is the case with the Earnings Function-based estimate.

Table 5. Private returns on investment in education estimated by the Short-cut method, old and new members of the EU.

	$r_{1(private)}$	$r_{2(private)}$	$r_{3(private)}$
Old EU members	7,8	6,3	7,8
New EU members	8,1	6,3	7,7

However, the estimation of private returns using the Short-cut method showed significantly higher returns in all countries, and especially higher returns at the level of primary education (Bulgaria, Croatia, Cyprus, Latvia, Slovakia). Nevertheless, the highest average returns estimated by the Short-cut method as is the case with the Earnings Function are in Hungary and Poland. Also, the estimates based on the Earnings Function show negative returns on

investment, which are almost non-existent in Short-cut method estimates (except in the case of Austria, Denmark and Estonia).

During the period from the beginning of the transition process of the new EU members, the average private return on investment in primary education was about 7 %, while estimating the return based on the Earnings Function we get an average return of 3,5 % for the same level education. And [84] emphasizes the importance of secondary education with special emphasis on vocational education in centrally planned economies, stating that significant financial resources have been invested in this level of education. Namely, planned production, which in a large number of cases referred to the exploitation of natural resources or their simple processing, required knowledge and skills at the level of primary and / or secondary vocational education. Additional justification for low returns from investment in primary and secondary education in the new member states of the Union, and in the above context, is in a significant share of persons with completed primary and secondary education in the structure of employees in the pre-transition period. These conclusions are consistent with the earlier conclusions of [85] and [58] who also point out the growth of returns in the first stages of transition and the absence of significant growth in the later stages of the process. The increase in returns on investment in education since the beginning of the transition is linked to the first phase of education reforms, which, according to [86-90], saw a significant inflow of foreign funding. However, there was no significant increase in return on investment in education during the same time period in the old member states. [74] state that there is a global trend of declining returns on investment at all levels of education during the 1990s and especially in the second half of the decade. [57] recorded an increase in average private returns on investment in education in transition countries from about 5 % (1989) to about 8 % (1990s). The evaluation by the Short-cut method showed identical results for the new members of the Union during these two periods. It also showed that average returns on investment during the 2000s remained at the same level as during the 1990s (8 %). [91] states that transition countries still face the problem of lack of skilled labor, which, according to [81], has led to a certain increase in returns which, according to the same author, has slowed down and is expected to stagnate and eventually decline. The estimated average returns on investment in education in the old member states of the Union began to fall in the 2000s compared to the 1990s. From a theoretical point of view, [22] states that the decline in return on investment in education comes with an increase in the share of the population with a high level of education, or generally due to an increase in the level of education of the workforce. This is also known in literature as the Becker's Woytinsky Lecture Hypothesis. [27, 74] also state the same reason for the decline in returns on investment in education.

Estimation of return on investment in education with the Short-cut method shows that in both groups of countries returns on investment in primary education were the highest, which is consistent with [2, 24-27] who believes that returns on investment in education are always the highest for primary education no matter what level of development the country is at. Also, the results of estimates of returns on investment in education using the Short-cut method show the largest decline in returns on investment in tertiary education during the period of initial transition reforms in the new member states (1988-1993) in contrast to [64], who emphasize the existence of a faster decline in returns from investing in lower rather than in higher levels of education.

In the group of old EU member states, the highest social returns on investment were recorded at the level of tertiary education, except in the case of Austria, where the highest social returns on investment in secondary education were recorded. Authors [83] cite an increase in the supply of highly educated labour as one of the reasons for the decline in the return on

investment in education in estimating the return on investment in education in Austria during the period 1981-1997. In [79], as previously stated in the article, authors consider that negative returns on investment are an indicator of very low returns on investment in education.

Table 6. Social returns from investment in primary, secondary and tertiary education for old and new EU members, average.

	Primary education	Secondary education	Tertiary education
Old members EU	6,4	9,7	15,2
New members EU	6,5	9,9	17,1

If we look at the period before the transition of the new members (1985-1990), the first phase of transition (1991-1990) and the second phase of transition and integration (2000-2014), the average social returns on investment in education are given in the table below:

Table 7. Average social returns on investment in education, 1998-2013, percentage.

	1986-1990	1991-1999	2000-2014
Old members EU	7,0	8,0	7,0
New members EU	5,0	8,0	8,0

Average social returns on investment in education in the old members of the Union indicate a decline during the 2000s, while average social returns on investment in education increased in the new members of the Union over the same time period. Namely, the old members of the European Union after 2001 also recorded a decline in investment in education, especially in tertiary education (a decline of 6 % of GDP in 2005 compared to the level of investment in 1998).

Table 8. Average investment in primary, secondary and tertiary education in old and new EU member states, 1998-2013, (% of GDP pc).

	Investment in primary education	Investment in secondary education	Investment in tertiary education
Old members EU	19,8	25,8	34,4
New members EU	19,2	22,4	26,7

The difference in investment at the tertiary education level is the biggest. According to [28, 92-93,], primary education is more socially profitable in low-income countries while secondary and tertiary education are more socially profitable in middle- and high-income countries. [92] showed that social returns from investment in tertiary education are highest in the case of developed countries (20 %) and are low or even negative at the level of secondary education because the benefits of secondary education coverage are small in comparison to costs. However, according to [26], social returns from investing in secondary education are highest.

DISCUSSION

NONLINEARITY IN RETURNS ON INVESTMENT IN EDUCATION

The research results in this article are partly in line with earlier findings by [23, 73, 75] which suggested nonlinearity in returns on investment in education. Namely, the linearity in returns would mean an increase in return on investment in education with an increase in the level of education. Authors such as [23, 73, 75] also point out the existence of nonlinearity in terms of the increase in return on investment in secondary education relative to primary education and the decrease in return on investment in tertiary education relative to secondary education. However, the pattern of nonlinearity in the scientific literature that deals with returns on investment in education is unclear. [73] argues that endogeneity in education may partly explain the increasing returns from investment in education from the beginning of the education process, but not the declining returns from the increasing levels of education.

The estimated returns on investment based on the Earnings Function and Short-cut method in this article show nonlinearity, as is the case with previous research [73, 75]. Nonlinearity occurs, among others due to:

- The assessment of return on investment in education considers only the quantity of education through the number of years spent in education without considering the quality of education and equal access to quality education for all participants in the education process.
- The assessment of the return on investment in education does not consider the specifics of national labour markets, which primarily refers to the relationship between the level of wages and labour productivity. [9] emphasises the existence of higher wages relative to the level of productivity in the public sector compared to the private sector, which can ultimately lead to the emergence of nonlinearity.
- The mismatch between the education system and the needs of labour market leads to a shortage or surplus of labour with certain knowledge and skills, which significantly affects the return on investment in education [26].

The most significant difference in terms of returns at different levels of education between the old and new members in the research exists at the level of tertiary education in the pre-transition period and the period from the beginning of the transition process. Namely, this is a period during which the new members were still predominantly centrally planned economies or were at the very beginning of the transition process, where market forces of supply and demand for certain skills did not affect the level of wages in labour market. [93] states that wage inequality was much lower during the transition process compared to the then OECD average. The increase in returns on investment in tertiary education in the new member states was recorded after 2007, where returns averaged 8 %. Returns from tertiary education in this group of countries during 1995-2014 ranged between 6-10 %, [26, 28, 49] and is the average for high-income countries and OECD countries. [69] also highlights the existence of a convergence of returns on investment in education in transition countries to a world average of 10 %. [26, 28] also concludes that the general picture of the return on investment in education is in fact based on the law of declining returns despite the slight increase in returns relative to the level of development of the country. If we analyse the return on investment by the level of education estimated by the Short-cut method, we come to the following conclusions about possible trends and patterns:

- return on investment in primary education in the new EU member states follows the trends in the old member states,
- the returns on investment in tertiary education in the old members of the Union in the second half of the 1980s were higher than the returns in the new members. The beginning of the transition (1990-1994) is described as a period marked by instability, but after that there comes an increase in returns on investment in tertiary education. However, as stated in [58], the evidence for the existence of increasing returns on investment in education is weak.

However, according to some authors, instabilities in terms of return on investment in education in the new member states of the Union during the transition process were not great given the number and importance of reforms. [57] offered an explanation based on reforms that focused on the liberalization of legislation, in particular labour legislation as well as other institutional constraints related to the regulation of wage levels in labour market. The faster the reforms were implemented, the faster the returns on investment adjusted to the market. [94] states that the countries in which the so-called Shock therapy (Bulgaria, Slovakia, and the Czech Republic) had higher average returns than investments in education in comparison to other countries. Also, other successful transition countries (Hungary, Poland) have returns on investment in education that are above average, as estimated in the research in this doctoral dissertation. Article [15]

emphasises the importance of structural transformations by stating that more educated individuals are able to better adapt and respond to new challenges and opportunities, which alleviates initial instabilities in labour market. Finally, [95] and [96] highlight a change in the value system in these new economies that took education into account when defining wages in labour market. The analysis of estimated returns on investment in primary, secondary and tertiary education using The Short-cut method shows an overall slight decline in returns on investment in education in all countries, and this is in line with the conclusions in [8, 26, 28, 73, 75, 97] regarding global trends in returns on investment in education.

NEGATIVE RETURNS ON INVESTMENT IN EDUCATION AND LESSON FOR SUSTAINABLE EDUCATION POLICY

Negative returns on investment in education are not uncommon and modern scientific literature especially in cases where returns are estimated in developed countries. A situation where there is a disparity in knowledge and skills in scientific literature is known as the case of overqualification and/or insufficient qualification of the workforce (persons accept employment where their level of knowledge and skills does not match job description and job tasks) [98]. In literature, we find more detailed analyses related to the cases of supply-side problems (supply increase). [99] analysed the case of the United Kingdom, stating that the increase in student enrolment in the mid-1980s, together with lower costs per student, led to a decline in returns on investment in education. [100] states that in the case of the United States during the 1970s, there was a decline in returns on investment in tertiary education due to an increase in the supply of university graduates. Authors such as [101] also state that a similar phenomenon is possible in developed countries during financial instabilities and crises when there is an increase in supply due to a falling employment and ultimately a fall in return on investment in education. [99] further states that the patterns of supply and demand in labor markets of developed countries have shown over the last forty years that there is a trend of insufficient qualifications at the beginning of the transition process and that after that comes a period of retraining as the transition process finalizes. Share of highly educated people in the total workforce has increased significantly in recent decades. Authors such as [79, 99, 102, 103] state that this is especially significant in the case of developed countries where investment returns fall and there is an increase in the level of education of the total population. The return on investment in education is reported to fall between 5-26 % in the event of retraining in developed countries [98, 99, 102, 104]. In addition to the stated (possible) reasons for the mismatch between supply and demand in labour market, which can be stated to be temporary, [99] argues that retraining is the result of a serious imbalance and as such may be permanent. The author also states that retrained individuals continue to be retrained for a given job over time and that retraining is the result of an inefficient resource allocation and also brings cost to both the individual and the society. As the only solution, the author cites a more efficient allocation of available resources. One of the basic policies that appears as a possible solution to the problem of negative returns on investment in education is labour legislation or a legal framework that will regulate labour market and thus significantly affect the return on investment in education. This applies in particular to legal provisions regarding the minimum wage that most directly affects supply and demand in labour market. However, as such, it can create a picture of non-existence of the need for education in society and ultimately lead to a decline in the return on investment in education [105, 106] cite Russia and other (communist) countries as cases where there are negative returns on investment in education resulting from government intervention or some other (non-market) compensation and compensation for work.

CONCLUSION

Investing in education is significant, whether it is investing in inputs or outputs of education, or in the process itself. However, contemporary literature that deals with returns on investment in

education, shows discrepancies in terms of conclusions, as well as recommendations and practical implications of research. We see a key difference in the reflections of authors Carnoy and Psacharopoulos. Namely, [5, 6, 63, 107] believes that returns on investment in education depend on the level of development of the country, while [2, 24-27] considers that returns on investment in primary education are always highest regardless of the level of development of the country. Estimated returns on investment in education in the EU member states indicate the existence of a gap between the old and new members of the Union and the absence of a significant increase in the return on investment in education. Using the Earnings function, we can see that estimated average private returns on investment in education in the new EU member states are lowest at the level of primary education. They increase with the increase of the level of education, which makes returns linear, while the results of the cutting method show nonlinearity, i.e. a U-curve. This research confirms the theses of [108] and [68], that different levels of return on investment in education are the result of using different methodologies in assessment, although this research went a step further by focusing on assessing returns by using data from the same (consistent) source. [2, 24-27] believes that returns are always highest for the level of primary education no matter what level of development the country is at. However, this article uses identical methods which lead to contradictory assessment results. Ultimately, one of the research objectives of this article is to contribute to scientific literature and to contemporary methodological discussions regarding the methodology for estimating the return on investment in education. Authors such as Menon [109, 110] have shown that Elaborate method and Short-cut method are interchangeable, and that both methods indicate significant heterogeneities between groups of countries and between countries separately.

This article, although covering a relatively long period of time (1985-2014), did not show homogeneous patterns of return on education investment in these two groups of countries but rather indicated significant heterogeneities among the countries themselves. Therefore, it is necessary to interpret the relationship between wages and levels of education for each country separately, taking into account its specifics such as the relationship between education policy and other policies (e.g. labour market policy and budgetary policies) and national reforms (whether transitional reforms or integration process), and taking into account regional and global trends in education, such as the growing importance of international organizations, regional projects, programs, etc. Another potential limitation of work is the data used in estimating the return on investment in education. Namely, estimating the return on investment in education using methods based on the Mincer equation requires data at the micro level, which in most cases are collected through differently designed questionnaires and collection methods in general. All research created in this way has its own limitations. Taking into account the declining returns on investment in tertiary education as well as the significant expansion of this level of education across EU countries, it is necessary to further analyse specific policies that could be used to overcome labour market mismatches such as identifying active policies and other policies that will stimulate a higher level of labour market flexibility.

REFERENCES

[1] Levin, R.M. and Shank, A.: *Educational investment in an urban society: Costs, benefits and public policy*.
Teachers College Press, New York, 1970,

[2] Psacharopoulos, G.: *Returns to education: An International Comparison*.
Jossey-Bass, Elsevier, Amsterdam, 1973,

[3] Norman, D.V.: *Education, earning and productivity*.
Universitetsforlaget, Oslo, 1976,

[4] Cohn, E. and Geske, S.T.: *The economics of education.*
Pergamon Press, New York, 1990,

[5] Carnoy, M.: *Rates of return to education.*
In: Carnoy, M., ed.: *International encyclopedia of economics of education*. Pergamon Press, New York, 1995,
[6] Carnoy, M.: *International encyclopedia of economics of education.*
Pergamon Press, New York, 1995,
[7] Johnes, G.: *The economics of education*.
St. Martin's Press, New York, 1993,
[8] Harmon, C.; Oosterbeek, H. and Walker, I.: *The returns to education: Microeconomics.*
Journal of Economic Surveys **17**(2), 115-155, 2003,
http://dx.doi.org/10.1111/1467-6419.00191,
[9] Barro, J.R. and Lee, J-W.: *A New Data Set of Educational Attainment in the World, 1950-2010*.
National Bureau of Economic research, Cambridge, 2010,
http://dx.doi.org/10.3386/w15902,
[10] Lucas, E.R.: *On the mechanics of economic development*.
Journal of Monetary Economics **22**(1), 3-42, 1988,
http://dx.doi.org/10.1016/0304-3932(88)90168-7,
[11] Ray, D.: *Development Economics*.
Princeton University Press, Princeton, New Jersey, 1998,
[12] Barro, J.R. and Sala-i-Martin, X.: *Economic growth.*
McGraw-Hill, New York, 1995,
[13] Barro, J.R.: *Determinants of Economic Growth, A Cross – Country Empirical Study*.
The MIT Press, Cambridge, 1997,
[14] Becker, S.G.: *Human capital: A theoretical and empirical analysis, with special reference to education*.
NBER, New York, 1964,
[15] Schultz, W.T.: *Investment in human capital: The role of education and of research.*
The Free Press, New York, 1971,
[16] Mincer, J.: *Investment in human capital and personal income distribution*.
Journal of Political Economy **66**(4), 281-302, 1958,
http://dx.doi.org/10.1086/258055,
[17] Mincer, J.: *On the job training costs, returns and some implications*.
Journal of Political Economy **70**(5), 50-79, 1962,
http://dx.doi.org/10.1086/258725,
[18] Mincer, J.: *Schooling, Experience and Earnings*.
NBER Press, New York, 1974,
[19] Becker, G.: *Underinvestment in college education*.
American Economic Review **50**(2), 346-354, 1960,
http://dx.doi.org/10.1016/0002-9394(60)90031-3,
[20] Becker, S.G.: *Human Capital, A Theoretical and Empirical Analysis with Special Reference to Education*.
The University of Chicago Press, Chicago, 1993,
[21] Schultz, W.T.: *Investment in human capital.*
American Economic Review **1**(2), 1-17, 1961,
http://dx.doi.org/10.1017/S0027950100018378,
[22] Becker, S.G.*: Investment in human capital: A Theoretical Analysis*.
Journal of Political Economy **70**(5), 9-49, 1962,
http://dx.doi.org/10.1086/258724,
[23] Heckman, J.J.; Lochner, J.L. and Todd, E.P.: *Earnings function and rates of return.*
Journal of Human Capital **2**(1), 1-31, 2008,
http://dx.doi.org/10.3386/w13780,
[24] Psacharopoulos, G.: *Returns to Education: An Updated International Comparison.*
Comparative Education **17**(3), 321-341, 1981,
http://dx.doi.org/10.1080/0305006810170308,

[25] Psacharopoulos, G.: *Returns to Education: A Further International Update and Implications.*
Journal of Human Resources **20**(4), 583-604, 1985,
http://dx.doi.org/10.2307/145686,

[26] Psacharopoulos, G.: *Returns to Investment in Education: A Global Update*.
World Development **22**(9), 1325-1343, 1994,
http://dx.doi.org/10.1016/0305-750X(94)90007-8,

[27] Psacharopoulos, G.: *Returns to investment in higher education. A European Survey.*
2009,

[28] Psacharopoulos, G. and Patrinos, H.A.: *Returns to investment in education: a further update.*
Education Economics **12**(2), 11-134, 2004,
http://dx.doi.org/10.1080/0964529042000239140,

[29] McKenna, C.J.: *Education and the distribution of unemployment*.
European Journal of Political Economy **12**(1), 113-132, 1996,
http://dx.doi.org/10.1016/0176-2680(95)00040-2,

[30] Devine, J.T. and Kiefer, M.N.: *Empirical labor economics: the search approach*.
Oxford University Press, Oxford, 1991,

[31] Kodde, A.D.: *Unemployment expectations and human capital formation*.
European Economic Review **32**(8), 1645-1660, 1988,
http://dx.doi.org/10.1016/0014-2921(88)90023-2,

[32] Star, O. and Chau, H.N.: *Human Capital Formation, Asymmetric Information, and the Dynamics of International Migration*.
Economic Series No.52, 1998,

[33] Sloane, J.P.: *Much ado about nothing: What does the over – education literature really tell us?*
In: Buchel, F.; de Grip, A. and Mertens, A., eds.: *Over – education in Europe: Current issues in theory and policy.* Edgar Elgar, Cheltenam, pp.11-48, 2003,

[34] Sloane, P.; Battu, H. and Seaman, P.: *Overeducation, undereducation and the British labour market.*
Applied Economics **31**(11), 1437-1453, 1999,
http://dx.doi.org/10.1080/000368499323319,

[35] Nickell, S.: *Unemployment and labour market rigidities: Europe versus North America.*
Journal of Economic Perspectives **11**(3), 55-74, 1997,
http://dx.doi.org/10.1257/jep.11.3.55,

[36] Nickell, S. and Layard, R.: *Labour market institutions and economic performance.*
In: Ashnefelter, O. and Card, D., eds.: *Handbook on Labor Economics*.
North Holland, Amsterdam, 1999,

[37] Nickell, S.; Nunziata, L. and Ochel, W.: *Unemployment in the OECD since the 1960s; what do we know?*
The Economic Journal **115**(500), 1-27, 2002,
http://dx.doi.org/10.1023/A:1017414823878,

[38] Layard, R.; Nicekell, S. and Jackman, R.: *Unemployment: macroeconomic performance and the labour market.*
Oxford University Press, Oxford, 1991,

[39] Calmfors, L.: *Active labour market policy and unemployment: A framework for the analysis of crucial design features.*
OECD Economic Studies **22**, 4-47, 1994,

[40] ILO Wage: *Wages.*
http://www.ilo.org/global/topics/wages/lang--en/index.htm,

[41] Duflo, E.: *Schooling and labor market consequences of school construction in Indonesia: Evidence from an unsual policy experiment.*
American Economics Review **91**(4), 795-813, 2001,
http://dx.doi.org/10.1257/aer.91.4.795,

[42] Patrinos, H.A. and Psacharopoulos, G.: *Returns to education in developing countries*.
In: Brewer, D.J. and McEwan, P.J.: *Economics of education.*
Elsevier, San Diego, 2010,

[43] OECD: *Understanding the Social Outcomes of Learning*.
OECD Publishing, 2007,
http://dx.doi.org/10.1787/9789264034181-en,

[44] Lim, D.: *Explaining economic growth: A new approach framework.*
Edward Elgar, Brookfield, 1996,

[45] McMahon, W.W.: *Education and development, Measuring the Social Benefits.*
Oxford University Press, Oxford, 2002,

[46] Jenkins, P.S.: *Did the middle class shrink during the 1980s? UK evidence from kernel density estimates.*
Economics Letters **49**(4), 407-413, 1995a,
http://dx.doi.org/10.1016/0165-1765(95)00698-F,

[47] Jenkins, P.S.: *Accounting for Inequality Trends: Decomposition Analyses for the UK, 1971-86.*
Economica, New Series **62**(245), 29-63, 1995,
http://dx.doi.org/10.2307/2554775,

[48] Bjorklund, A. and Kjellstrom, C.: *Estimating the return to investment in education: how useful is the standard Mincer equation?*
Economics of Education Review **21**(3), 195-210, 2002,
http://dx.doi.org/10.1016/S0272-7757(01)00003-6,

[49] Acemoglu, D. And Angrist, J.: *How Large Are Human-Capital Externalities? Evidence from Compulsory Schooling Laws.*
NBER Macroeconomics Annual **15**, 9-5, 2000,
http://dx.doi.org/10.1086/654403,

[50] Ciccone, A. and Peri, G.: *Identifying Human-Capital Externalities: Theory with Applications.*
Review of Economic Studies **73**(2), 381-412, 2006,
http://dx.doi.org/10.1111/j.1467-937X.2006.00380.x,

[51] Doughtery, C.: *Why are returns to schooling higher for women than for men?*
Journal of Human Resources **40**(4), 969-988, 2005,
http://dx.doi.org/10.3368/jhr.XL.4.969,

[52] Daly, A.; Lewis, P.; Corliss, M. and Heaslip, T.: *The private rate of return to a university degree in Australia*.
Australian Journal of Education **59**(1), 97-112, 2015,
http://dx.doi.org/10.1177/0004944114565117,

[53] Kara, O.: *Comparing two approaches to the rate of return to investment in education.*
Education Economics **18**(2), 153-165, 2010,
http://dx.doi.org/10.1080/09645290802416486,

[54] Qian, X. and Smyth, R.: *Private returns to investment in education: an empirical study of urban China.*
Post – Communist Economics **20**(4), 483-501, 2008,
http://dx.doi.org/10.1080/14631370802444732,

[55] Branson, N. and Leibbrandt, M.: *Educational Attainment and Labour Market Outcomes in South Africa, 1994-2010*.
OECD Economics Department Working Papars, OECD Publishing, No. 1022, 2013,

[56] Garcia-Suaza, A.F.; Guataqui, C.J.; Guarra, J.A. and Maldonado, D.: *Beyond the Mincer equation: the internal rate of return to higher education in Columbia.*
Education Economics **22**(3), 328-344, 2014,
http://dx.doi.org/10.1080/09645292.2011.595579,

[57] Fleisher, M.B.; Sabirianova, K. and Wang, X.: *Returns to Skills and the Speed of Reforms: Evidence from Central and Eastern Europe, China, and Russia.*
Journal of Comparative Economics **33**(2), 351-370, 2005,
http://dx.doi.org/10.1016/j.jce.2005.03.003,

[58] Flabbi, L.; Paternostro, S. and Tiongson, R.E.: *Returns to education in the economic transition: A systematic assessment using comparable data.*
Economics of Education Review **27**(6), 724-740, 2008,
http://dx.doi.org/10.1016/j.econedurev.2007.09.011,

[59] Fitzenberger, B.K.R. and Machado, A.F.J.: *Economic application of quantile regression: Studies in empirical economics.*
Physica-Verlag, New York, 2002,

[60] Denny, K. and Harmon, C.: *The Impact of Education and Training in the Labour Market Experiences of Young Adults*.
IFS Working Paper, No. W00/08, 2000,

[61] Zamarro, G.: *Accounting for heterogeneous returns in sequential schooling decisions.*
Journal of Econometrics **156**(2), 260-276, 2010,
http://dx.doi.org/10.1016/j.jeconom.2009.10.018,

[62] Serumaga-Zake, A.E.P. and Kotze, D.: *The use of the double-hurdle model in estimating the rate of return to education in South Africa*.
Journal of Studies in Economics and Econometrics **27**(3), 103-119, 2003,
http://dx.doi.org/10.1080/10800379.2003.12106355,

[63] Carnoy, M. and Marenbach, D.: *The return to schooling in the United States, 1939-1969.*
The Journal of Human Resources **10**(3), 312-331, 1975,
http://dx.doi.org/10.2307/145194,

[64] Ryoo, J-K.; Nam, Y-S. and Carnoy, M.: *Changing rates of returns to education over time: A Korean case study.*
Economics of Educations Review **12**(1), 71-80, 1993,
http://dx.doi.org/10.1016/0272-7757(93)90044-H,

[65] Jain, B.: *Returns to education: Further analysis of cross country data*.
Economics of Education Review **10**(3), 253-258, 1991,
http://dx.doi.org/10.1016/0272-7757(91)90048-T,

[66] Curtin, T.R.C. and Nelson, E.A.S.: *Economic and health efficiency of funding policy.*
Social Science and Medicine **48**(11), 1599-1611, 1999,
http://dx.doi.org/10.1016/S0277-9536(99)00084-2,

[67] Zhang, Q. and Zou, H-F.: *Returns to education, productivity and economic growth in China*.
Journal of Comparative Policy Analysis **9**(3), 293-308, 2007,
http://dx.doi.org/10.1080/13876980701494707,

[68] Amaghionyeodiwe, L.A. and Osinubi, T.S.: *Do Higher Levels Of Schooling Lead To Higher Returns To Education In Nigeria?*
Applied Econometrics and International Development **7**(1), 2007,

[69] Gibson, J. and Fatai, O.K.: *Subsidies, selectivity and the returns to education in urban Papua New Guinea.*
Economics of Education Review **25**(2), 133-146, 2006,
http://dx.doi.org/10.1016/j.econedurev.2005.01.002,

[70] Schutz, T.P.: *Investment in the schooling and health of women and man*.
The Journal of Human Resources **28**(4), 694-734, 1993,
http://dx.doi.org/10.2307/146291,

[71] Hossain, I.S.: *Making education in China equitable and efficient.*
World Bank Policy Research Working Paper, 1997,

[72] Sakellariou, C.: *Rates of return to investment in formal and technical/vocational education in Singapore.*
Educational Economics **11**(1), 73-87, 2003,
http://dx.doi.org/10.1080/09645290210127525,

[73] Trostel, A.P.: *Nonlinearity in the return to education*.
Journal of Applied Economics **8**(1), 191-202, 2005,
http://dx.doi.org/10.1080/15140326.2005.12040624,

[74] Walker, I. and Zhu, Y.: *The Returns to Education: Evidence from the Labour Force Survey.*
Research Report RR313, 2001,
[75] Trostel, P.; Walker, I. and Woolley, P.: *Estimates of the economic return to schooling for 28 countries.*
Labour Economics **9**(1), 1-16, 2002,
http://dx.doi.org/10.1016/S0927-5371(01)00052-5,
[76] ISSP. *International Social Survey Database.*
[77] Dougherty, R.S.C. and Jimenez, E.: *The specification of earnings functions: tests and implications.*
Economics of Education Review **10**(2), 85-98, 1991,
http://dx.doi.org/10.1016/0272-7757(91)90001-6,
[78] Hartog, J.; Pedro, T.P. and Vieira, A.C.J.: *Changing returns to education in Portugal during the 1980s and early 1990s: OLS and quantile regression estimators.*
Applied Economics **33**(8), 1021-1037, 2001,
http://dx.doi.org/10.1080/00036840122679,
[79] Henderson, J.D.; Polachek, W.S. and Wang, L.: *Heterogeneity in Schooling Rates of Return.*
Economics of Education Review **30**(6), 1202-1214, 2011,
http://dx.doi.org/10.1016/j.econedurev.2011.05.002,
[80] Kertesi, G. and Kollo, J.: *Economic transformation and the reevalution of human capital – Hungary, 1986-1999.*
Budapest Working Papers on the Labour Market from Institute of Economics, Centre for Economic and Regional Studies, No 104, 1999,
[81] Rutkowski, J.: *High Skills Pay – off: The Changing Wage Structure during Economic Transition in Poland.*
Economics of Transition **4**(1), 89-112, 1996,
http://dx.doi.org/10.1111/j.1468-0351.1996.tb00163.x,
[82] Stanovnik, T.: *The Returns to Education in Slovenia.*
Economics of Education Review **16**(4), 443-49, 1997,
http://dx.doi.org/10.1016/S0272-7757(97)00006-X,
[83] Fersterer, J. and Winter-Ebmer, R.: *Are Austrian Returns to Education Falling Over Time?*
Labour Economics **10**(19), 73-89, 2003,
http://dx.doi.org/10.1016/S0927-5371(02)00105-7,
[84] Sosic, V.: *Premium for education and investment in human capital in Croatia*. In Croatian.
Financijska teorija i praksa **27**(4), 439-455, 2003,
[85] Card, D.: *Estimating the return to schooling: Progress on some persistent econometric problems.*
Econometrica **69**(5), 1127-1160, 2001,
http://dx.doi.org/10.3386/w7769,
[86] OECD: *Estonia*: *Reviews of National Policies for Education.*
OECD Publishing, 2001,
[87] OECD: *Latvia*: *Reviews of National Policies for Education.*
OECD Publishing, 2001,
[88] OECD: *Lithuania: Education and Skills. Reviews of National Policies for Education.*
OECD Publishing, 2002,
[89] OECD: *Bulgaria, Science, Research and Technology. Reviews of National Policies for Education.*
OECD Publishing, 2004,
[90] OECD: *Romania, Education and Skills. Reviews of National Policies for Education.*
OECD Publishing, 2000,
[91] EBRD: *Transition report: Innovation in transition.*
EBRD, London, 2014,

[92] Mingat, A. and Tan, J-P.: *The full social returns to education: estimates based on countries' economic growth performance*.
World Bank, Washington, D.C., 1996,
[93] World Bank: *Enhancing job opportunities – Eastern Europe and the Former Soviet Union.*
World Bank, Washington, D.C., 2005,
[94] Hung, F-S.: *Returns to education and economic transition: an international comparison.*
Journal of Comparative Education **38**(2), 155-171, 2008,
http://dx.doi.org/10.1080/03057920701420957,
[95] Chase, S.R.: *Markets for Communist Human Capital: Returns to Education and Experience in the Czech Republic and Slovakia*.
Industrial and Labor Relations Review **51**(3), 401-423, 1998,
http://dx.doi.org/10.1177/001979399805100303,
[96] Flanagan, J.R.: *Were Communists Good Human Capitalists? The Case of the Czech Republic.*
Labour Economics **5**(2), 295-312, 1998,
http://dx.doi.org/10.1016/S0927-5371(97)00029-8,
[97] Harmon, C.; Hogan, V. and Walker, I.: *Dispersion in the economic return to schooling.*
Labour Economics **10**(2), 205-2014, 2001,
http://dx.doi.org/10.1016/S0927-5371(03)00003-4,
[98] Galasi, P.: *The effect of educational mismatch on wages for 25 countries*.
Budapest Working Papers on the Labour Market BWP-2008/8 2008,
[99] Chevalier, A.: *Measuring over-education.*
Economics **70**(279), 509-531, 2003,
http://dx.doi.org/10.1111/1468-0335.t01-1-00296,
[100] Freeman, B.R.: *The overeducated American.*
Academic Press, New York, 1976,
[101] Dutta, J.; Sefton, J. and Weale, M.: *Education and public policy.*
Fiscal Studies **20**(4), 351-386, 1999,
http://dx.doi.org/10.1111/j.1475-5890.1999.tb00017.x,
[102] Dolton, P. and Vignoles, A.: *The incidence and effects of overeducation in the U.K. labour market*.
Economics of Education Review **19**(2), 179-198, 2000,
http://dx.doi.org/10.1016/S0272-7757(97)00036-8,
[103] Moffitt, R.: *Estimating marginal returns to higher education in the UK.*
National Bureau of Economic Research Working Paper, 2007,
http://dx.doi.org/10.3386/w13534,
[104] Cohn, E. and Khan, P.S.: *The wage effects of overschooling revisited.*
Labour Economics **2**(1), 67-76, 1995,
http://dx.doi.org/10.1016/0927-5371(95)80008-L,
[105] Funkhouser, E.: *Changes in the returns to education in Costa Rica.*
Journal of Development Economics **57**(2), 289-317, 1998,
http://dx.doi.org/10.1016/S0304-3878(98)00090-X,
[106] Benitez-Silva, H. and Sheidvasser, S.: *The Educated Russian's Curse: Returns to Education in the Russian Federation*.
Department of Economics Working Papers 00-05, Stony Brook University, 2000,
[107] Carnoy, M.: *Political economy of education.*
In: Labelle, T., ed.: *International encyclopedia of economics of education.*
Pergamon Press, New York, 1972,
[108] Krueger, B.A. and Lindahl, M.: *Education for Growth: Why and For Whom?*
Journal of Economic Literature **39**(4), 1101-1136, 2001,
http://dx.doi.org/10.1257/jel.39.4.1101,
[108] Menon, M.E.: *Perceived rates of return to higher education in Cyprus.*
Economics of Education Review **16**(4), 425-430, 1997,
http://dx.doi.org/10.1016/S0272-7757(96)00065-9,

[109]Menon, M.E.: *Rates of return to higher education: Further evidence from Cyprus*. Economics of Education Review **27**(1), 39-47, 2008, http://dx.doi.org/10.1016/j.econedurev.2006.07.009.

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EMPLOYMENT OF ECONOMICS GRADUATES: DO GRADE POINT AVERAGES MATTER?

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ABSTRACT

The level of educational attainment and skills of young people have a strong influence on economic activity and consequently on their employment rates. Grade point averages (GPA) of undergraduate studies keep on being a relevant selection tool in the employment process. GPA metric is believed to be an index of mental ability related later to job performance and successful outcomes. Youth employment in Albania and North Macedonia is low and unresponsive to the education of young people. This study offers an overview of youth unemployment rates in the Western Balkan countries. It uses survey analyses of tertiary graduates of economics programs at Luigj Gurakuqi University in Albania and South-East European University in North Macedonia. A comparative analysis focusing on the determinants of the employability of economics graduates in the last decade is realized using qualitative and quantitative analyses for each university. Logistic regression results indicate that the GPA of the bachelor program is an important factor in the employment of graduates. Additional variables such as gender, time of graduation, and obtaining a master's degree play an important role in being employed in Luigj Gurakuqi University. Developing educational attainment by updating educational and vocational curricula taking into account market demands would improve the school-to-work transition of youth.

KEY WORDS

youth employment, unemployment, graduates

CLASSIFICATION

JEL: J01, J21, J64

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INTRODUCTION

Albania and North Macedonia, as many countries in South-Eastern Europe, struggle with youth unemployment, which is persistent, acute, and unresponsive to the education of young people in both countries. Educational attainment is considered a strong predictor in long-term employment and active economic activity, especially among the youth [1]. As such continuing higher education is perceived as a guarantee for a future better and higher-paying job. While an indication of academic achievement is considered the GPA, generally believed as an index of mental ability [2], as well one's motivation to learn [3]. It is demonstrated that recruiters are encouraged to evaluate applicants more favourably due to the presence of a high GPA on their resume [4]. There are other viewpoints on the GPA metric, except that it generally might predict the success of the worker job outcome. It helps predict the employee's predisposition to freely and voluntarily offer helpful behaviour in the work environment and to co-workers. If GPA helps predict both job success or performance, and one's freely tendency to engage in helpful behaviour in the organization, then the GPA metric has increased value [5]. Studies have revealed that unemployed students were more likely to have lower GPAs, while employed students were more likely to have higher GPAs [6]. Other things being equal, in particular in high-paying foreign firms, graduates with better college GPAs were more likely to be employed. Furthermore, female graduates advantage in GPA favour females in employment, helping to produce also a gender employment gap [7].

The number of higher education institutions has been growing in the last decades. In 2003 Albania and North Macedonia joined the Bologna process going through all the related reforms in higher education as changes in funding arrangements, changes in curricula, and changes in higher education legislation. In 2015, there were 240 registered higher education institutions (HEI) in Western Balkans with 586 faculties. In this classification Kosovo and Montenegro are in better positions, respectively with 2,2 and 2,1 higher education institutions per 100 000 population, followed by Albania with 1,3 of higher education institutions, Serbia and Bosnia Herzegovina each by 1,2 higher education institutions, and last North Macedonia with 0,8 higher education institutions [8]. The biggest challenge of higher education is insufficient investment in education by the state. Higher salaries for professors, greater funding for research, and investment in labs and information technology would increase the quality of education [8]. The rising of digitalization in the economy has led to a demand for highly skilled graduates with different knowledge and skills, aimed to support the complexity of modern business [9]. Transfer of knowledge from academia to business is considered an essential factor for creating innovation, and this transfer would significantly be improved through the creation of university spin-offs [10].

Between 2010 and 2019, an average of 49,5 % of young people in North Macedonia was unemployed and the gap in unemployment of adults and young people has widened since 2010, while for the same period in Albania an average of 31,5 % of young people was unemployed [11]. Youth are more likely to be unemployed and underemployed because of lack of experience in job searching, less power in wage bargaining, and as a result, they are more likely to accept underpaid jobs that do not match their skills [12]. Analyses of youth transition from school to work in Albania have shown the phenomena of skills mismatch with the labour market positions. There is a mismatch between labour market features of supply of qualifications and diplomas, and demand skills perceived by the employers [13]. Studies in the North Macedonia labour market suggest that due to the very low level of demand for labour, there is an abundance of highly educated unemployed young people, and employers select workers with the highest level of education besides the complexity of the workplace [14]. However, it is not clear to what extent various characteristics impact the likelihood of employment among

young graduates. To shed some light on this area, this research focuses on the determinants of youth employment based on survey research conducted on a sample of graduated students in economics programs at two universities in Albania and North Macedonia.

The rest of the article is organized as follows. The following section explores the impact of education on youth employment. The third section analysis labour market indicators in Western Balkans, whilst the data and methodology adopted in the empirical investigation of the determinants of the probability of being in employment is explained in the fourth section. The results are presented in the fifth section and the final section summarises the key findings and considers their policy implications.

EDUCATION AND YOUTH EMPLOYMENT

Tertiary education is considered a crucial pathway for a better job or higher-paid salary perspective. During the past decade, most of the countries experienced unprecedented growth in tertiary education indicators [15]. The high rates of student enrolments, as well as the graduation rates of tertiary education, demonstrate the increasing phenomena. The employment of young tertiary-educated adults has advantages over young upper secondary education adults [16]. Previous research indicates that the success of the hiring process is more attributed to the undergraduate GPA compared to other advanced degree GPAs. The validity of college GPA is significantly larger in the hiring process of skilled jobs compare to other degrees of GPAs, followed by the master studies and the doctoral GPAs [17]. Hence, GPA persists in being a relevant selection tool [18]. It is considered a determining factor ensuring better skills and better performance in the workplace.

Studies have shown that the category of graduated workers is more affected by the unemployment during the country's economic recessions. In EU, during the economic recession of 2008-2009, unemployment rates among those with tertiary education qualifications were higher than those with primary or secondary qualifications [19]. Therefore, youth education focus has been the agenda of many global institutions in many developing countries [20, 21], as well as a popular research topic among researchers in many European countries [22, 23]. According to the Institute of Labour Organization in the developing economies, the labour market has been characterizing by the vulnerability of young people in terms of (i) longer and more insecure school-to-work transitions, (ii) increased impassiveness from the labour market, (iii) higher unemployment, (iv) lower-quality jobs for those who find work [24]. The study examines the relationship between education and employment outcomes among youth in developing countries through the identification of qualifications mismatch and gives a contribution to the debate on how to address discrepancies more effectively between the youth labour market demand and supply.

The review of the literature revealed that political, economic, and social factors can affect the high unemployment rate among young people and that the impact depends on a country or region analysed. Key aspects of active government labour market policies were analysed in Albania, North Macedonia, and Bosnia and Herzegovina. The level of public expenditure on active labour market policies is very low for these countries and far from the EU average of 0,5 % of GDP [25]. Skilled people who cannot find a job in the formal sector accept jobs that are below to their qualifications or they work in the informal sector [26]. There is a relationship between youth unemployment and the determinants of the labour market flexibility for Balkan countries [27]. Where according to the "Economic Freedom" database of the Fraser Institute, the indicators of the labour market flexibility include the variables of employment barriers as the minimum wage, hiring regulations, collective bargaining, employment taxes costs and dismissals costs.

In Albania, higher education seems not to have effects on youth employment and it is not a guarantee for finding a job. This raises the question to what extent tertiary education is effectively geared to the labour market needs and the issue is further highlighted by the high level of skill mismatch. The mismatch implies that graduated workers with high education were over-qualified for their job. The graduated youth are particularly at risk in the labour market because they are neither improving their future employability through investment in skills nor gaining experience through employment. According to Institute of Statistics in Albania, people with secondary education have higher unemployment rates (14,4 %) followed by people with high education (12,3 %) [11]. A new law no 586, date 30 August 2019, was decreed by government of Albania, in order to stimulate meritocracy in new employments in public administration. The law on "Employment of excellence students in public administration institutions' gives advantages of graduated students with 9 to 10 GPA at their bachelor or master studies, compared to their peers, to be employed in public institutions.

Although unemployment affects all segments of population in Bosnia and Herzegovina, youth aged group between 15 and 29 years are more affected by unemployment. This group of population accounts for about 1/4 of the total country population and a significant share of youth is working in the informal sector, under unfavourable conditions of low paying jobs, or being unemployed. During the years, structured policies approach that contribute to the long term youth employment, are neglected [28]. Kosovo is facing high youth unemployment mainly for two reasons. First, Kosovo's labour market does not offer many job opportunities, hence, many youths remain unemployed for a long-term period. Second, due to the education system in Kosovo, youth is not well prepared to enter the labour market. Inappropriate or nonexistent skills make them less employable over a long-term period [29]. Youth unemployment rates in Montenegro remain relatively high and the job mismatch indicators point out the difficult 'journey' for young graduates into their first work experience and jobs. High educational levels have the lowest unemployment-to-employment ratio of all education levels, and there is a larger degree of over-qualification among the higher educated than among the intermediate levels. The highest share of unemployment is among young people aged 15–29 (25,8 % in 2017), making difficult the transition from school into employment. Quite positive in comparison to peer countries, the unemployment of young people is decreasing, which means that there is less 'underutilization' of youth potential [30]. In Serbia, young people are attracted to be enrolled in a tertiary education due to higher wages attained by university graduates, and to the limited job opportunities available in the labour market. Even though having a university degree provides some protection against unemployment, often jobs fail to match their degree qualifications. The unemployment rate of recent graduates is high [31]. In North Macedonia according to World Bank, the five priorities areas against the high youth unemployment are the lack of experience among young workers, the skills gap among the employees, the underemployment in jobs below their level of education, detached and not adequate labour market information between the firms and the educational systems, and labour market regulations regarding short-term contracts that disproportionally affect youth [32].

DEMOGRAPHIC AND LABOUR MARKET OVERVIEW

Albania and North Macedonia are two small countries located in the Western Balkan geographical area. The countries are characterized by similar economic and demographic factors. Both countries have experienced the long centralized economic system for almost half a century. The free market economic system was established only after the 1990-s. The following years have been associated with high rates of population emigration and low employment rates, especially during the first decade. Countries have experienced relatively high economic growth rates and are characterized by low GDP per capita as shown in Table 1 compared to other European countries 35 623 US$ [28].

Table 1. Countries macroeconomic indicators, 2019. Sources: Ministry of Finance and Economy, Albania; Ministry of Finance, North Macedonia and State Statistical Office, North Macedonia.

Indicators	Albania	North Macedonia
Population, 10^6	2,86	2,08
Real GDP growth, %	3,81(3-rd Q)	3,5
GDP per capita, EUR	4,680	5,462
Employment, %	60,7(3-rd Q)	47,4 (3-rd Q)

Both countries are characterized by a small population number and young median age population. The median age is 36,4 years in Albania and 39.1 years in North Macedonia [33]. While the median age of the entire EU population stands at 42,6 years [34]. Although economic and labour market performance differs between selected countries, they have in common many challenges as all the western Balkan countries. Labour market of the western Balkan countries is characterized by low participation and employment rates. Croatia has the highest employment rate followed by Albania, Serbia, North Macedonia, and Montenegro. The situation is worse in Kosovo with only 24,8 % of the labour force employed. They share the problem of high unemployment rates compared to the EU-28 average of 7,4 %. Kosovo followed by North Macedonia, Bosnia and Herzegovina and Montenegro have the highest unemployment rates (Table 2).

Table 2. Unemployment and Employment rates of Western Balkan Countries (15-64 years), 2019. Sources: CEIC, Eurostat; Statista; Countries Employment/Unemployment Rates; ILOSTAT; SDG indicators; OECD stat.

EU (European Union 28)	7,4 %	73,1 %
Albania	12,3 %	61,4 %
Bosnia and Herzegovina	18,4 %	35,2 %
Croatia	6,6 %	62,2 %
Kosovo	25,7 %	30,7 %
North Macedonia	21,6 %	48,1 %
Montenegro	16,1 %	47,5 %
Serbia	13,5 %	49,7 %

All countries, except Croatia, experienced high unemployment rates, especially in the youth population category. The phenomenon of the youth age category unemployment is also high and persistent in Western Balkan countries. Comparing youth unemployment rates of the EU-28 average of 14,9 %, it may be concluded that youth in the EU countries are more likely to get the job than their peers from the Western Balkans. Though declining, unemployment among young people remained high in several countries of the region, ranging from countries with very severe youth unemployment rates as Kosovo, followed by Bosnia and Herzegovina and North Macedonia. North Macedonia is characterized by the lowest decrease range of unemployment rate with only 2,6 % during the last 5 years compared to other countries. Although the rate fell to 35 % in 2018, it was twice as high as the EU average [35]. Comparing youth unemployment rates with the EU-28 average, it may be concluded that youth in the EU countries are more likely to get a job than their peers from the Western Balkans (Table 3).

Youth unemployment rates of North Macedonia have been in the highest levels after the 1990-s (Figure 1). In 1991 the youth unemployment rate in Albania was 25 % and in North Macedonia 63 %. However, during the last two decades, there have been continuous decreases but still not satisfying compare to other west Balkan countries. Both countries have continued experiencing high youth unemployment rates during the last decades. Despite the very low decreases in unemployment rates, Albania is slightly in better condition compared to its neighbour country North Macedonia. In 2019 youth unemployment ranged from 28 % in Albania to 32 % in North Macedonia.

Table 3. Youth unemployment rates of Western Balkan Countries (15-24 years). Sources: Statista; Trading-Economics; Countries statistics; ILOSTAT; SDG indicators; OECD.

	2015	2019
European Union 28	20,3	14,9
Albania	39,8	28,63
Bosnia and Herzegovina	62,3	46,12
Croatia	42,3	17,82
Kosovo	57,7	48,92
North Macedonia	47,3	44,74
Montenegro	37,6	29,11
Serbia	43,2	32,23

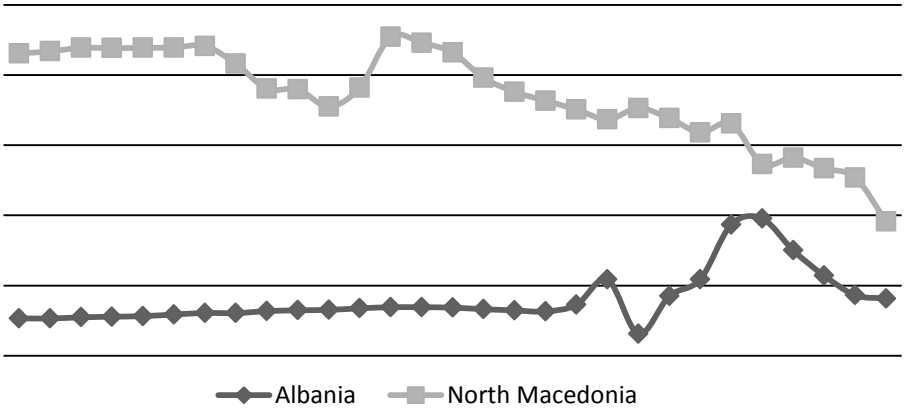

Figure 1. Youth Unemployment Rates of Albania and North Macedonia, 1991-2019. Sources: Macrotrends.net. Youth Unemployment Rate 1991-2020 of Albania and North Macedonia.

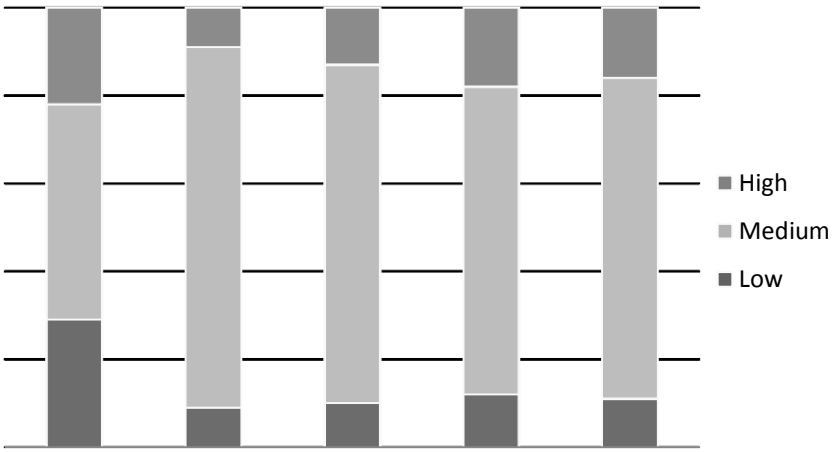

Figure 2. Educational Attainment of Unemployed Youth, 2018. Sources: World Bank Group and The Vienna Institute for International Studies, 2019. SEE Jobs Gateway Database, based on data provided by national statistical offices and Eurostat. Note: Missing data information for Montenegro.

In terms of education, the largest share of unemployed young people in all the western Balkan countries were those with a medium level of education ranging from 50 % in Albania to 83 % in Bosnia and Herzegovina [36]. Unemployed youth with tertiary education seems to be more likely in high rates in Albania, North Macedonia, Serbia, Kosovo, and lastly in Bosnia Herzegovina.

METHODOLOGY

Online questionnaires are delivered to students of Luigj Gurakuqi University (LGU) in Albania and South East European University (SEEU) in North Macedonia. LGU is located in Shkodra city with a population of 77 000 inhabitants, is positioned in the northwest of Albania. SEEU is located in Tetovo city with a population of 52 000 inhabitants, is positioned in the statistical region of Polog in the northwest of North Macedonia. Polog borders Kosovo and Albania. The quantitative analyses of the youth unemployment have taken into consideration the geographical vicinity of the Shkodra city and Tetovo city, and similarity in their small population size. Furthermore, the same graduation economics program offered by both universities is taken into account. The questionnaire is organized into three sections: the first section includes respondents characteristics such as age, gender, labour status, etc.; the second section includes questions to the employed graduates, while the third section to the unemployed graduates. The samples are the cohort of students who graduated in the last decade during the academic years 2009 until 2019, in both universities, responded to the questionnaires. There have been 175 answers from graduated students of the faculty of Economics of LGU and 92 answers from SEEU. Both universities 'students pertain to the age category 21-30 years old. Descriptive statistics of the questionnaire's results are presented. A multivariate logistic analysis is performed for evaluation of the relationship between predictor variables and graduate employability.

Logistic regression is also known as the logit regression or logit model is a statistical technique used with sigmoid function. The logit regression is an S-shaped curve that can take any real-valued number and map it into a value between 0 and 1, but never exactly at those limits. It is named so because it uses a Sigmoid curve or function which is of "S" shape and is a special case of the logistic function.

In logistic regression, the dependent variable is a binary variable that contains data coded as 1 (e.g. yes, success, etc.) or 0 (e.g. no, failure, etc.) [37, 38]. Often referred to as a binary classifier, it is used when the dependent variable has two possible outcomes and is categorical. It works with binary data and is used in our model to estimate the probability of the employability of the graduate students and answers: 1 – employed and 2 – not-employed. The "log-odds" of the dependent variable's probability is modelled by a linear combination of independent variables:

$$\text{logit}(p) = b_0 + b_1X_1 + b_2X_2 + \ldots + b_kX_k. \quad (1)$$

The function logit**(·)** is defined as the logged odds of probability p:

$$\text{logit}(p) = \ln(Odds_p) = \ln \frac{p}{1-p}. \quad (2)$$

The exploratory variables in our model are gender, age, civil status graduation year of the students, education level, and GPA of graduates. The model is validated for accuracy and precision. The confusion matrix [39] and receiver operating characteristic (ROC) curve are used for testing the model performance. These are standard techniques for summarizing classifier performance over a range of trade-offs between true positives, false positives, and error rates [40]. Statistical software R is used for econometric analyses.

RESULTS

DESCRIPTIVE ANALYSIS

Luigj Gurakuqi University Graduate Students

The questionnaire was responded to by 62,8 % of graduate female students of which 44,5 % were employed. Results indicate a higher percentage of male employment compare to female

graduate students. The employment status of the graduated students shows that 47,4 % of them are employed, while 52,6 % are unemployed. The dominant age category of unemployed graduate students is the age category 21-25 years with 62,8 % (Table 4).

Table 4. Employment status by age categories, LGU. Author's calculation. There is a significant association between age categories and employment status.

Age	Employed		Unemployed		Total	
	# of students	%	# of students	%	# of students	%
21-25 years	48	37,2	81	62,8	129	73,7
25-30 years	35	76,1	11	23,9	46	26,3
Total	83	47,4	92	52,6	175	100,0
chi2(1) = 20,55, p < 0,001, Fisher's exact = 0,002						

Table 5. Employment status by education programs, LGU. Author's calculation. There is a significant association between level of education and employment status.

Education level	Employed		Unemployed		Total	
	# of students	%	# of students	%	# of students	%
Bachelor	27	37,5	45	62,5	72	41,1
Master	31	70,4	13	29,6	44	25,1
Graduating at Master Studies	25	42,4	34	57,6	59	33,7
Total	83	47,4	92	52,6	175	100,0
chi2(1) = 12,81, p = 0,002, Fisher's exact = 0,002						

The employment status as per the level of education (Table 6) demonstrates higher employed students with master education followed by students frequenting master and bachelor studies. While most of the unemployed students pertain to the category of the bachelor education level, followed by frequenting the master program and lastly with master education.

The employment status of graduate students is related significantly with time (Table 6). It takes time for graduates after completing their studies to find a job. The number of unemployed students is high, a short time after graduation, while it is reduced with the passing of the years.

Table 6. Employment status by graduation year, LG University. Author's calculation. There is a significant association between graduation year and employment status.

Graduation year	Employed		Unemployed		Total	
	# of students	%	# of students	%	# of students	%
2009	1	100	0	0	1	0,6
2010	3	100	0	0	3	1,7
2011	6	75	2	25	8	4,6
2012	5	83,3	1	16,7	6	3,4
2013	8	88,9	1	11,1	9	5,1
2014	12	66,7	6	33,3	18	10,3
2015	8	57,1	6	42,9	14	8,0
2016	11	37,9	18	62,1	29	16,6
2017	16	38,1	26	61,9	42	24,0
2018	13	28,9	32	71,1	45	25,7
Total	83	47,4	92	52,42	175	100,0
chi2(1) = 28,10, p = 0,001 Fisher's exact = 0,000						

The employment status of graduates' students depends on the GPA of the bachelor studies. Table 7 shows that the excellent graduates with above 9 GPA are mostly employed, while the graduate students with 5-6 passing GPA are mostly unemployed.

Table 7. Employment status by bachelor GPA, LG University. Author's calculation. We can reject the null hypothesis and conclude there is a relationship between bachelor GPA and employment status.

Bachelor GPA	Employed		Unemployed		Total	
	# of students	%	# of students	%	# of students	%
5-6 GPA	12	40,0	18	60,0	30	17,1
6-7 GPA	23	35,4	42	64,6	65	37,1
7-8 GPA	30	58,8	21	41,2	51	29,1
8-9 GPA	9	47,4	10	52,6	19	10,9
above 9 GPA	9	90,0	1	10,0	10	5,7
Total	83	47,4	92	52,6	175	100,0
chi2(1) = 14,4, p = 0,006, Fisher's exact = 0,005						

South-East European University Graduate Students

Analysing the employment status of SEEU graduates, the data show that 52 % of respondents are male and they are more likely to be employed compared to female graduate students. While 80,4 % of the graduates are employed, most of them (83,5 %) are within the age category 25-30 years old (Table 8).

Table 8. Employment status by age categories, SEEU. Author's calculation. There is not a significant association between age categories and employment status.

Age	Employed		Unemployed		Total	
	# of students	%	# of students	%	# of students	%
21-25 years	8	61,5	5	38,5	13	14,1
25-30 years	66	83,5	13	16,5	79	85,9
Total	74	80,4	18	19,6	92	100,0
chi2(1) = 3,4, p = 0,06, Fisher's exact = 0,123						

The employment status based on the level of education demonstrates low differences between the different programs as presented in Table 9. The share of employed students with master education is higher compared to students frequenting master and bachelor studies.

Table 9. Employment status by education programs, SEEU. Author's calculation. There is not a significant association between level of education and employment status.

Education level	Employed		Unemployed		Total	
	# of students	%	# of students	%	# of students	%
Bachelor	25	78,1	7	21,9	32	34,8
Master	34	81,0	8	19,0	42	45,7
Graduating at Master Studies	15	83,3	3	16,7	18	19,6
Total	74	80,4	18	19,6	92	100,0
chi2(1) = 0,21, p = 0,900, Fisher's exact = 0,888						

The employment status of the graduate students is related to time, however not significantly. As can be shown in Table 10 there are higher unemployment rates of the graduated students in the last years, however, the employment rates are higher compared to LGU.

Table 10. Employment status by graduation year, SEEU. Author's calculation. There is no significant association between graduation year and employment status.

Graduation year	Employed		Unemployed		Total	
	# of students	%	# of students	%	# of students	%
2009	10	90,9	1	9,1	11	12,0
2010	9	100,0	0	0,0	9	9,8
2011	6	75,0	2	25,0	8	8,7
2012	6	100,0	0	0,0	6	6,5
2013	7	100,0	0	0,0	7	7,6
2014	10	76,9	3	23,1	13	14,1
2015	6	60,0	4	40,0	10	10,9
2016	7	77,8	2	22,2	9	9,8
2017	6	100,0	0	0,0	6	6,5
2018	3	60,0	2	40,0	5	5,4
2019	4	50,0	4	50,0	8	8,7
Total	74	80,4	18	19,6	92	100,0
chi2(1) = 18,35, p = 0,145, Fisher's exact = 0,114						

The GPA of bachelor studies has an impact on the employment status of graduates. Graduates with 8 GPA and above are mostly employed, while the graduate students with 6-7 passing GPA are mostly unemployed (Table 11). SEU is conducting employability survey of their graduates each year and the last report indicate that economics graduates have an employment rate of 76,5 %, employability increases with GPA and they are mostly employed in the trade sector (48,9 %) [41].

Table 11. Employment status by Bachelor GPA, SEEU. Author's calculation. There is no relationship between bachelor GPA and employment status.

Bachelor GPA	Employed		Unemployed		Total	
	# of students	%	# of students	%	# of students	%
6-7 GPA	10	83,3	2	16,7	12	13,0
7-8 GPA	21	70,0	9	30,0	30	32,6
8-9 GPA	26	89,7	3	10,3	29	31,5
above 9 GPA	17	81,0	4	19,0	21	22,8
Total	74	80,4	18	19,6	92	100,0
chi2(1) = 3,71, p = 0,295, Fisher's exact = 0,311						

REASONS FOR NOT FINDING A JOB

The main reasons for not finding a job are given in Table 12. Low labour market demand for graduates of both universities is indicated as the main reason for not finding a job; followed by no information for vacancies and no efficiency of government labour offices; demand of work experience from the employer; personal life interests as child growth or elderly care; high supply of graduates in the labour market and interest in a personal start-up business.

Education efficiency in finding a proper job is perceived differently from the graduates of two universities (Table 13). At LGU, 25 % of the graduates consider education, not a factor in finding a proper job, while of the same opinion are 17 % of their counterparts at SEEU. While education is considered a 'very much' efficient factor in finding the proper job from both countries universities' graduates with approximately 27-28 % of employed students.

One of the main causes of not finding a proper job that matches with the finished education is perceived the passive government education reforms, which create surpluses and shortages of graduates at the labour market. This is followed by the lack of work experience of graduate students required from the employers, the economic crises, etc. (Table 14).

Table 12. Reason for not finding a job.

	LGU	SEEU
The demand for experience from the employer	10 %	22 %
High supply of graduates in the labour market	7 %	6 %
Interested in personal start-up business	2 %	6 %
Low labour market demand.	56 %	22 %
No information for vacancies and no efficiency of government labour offices, etc.	16 %	22 %
Other interests as child growth, elderly care, etc.	9 %	22 %

Table 13. Education efficiency in finding a job.

	LGU	SEEU
Not at all	25 %	17 %
A little	7 %	22 %
Enough	20 %	33 %
Much	21 %	0 %
Very much	27 %	28 %

Table 14. Reasons for job mismatching with education.

	LGU	SEEU
Economic crises	16 %	14 %
No government education reforms accordingly to the labour market demand (surpluses and shortages of graduates by field of study)	35 %	35 %
No work experience	20 %	18 %
Not the efficiency of government labour offices, etc.	11 %	8 %
Other	9 %	16 %
Youth work refusal	9 %	9 %

LOGISTIC REGRESSION RESULTS

Luigj Gurakuqi University

The logistic model results indicate that the explanatory gender and age variables are both significant at a 99 % significance level (Table 15). These variables contribute to the accuracy of the employment model. The variable of graduated master students is significant at a 95 % level of confidence; while the variable frequenting the master studies is not significant. The GPA of the bachelor program indicates an important role in the employment of graduates with a significance level of 95 %, with emphasis on the GPA of 7-8, and above 9. The civil status of single or married graduate students is not significant in the model.

With 99 % of significance, the below variables are interpreted. The impact size of the logistic regression coefficients is translated into odds ratio. If all other variables are the same, the coefficient of the gender male variable can be interpreted as the odds of males being unemployed over the odds of females is 0,315. In other words, in terms of gender, the odds of males being unemployed is 31,5 %; or 68,5 % lower than the odds of females, holding all other variables fixed. The odds of a 25-30 years graduated student being unemployed is 0,286 or 71,4 % lower to a 20-25 years graduate student, holding all other variables fixed.

With 95 % significance, the below variables are interpreted. The students that have finished master’s have the odds of being unemployed of 0,325 compare to the graduates in bachelor's; or 67,5 % lower than the odds of the graduate’s students in the bachelor program. Attending regularly master studies has no significance in the model. Students who graduated within a

Table 15. LGU regression model coefficients.

	Estimate	Std. Error	z value	Pr (>|z|)
(Intercept)	1,7854	0,6553	2,725	0,00644**
Gender Male	–1,1545	0,3894	–2,964	0,00303**
Age 25-30 years	–1,2527	0,4688	–2,672	0,00754**
Civil Status Single	–0,1156	0,4927	–0,235	0,81455
Regular attending Master studies	–0,2176	0,4045	–0,538	0,59066
Education Master	–1,1230	0,4995	–2,248	0,02457*
GPA Bachelor 6-7 GPA	–0,2301	0,5171	–0,445	0,65625
GPA Bachelor 7-8 GPA	–1,0590	0,5316	–1,992	0,04637*
GPA Bachelor 8-9 GPA	–0,2974	0,6691	–0,444	0,65671
GPA Bachelor above 9	–2,7977	1,1856	–2,360	0,01828*

*statistically significant at 5 %
**statistically significant at 1 %

bachelor with a 7-8 GPA have the odds of being unemployed at 0,345 or 65,5 % lower than other graduate student's odds. While students who graduate with GPA above 9 have the odds of being unemployed at 0,061 or 93,9 % lower than the odds of the other graduate students- that is a plausible result. On the other side, the 8-9 GPA of the graduate students is not significant at the model and presents an atypical result.

To make use of the accuracy values of the model, the ROC curve is presented (Figure 3). A useful tool in predicting the probabilities of the binary outcomes employed not employed is the ROC. The plot below shows how good the model is at predicting the positive outcome when the actual outcome is positive. The accuracy of the test is 0,7738, which is a good index for the model accuracy (Figure 4).

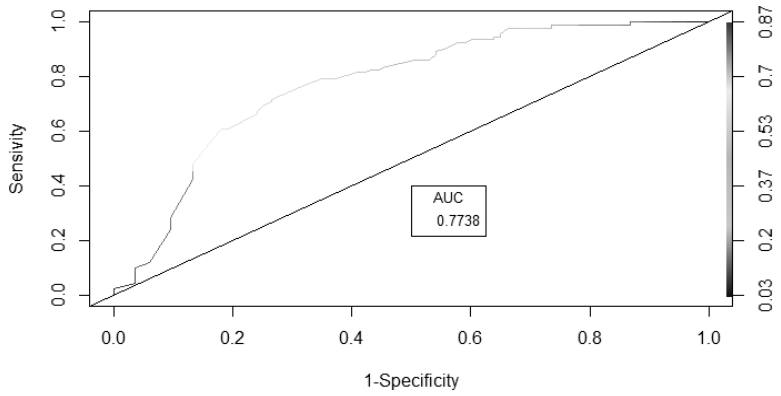

Figure 3. ROC curve, LGU Model.

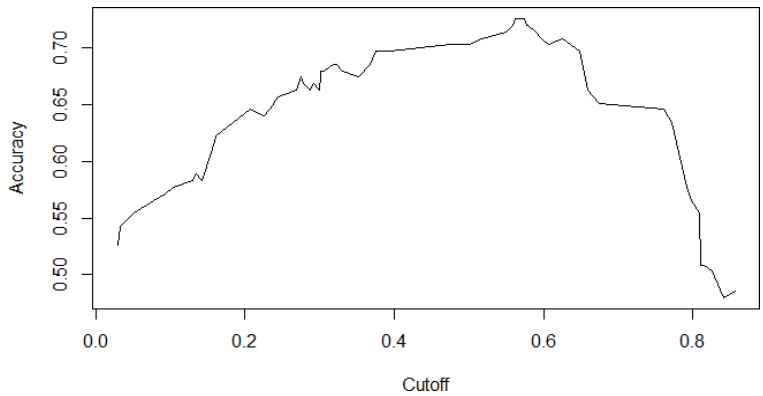

Figure 4. Accuracy Test, LGU Model.

South-East European University

The regression model of the SEEU data shows that none of the independent variables is significant. An exception makes the GPA variable, specifically the 8-9 GPA statistically significant at p < 0,1 which is relatively low. High GPA 8-9 of the graduates' students has a stronger impact than any other variable included in the model (Table 16).

Table 16. SEEU regression model coefficients.

	Estimate	Std. Error	z value	Pr (>|z|)
(Intercept)	1,0911	1,0209	1,069	0,2852
Gender Male	0,3348	0,4942	0,677	0,4981
Age 25 - 30 years	–1,2530	0,6620	–1,495	0,1350
Civil Status Single	–0,3341	0,6620	–0,505	0,6138
Education frequenting Master studies	0,3849	0,6671	0,577	0,5640
Education Master	0,1931	0,5940	0,325	0,7451
GPA Bachelor 7-8 GPA	–0,4979	0,7307	–0,681	0,4956
GPA Bachelor 8-9 GPA	–1,4701	0,7886	–1,864	0,0623 '
GPA Bachelor above 9	–1,2053	0,8429	–1,430	0,1527

*statistically significant at 10 %

Even though almost all probabilities of the included variables show no significance in the model, still the test of the model performance for sensitivity and with accuracy index is presented. The plot below shows how good the model is at predicting the positive outcome when the actual outcome is positive. The accuracy of the test is 0,7257, which is a good index of the model accuracy but not as good as the accuracy of the model of LGU of 0,7738 (Figures 5 and 6).

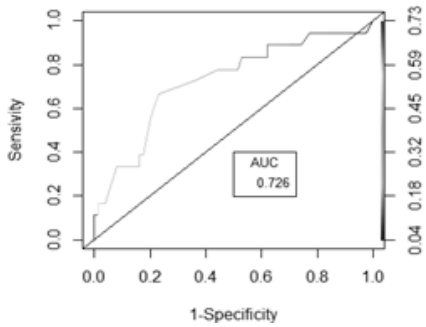

Figure 5. ROC curve, SEEU Model.

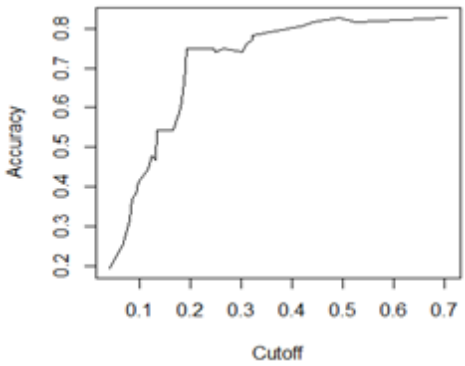

Figure 6. Accuracy Test, SEEU Model.

CONCLUSION

As higher education is considered an investment in the persons' life in time, money, and efforts, the objective of this study is to analyse the transition from tertiary education studies

to the labour market. High school graduates often decide to continue university education for better job perspectives and advancement. High education is often perceived as a guarantee for employment. However, statistics show that youth employment faces many challenges and has lower rates compared to other categories of the population. Descriptive analysis and logistic regression is used to estimate the correlation between graduated youth employment and the various explanatory variables. The conclusions of the study are as follows. The unemployment rates are higher in the Western Balkan countries compared to the average of European countries. The unemployment rates of the youth age category 15-24 years in west Balkan countries are higher compared to the average of European countries. Employment of graduated youth faces many challenges such as local labour market demand, the divergence between education and job positions, etc. Labour markets with high unemployment rates are an indicator of either labour demand and supply high mismatch rates or a bad fit between the education system output and labour market demand, or a combination of both. Passive government education reforms of labour market demand have consequences in surpluses and shortages of graduates in the labour market.

Regression analyses of the graduated student's questionnaires of the LGU in Albania show that the GPA of the bachelor program plays a crucial role in being employed. As educational attainment becomes increasingly more important in employments settings, higher undergraduate GPA is an important determinant in the employment process. A higher GPA of bachelor studies makes an advantage in the selection process of the graduated youth in the labour market in Albania. LGU logit model results show also other significant variables to the students' graduate's employment. There is a relationship between the gender and employment status of the graduates' students. Males have higher probabilities of being employed compare to their counterparts females. Time plays a crucial factor in employment. Students of age category 21-25 years have a higher probability of being unemployed compare to the older category 25-30 years. The education level of the graduated program is significant in their employment. Students who graduated from the master's program have a higher probability of being employed rather than students who graduated with the bachelor program, while being enrolled and frequenting the master studies does not affect their employment status.

Regression analyses of the graduated students of the SEEU in North Macedonia show no significance of all the independent variables included in the model, except of the GPA variable. The GPA variable, specifically the 8-9 GPA is at the margin of statistical significance ($p < 0{,}0623$) close to being statistically significant ($p = 0{,}055$).

For policy-makers, this study shows the importance of better cooperation with HEI to develop adaptive curricula for the labour market. If Albania and North Macedonia will enter into the EU in the next years, facing the European market competition, an urgent need is the rethinking of the process. Although new law is decreed to stimulate meritocracy in employment of excellent students in public administration, by government of Albania, their peers might lack employment opportunities for long time. International institutions as the International Labour Organisation, etc. might help in the process of improving the capacity of the country's local institutions for improvements to the youth employment policy-making process. There are many interesting issues open to be further investigated. It would be interesting to conduct an in-depth analysis of more inclusive variables, as well as using panel statistical data to make comparison between different non-EU and EU countries.

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REFERENCES

[1] Milovanovitch, M.: *Policies for human capital development: North Macedonia - an ETF Torino Process assessment*.
European Training Foundation, 2019,

[2] Colarelli, S.M.; Dean, R.A. and Konstans, C.: *Comparative effects of personal and situational influences on job outcomes of new professionals.*
Journal of Applied Psychology **72**(4), 558-566, 1987,
http://dx.doi.org/10.1037/0021-9010.72.4.558,

[3] Strenze, T.: *Intelligence and socioeconomic success: A meta-analytic review of longitudinal research.*
Intelligence **35**(5), 401-426, 2007,
http://dx.doi.org/10.1016/j.intell.2006.09.004,

[4] Cole, M.S., et al.: *Using recruiter assessments of applicants' resume content to predict applicant mental ability and big five personality dimensions.*
Internal Journal of Selection and Assessment **11**(1), 78-88, 2003,
http://dx.doi.org/10.1111/1468-2389.00228,

[5] Lyons, P. and Bandura, R.: *An expanded value of college GPA in recruitment? As related to US organizations.*
Development and Learning in Organizations **31**(2), 13-15, (2017),
http://dx.doi.org/10.1108/DLO-08-2016-0072,

[6] Schill, W.J.; McCartin, R. and Meyer, K.: *Youth employment: Its relationship to academic and family variables.*
Journal of Vocational Behavior **26**(2), 155-163, 1985,
http://dx.doi.org/10.1016/0001-8791(85)90015-6,

[7] Tao, L. and Zhang, J.: *What determines employment opportunity for college graduates in China after higher education reform?*
China Economic Review **21**(1), 38-50, 2010,
http://dx.doi.org/10.1016/j.chieco.2009.10.001,

[8] Stojanoski, S.; Denkova, J. and Marolov, D.: *Higher Education in the Republic of Macedonia: Challenges and Perspectives.*
Balkan Social Science Review **11**, 95-115, 2018,

[9] Bach, M.P.; Praničević, D.G.; Šebalj, D. and Pihir, I.: *Employment of Business Informatics Graduates: Preliminary Results.*
In: Central European Conference on Information and Intelligent Systems Faculty of Organization and Informatics, Varazdin, pp.55-60, 2018,

[10] Hunady, J.; Orviska, M. and Pisar, P.: *What matters: The Formation of University Spin-offs in Europe?*
Business Systems Research Journal **10**(1), 138-152, 2019,
http://dx.doi.org/10.2478/bsrj-2019-0010,

[11] Instat: *Statistics of Labour Market.*
Institute of Statistics of Albania, Tirane, 2019,

[12] Petreski, B.; Davalos, J.; Vchkov, I.; *Tumanoska, D. and Kochovska, T.: Analysis of Youth Underemployment in North Macedonia, Montenegro, and Serbia.*
Finance Think, Skopje, 2019,

[13] Hackaj, A.: *Youth employment trends in Albania: What is the market looking for?*
Friedrich-Ebert-Stiftung, Tirane, 2015,

[14] Zulfiu Alili, M.: *The Effect of Emigration on Macedonian Labour Market.*
10th International Congress on Social Sciences, Madrid, 2016,

[15] OECD: *How is the tertiary-educated population evolving?*
Paris, 2018,
[16] UNESCO: *Global Education Monitoring Report 2016: Education for People and Planet.*
Creating, Paris, 2016,
[17] Roth, P.L.; BeVier, C.A.; Switzer, F.S. and Schippmann, J.S.: *Meta-analyzing the relationship between grades and job performance.*
Journal of Applied Psychology **81**(5), 548-556, 1996,
http://dx.doi.org/10.1037/0021-9010.81.5.548,
[18] Imose, R.A. and Barber, L.K.: *Using Undergraduate Grade Point Average as a Selection Tool: A Synthesis of the Literature.*
The Psychologist-Manager Journal **18**(1), 1-11, 2015,
http://dx.doi.org/10.1037/mgr0000025,
[19] Blanchflower, D.: *Young people and the Great Recession.*
Oxford Review of Economic Policy **27**(2), 241-267, 2011,
http://dx.doi.org/10.1093/oxrep/grr011,
[20] OECD: *Education at a Glance 2017. OECD Indicators.*
OECD Publishing, Paris, 2017,
[21] UNESCO: *Global Education Monitoring Report: Accountability in Education: Meeting our commitments*.
UNESCO, Paris, 2017,
[22] Dolado, J.: *No Country for Young People? Youth Labour Market Problems in Europe.*
Centre for Economy Policy Research, 2015,
[23] Owens, T.: *Higher education in the sustainable development goals framework.*
European Journal of Education **52**(4), 414-420, 2017,
http://dx.doi.org/10.1111/ejed.12237,
[24] Sparreboom, T. and Staneva, A.: *Is education the solution to decent work for youth in developing economies?*
Work4Youth Publication Series No. 23, International Labour Office, Geneva, 2014,
[25] Numanović, A.; Petreski, B.; Polo, E. and Tumanoska, D.: *Weak Labour Markets, Weak Policy Responses: Active Labour Market Policies.*
Analitika – Center for Social Research, Sarajevo, 2016,
[26] Arandarenko, M. and Barlett, W.: *Labour Market and Skills in the Western Balkans.*
Fren – Foundation for the Advancement of Economics, Belgrade, 2012,
[27] Pavlović, D.; Zubović, J. and Obradović, V.: *Relationship of the youth unemployment and determinants of the labour market in the Balkan countries.*
Industrija **45**(4), 153-166, 2017,
http://dx.doi.org/10.5937/industrija45-15155,
[28] Pavelić, D.: *National Youth Survey In Bosnia and Herzegovina 2018: Findings Report.*
USAID, IMPAQ International, LLC, 2018,
[29] Halili, I.: *Getting Kosovo Back to Work - Assessing Youth Employability in Kosovo.*
Rochester Institute of Technology, Zagreb, 2016,
[30] Golubovic, V.: *Skills Mismatch Measurement in Montenegro.*
European Training Foundation, Turin, 2019,
[31] Uvalić, M. and William, B.: *Transition from university to employment of young graduates in Serbia.*
Newcastle upon Tyne: Cambridge Scholars, pp.191-217, 2020,
[32] World Bank: *Finding Solutions to Youth Unemployment in North Macedonia.*
Report No: AUS0001042. World Bank, Washington DC, 2019,
[33] IMF: *World Economic Outlook Database, October 2019.*
International Monetary Fund, accessed 13 January 2020,
[34] United Nations: *World Population Prospects: the 2019 Revision.*
United Nations, New York, 2019,

[35] Eurostat: *Ageing Europe.*
Publications Office of the European Union, Luxemburg, 2019,
[36] The Vienna Institute for International Studies: *Western Balkan Labor Market Trends 2019.*
World Bank Group, New York, 2019,
[37] Harrell, F.E.: *Regression Modeling Strategies.*
Springer Series in Statistics, New York, 2015,
[38] Pohar, M.B. and Turk, S.: *Comparison of Logistic Regression and Linear Discriminant Analysis: A Simulation Study*.
Metodološki Zvezki **1**(1), 143-161, 2004,
[39] Chawla, N.V; Bowyer, K.W.; Hall, L.O. and Kegelmeyer, W.P.: *Synthetic Minority Oversampling Technique*.
Journal of Artificial Intelligence Research **16**, 321-357, 2002,
http://dx.doi.org/10.1613/jair.953,
[40] Sweets, J.: *Measuring the Accuracy of Diagnostic Systems.*
Science **240**(4857), 1285-1293, 1988,
http://dx.doi.org/10.1126/science.3287615,
[41] SEEU Career Centre: *SEEU Alumni Destination Survey 2019.*
South East European University, Tetova, 2020.

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ENTREPRENEURSHIP DURING THE TIMES OF THE CORONAVIRUS PANDEMIC IN REPUBLIC OF CROATIA

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ABSTRACT

Entrepreneurship is a key driver of economic growth and a generator of employment opportunities in all modern economies across the world. Small and medium enterprises (SMEs) are the engines of modern entrepreneurship. In the Republic of Croatia, SMEs are indispensable to boost employment and economic growth. Numerous economic activities have been slowed down due to the coronavirus pandemic, and some have even been completely halted. In these extraordinary circumstances, not only in the Republic of Croatia but also all over the world, an entrepreneur must be proactive and able to promptly adapt to this new situation. The purpose of this article is to investigate the entrepreneur's position in the Republic of Croatia and to identify key problems entrepreneurs face during the coronavirus pandemic. As indicated by the research results, the coronavirus pandemic has drastically altered business activity conduction and entrepreneurship. For their businesses to survive these new, everyday challenges, many companies are forced to adapt their supply to market demands, introduce business informatization, lower the product and service prices and invest in employee education.

KEY WORDS

entrepreneurship, Republic of Croatia, European Union, pandemic, coronavirus

CLASSIFICATION

JEL: L26, O10

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INTRODUCTION

In today's economic system, small and medium enterprises are defined as the power capable of driving and influencing an improvement in certain national economic structures. In the Republic of Croatia, small and medium enterprises are possible generators of employment and economic growth [1].

Organization for Economic Cooperation and Development (OECD) indicates that entrepreneurs are the initiators of changes and growth in the market economy, and may accelerate the generation, dissemination, and implementation of innovative ideas [2]. Public assistance is mainly focused on novice entrepreneurs who do not have previous business experience [3].

When the novel coronavirus first appeared in early 2020, matters of pandemic suppression and salvation of human lives were highly prioritized. Most countries employed emergency measures like social distancing and the temporary shutdown of many business subjects, particularly in the service sector. Said emergency measures were proven to be more or less successful. As the crisis appeared, countries began to contemplate the possible consequences on the economy. Negative consequences on the economy are the result of the virus itself, as well as of the restrictive measures utilized to suppress the pandemic. Economic questions arise more and more frequently, intending to avoid an additional economic downturn that might occur due to poorly designed economic policies and measures [4].

The European Commission has activated the so-called 'General Escape Clause' for the first time in history on March 20th, 2020. This clause enables the governments of the European Union members to spend national funds on state aid to alleviate the effects of the ensued economic crisis. Additionally, a distribution of 37 billion Euros from the European Union budget has been foreseen as a means of supporting the health sector, the sustainability of the business sector, and the sustainability of workplaces.

The European Commission has been employing strong measures to strengthen the public health sector and alleviate the socioeconomic consequences the coronavirus pandemic has caused. Regions and cities of the European Union have been helping those in need by securing protective gear donations, providing treatment of infected patients abroad, and ensuring the repatriation of citizens who found themselves temporarily stuck abroad. Furthermore, the European Commission has applied complete flexibility to the fiscal rules of the European Union, has revised its rules on state aid, and established the Investment Initiative to ensure liquidity for small enterprises and the health sector. The Commission has also launched the 'Support Mitigating Unemployment Risks in Emergency' initiative, with the objective of workplace preservation and family support.

The coronavirus pandemic has caused severe damages to the global economy. It is still causing damages to this day and will continue to do so indefinitely. One can only begin to assess the total damages once the virus has been understood to a sufficient degree and once it has been relatively contained. This turn of events is not yet in sight. A short–term pandemic carries with it a certain type of consequences, whereas a longer pandemic (one that would, for example, last for over a year), has a much more pronounced impact on the economic and societal structure. The consequences of a long-term pandemic are much more severe and far-reaching. A short-term pandemic can be 'covered' with financial transactions. Once the short-term pandemic is over, this can be compensated for with a long-term production increase. Since one cannot assess exactly how long the COVID-19 pandemic will last, there are not sufficient elements to assess its total effects [5].

The main objective of this research was to determine to what extent the population intends to become entrepreneurs during the coronavirus pandemic. Further objectives were to determine which measures of fighting back against the coronavirus pandemic are considered the most efficient and which changes entrepreneurs must employ to adapt to this new situation.

This article is comprised of eight chapters. The first chapter is introductory. In the second chapter, an insight into the theoretical notion of entrepreneurship is given, along with a brief overview of the history of entrepreneurship. The third chapter describes the situation in the Republic of Croatia since the first COVID-infected patient appeared. The fourth chapter is based on the measures set forth by The Croatian Bank for Reconstruction and Development to fight back against the negative consequences of the coronavirus pandemic. The fifth chapter describes a package of measures introduced by the Tax Administration to maintain the liquidity of businesses. The sixth chapter lists all advantages and disadvantages of becoming an entrepreneur, with a short review on the current coronavirus pandemic, whereas the seventh chapter refers to the conducted research. This article ends with a conclusion.

LITERATURE REVIEW

Empirical research has shown that small business owners believe hard work will make them more money and will also make them happier than being an employee in someone else's company. According to the respondents, the main advantages of becoming an entrepreneur are [6]: being in control; being able to change things; being able to fulfill one's potential; unlimited income potential; social prestige, and an opportunity to pursue one's passion.

One of the advantages of becoming an entrepreneur is being in control. Owning a business gives the entrepreneur the freedom and ability to achieve his goals. True entrepreneurs do not think of their daily business activities as work [7]. The most successful entrepreneurs choose the activity they are most interested in and enjoy the most, following the advice of Harvey McKay, who said: "Find something you love to do, and you'll never have to work a day in your life" [8].

Although owning a business provides many benefits and opportunities, everyone considering entrepreneurship must be aware of the potential disadvantages: income uncertainty; risk of loss of invested capital; undefined working hours and hard work; lower quality of life in the initial phases; high level of stress; unlimited liability and discouragement [9].

Running one's own business can be a very positive experience, but also a very stressful one. Most entrepreneurs invest significant amounts of money in their businesses, leaving behind the security of a job with regular pay [10]. Often, entrepreneurs take out mortgage loans, i.e. they invest their entire properties in their business. In such cases, the failure of business would mean financial and psychological strain, which causes high levels of stress and worry [11]. Most entrepreneurs are likely to face many problems that they will not be able to solve due to a lack of knowledge [12]. At the same time, the decisions they make directly affect the success or failure of the company, as well as everyone involved in the business [13]. Entrepreneurs quickly learn that they are indistinguishable from their company and that starting a business requires commitment, discipline, and perseverance. Successful entrepreneurs also know that obstacles should not discourage them, but rather drive them to do even better [14].

Entrepreneurs are agents of change and provide a source of hope for many. To spur economic activity, entrepreneurs are needed as they come up with solutions to market problems. There are indirect effects from the crisis including export and import delays, which are affecting global trade. The coronavirus pandemic has resulted in more stress and tensions in the international business environment. The stress has come from the changes needed to stay competitive while at the same time protecting individual health. Businesses have had to

change their models to an online format to access customers. For many businesses based on traditional face-to-face interaction, this has required a change in current business practices. Some more entrepreneurial businesses have been able to transform more quickly than others as a result of environmental changes. The reason for this is the desire of the business leaders to stay in the marketplace while respecting required regulations. This has caused much tension among businesses due to the need to adapt quickly. Entrepreneurs by definition thrive from uncertainty; however, the COVID-19 pandemic has resulted in a large amount of uncertainty from a variety of sources. This means there is still uncertainty as to whether future changes are required or whether the changes made are adequate. In the past, the majority of entrepreneurship was based on market uncertainty, but the current pandemic has included not only market but also health and social uncertainty. This combination requires strong leadership capable of adapting to the needs of their business [15].

BACKGROUND

ENTREPRENEURSHIP IN REPUBLIC OF CROATIA AND COVID – 19

The beginning of the year 2020 was characterized by terrifying news and photographs from the Chinese city of Wuhan in the region Hubei. The world started to observe the appearance of a new, until then unknown respiratory system disease from afar. Soon, this disease got an official name, COVID – 19, the corona infection. This virus belongs to the RNA virus group *Coronaviridae*, which causes acute respiratory infections during the winter months, and has been known since 1965. Chinese scientists have sequenced the virus quite soon and then proceeded to share their data with the rest of the world: the virus in question was a new type of RNA virus, which, until then, was not known to cause disease in humans. Genome analysis indicates that the SARS – CoV – 2 has probably evolved from a type of virus often found in bats, whereas an unknown mammal has served as a potential amplifying intermediate host between bat and man [16].

The first case of a COVID – 19 infection in the Republic of Croatia has been observed on February 25th, 2020. The following chart shows the coronavirus infection growth rate in the Republic of Croatia from February 25th, 2020 to January 14th, 2021.

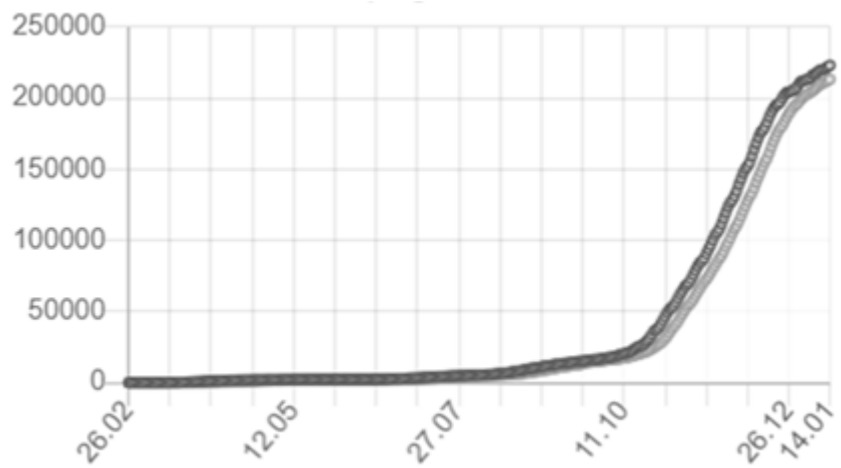

Figure 1. Number of coronavirus–infected patients in the Republic of Croatia from February 25th, 2020 to January 14th, 2021 [17].

The health crisis caused by the COVID – 19 pandemic has spread all over the world like wildfire, causing a never-before-experienced and historically unique alteration of all spheres

of human life, including economic relations. The world has been affected by an enormous crisis with an unknown expiration date. None of the previous modern-day economic crises (The Great Depression of 1929 and The Great Recession of 2008) have ever occurred as quickly or have caused such a steep decline in global economic activity [18].

On March 17th, 2020 the Croatian government has, among the first ones in the European Union, introduced a package comprised of 63 measures, designed to aid the overall economy, maintain liquidity and preserve workplaces. The value of the said package was approximately four billion Euros. A couple of days later, a group of entrepreneurs from the 'Voice of Entrepreneurs' initiative expressed their strong disapproval, claiming these measures were meek and inadequate. This initiative gained over twenty thousand members and sparked a floodtide of comments on social networks; most of them by entrepreneurs concerned for the future of their businesses. Meanwhile, after the European Commission's flexibilization of the rules on state aid, the governments of other member-states also came up with measures aimed at supporting the economy. The needs of the health sector and the needs of the small and micro–businesses were a common focus of these measures. Just like in Croatia, measures introduced by other European countries were supplemented with new, additional measures on an *as-needed* basis; following the effects incurred by the first package of measures and with the available funds (including funding provided by the European Commission). Aid measures were, apart from on the national level, also designed on a regional and local level (some good examples of local and regional measures are Rotterdam and Bjelovar). In addition to the content of the aforementioned measures, the speed at which they were applied was also vital, i.e. when awarding state aid, simplification and automation were crucial to the economy. Measures that are executed too late are namely as good as non-existent measures [19].

The continuation of favorable labor market trends was present in early 2020. A certain deterioration was seen in March, due to the coronavirus pandemic and the stringent containment measures. Observed quarterly, the number of employed persons (seasonally adjusted data) was slightly lower in the first quarter (–0,1 %) than in late 2019. The number of employed persons continued to drop in April and May and was on average 3,6 % lower than in the first quarter (Figure 2).

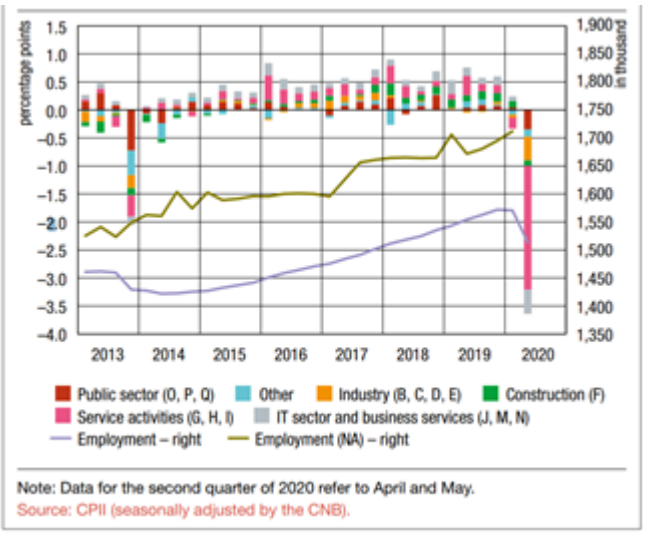

Figure 2. Employment by NCA activities, seasonally adjusted data, contributions to the quarterly rate of change [20].

Most of the noted drop was related to accommodation and food service activities, as well as to trade and transportation. Regrettably, these fields are the most vulnerable to social

distancing measures. Unemployment continued to drop in early 2020, but then, due to an increased number of new unemployment entries into the CES register, there was an increase in the total unemployment rate in March 2020; all despite continued clearings from the register (Figure 3).

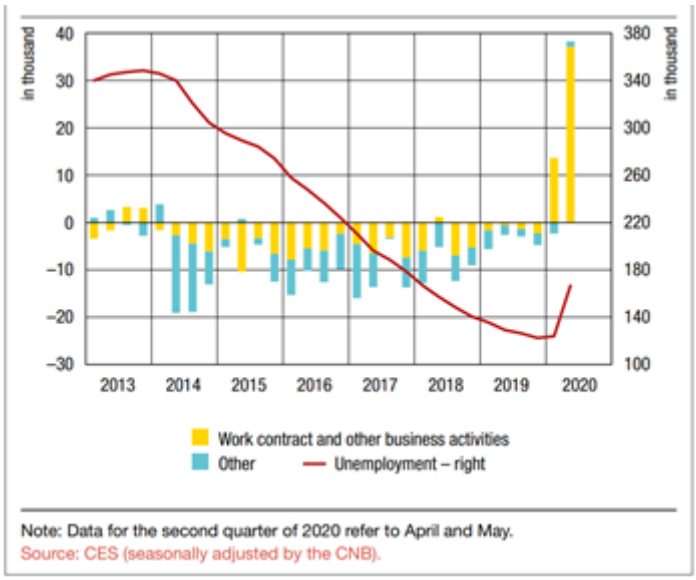

Figure 3. Total unemployment and net unemployment inflows, seasonally adjusted data [20].

The number of unemployed persons increased 8 % between December 2019 and the end of the first quarter of 2020. The unemployment rate started growing at a quicker pace in April due to an increase in the number of newly unemployed persons, i.e. due to an increased number of entries into the CES register. It continued to rise in May, though at a slower pace, and was only marginally higher in late June (Figure 4).

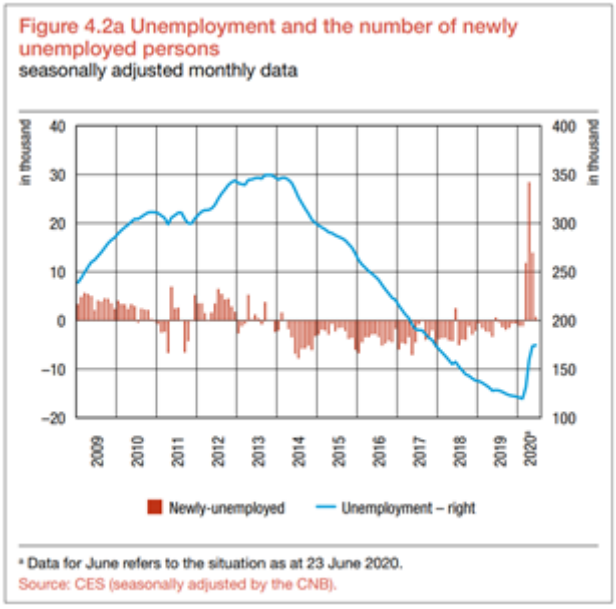

Figure 4. Unemployment and the number of newly unemployed persons, seasonally adjusted monthly data [20].

The growth of the unemployment rate was slowed down due to measures introduced by the Croatian government. These measures were designed to preserve jobs and to relax some of the restriction and lockdown rules due to a more favorable epidemiological situation [20].

AID FOR THE ENTREPRENEURS DURING THE COVID – 19 PANDEMIC

To alleviate the negative impacts of the COVID – 19 pandemic, Croatian Bank for Reconstruction and Development has introduced new measures aimed at the preservation of the present economic activity level, business liquidity, and, most importantly, workplace conservation. With this in mind, entrepreneurs are now not only able to utilize the moratorium and reprogram their existing credit responsibilities toward the Croatian Bank for Reconstruction and Development but are also able to obtain new, favorable loans (in cooperation with a commercial bank or directly). To ensure an easier loan approval process and induce a faster recuperation process for a large number of entrepreneurs whose businesses have been negatively impacted by the COVID – 19 pandemic, insurance of credit portfolio for exporter liquidity has been introduced. This insurance has been established for exporters seeking to obtain a loan, for indirect exporters, and the tourism sector [21].

To ensure business liquidity, the Ministry of Finance has proposed an interest–free tax deferral, and/or payment of tax liabilities in installments (said tax liabilities being incurred during extraordinary circumstances). Payment of tax liabilities in installments is initiated when

Table 1. Measures conducted by the Croatian Bank for Reconstruction and Development [21]

Program	Loan Potential, HRK millions	Benefits	Launched	Implementation	Status
Moratorium on and Rescheduling of Loans		Moratorium duration up to 16 months	27.3.2020	Direct lending and on-lending via banks	Active
Working Capital COVID-19	1500	Interest rate from 0 % on HBOR's share	30.3.2020	On-lending via 14 banks	Active
Working Capital for Wood Processing and Furniture Production	220	Interest rate from 0 % on HBOR's share	19.5.2020	On-lending via 14 banks	Active
Working Capital through Framework for Banks	1200	Interest rate reduced by 0,75 pp	22.5.2020	On-lending via 8 banks	Active
Working Capital for Rural Development	130	Interest rate 0,5 %	1.6.2020	Direct lending	Active
Working Capital for Tourism Industry	600	Interest rate from 0 %	15.4.2020	Direct lending	Applications received until 5th June
Insurance of Loan Portfolio	5561	Insurance of 90 % of the approved loan amount	8.4.2020	Via 15 banks	Active

stabilization of business operations becomes a necessity (after cessation of extraordinary circumstances) and is completely interest–free. The main idea is to permanently induct this measure into the system using legislation alterations. This measure should be reactivated if circumstances that might affect the due tax payments, arise.

Given that this measure mostly affects the budgets of the cities, regions, and municipalities, the Croatian Institute for Health Insurance and the Croatian Pension Insurance Institute will enable interest–free loans. These loans use the allocation of budget funds to replace the aforementioned city, region, and municipality funds. Various measures about the preservation of business liquidity in the Croatian economy have been suggested. These measures have been suggested in cooperation with the Croatian Bank for Reconstruction and Development, with the Croatian Agency for SMEs, Innovations, and Investments, and with commercial banks. Croatian Bank for Reconstruction and Development has introduced a moratorium about their clients' existing credit liabilities as well as the possibility to reprogram their existing loans with a predetermined start-date on principal payments.

New loans about the so-called 'cold business operations' shall be approved in cooperation with commercial banks. Within the means of the aforementioned support measures, the introduction of the so-called *standstill* arrangements has been proposed, which means that the commercial banks ought to suspend their coercive collection tactics for three months. During this time, statutory interest would still be accumulated and due. New liquidity and working capital loans count among additional support measures. Payments on these loans would be due in three years. To aid the tourism sector and the Croatian export, which have been rendered most vulnerable due to the coronavirus pandemic, an increase in the scope of the export insurance fund of the Croatian Bank for Reconstruction and Development has been foreseen. This will include the tourism sector as well as business subjects that are indirect exporters (suppliers or cooperating with direct exporters) and are supposed to invite as many clients as possible to become guarantee users (insurance policies) and thus also loan users. The Croatian Agency for SMEs, Innovations, and Investments has introduced a moratorium on all due payments for micro and small loans, as well as all micro and small loans about rural development. This moratorium is in force until December 31st, 2020. Furthermore, due payments about loans with issued guarantees have also been delayed [22].

The following business subjects are entitled to reimbursement of a portion or of the entirety of their fixed costs for December of 2020: all entrepreneurs whose business activity has been halted by the decree of the Croatian Civil Protection Directorate from November 27th, 2020; all entrepreneurs whose income/revenue for December of 2020 has dropped at least 60 % when compared to December of 2019; all entrepreneurs who have started their business activity in 2020 and whose income/revenue for December of 2020 has dropped at least 60 % when compared to November of 2020.

Entrepreneurs who have reported an income/revenue drop ranging between 60 % and 90 % are entitled to a fixed cost compensation, which is to be proportionate to their income/revenue drop. Entrepreneurs who have reported a staggering 90 % (or more) income/revenue drop are entitled to compensation of all fixed costs [23].

METHODOLOGY

RESEARCH INSTRUMENT

Research has been conducted using the survey research approach. The respondents who were invited to fill out the questionnaire were not solely entrepreneurs – this fact was used to determine an existence of an interest in entrepreneurship during the coronavirus pandemic. The questionnaire

was comprised of 19 questions. 11 of the questions were multiple-choice questions, 6 of the questions employed a Likert scale, and 2 of the questions were yes/no questions. The first 3 questions were general questions used to gather basic information on the respondents.

SAMPLE DESCRIPTION

A survey was conducted on a sample comprised of 110 respondents in December of 2020. The sample was comprised of persons of different sex, age, education level, employment status, and social status to make sure that it is as representative as possible with regards to all key characteristics.

The questionnaire was filled out by 79,1 % of women and 20,9 % of men. The majority of the respondents were aged under 25 (51,8 %) or in the 26-35 age bracket (41 %), followed by respondents in the 36-45 age bracket (3,6 %) and the 46-60 age bracket (3,6 %). The majority of the respondents have completed a graduate study education (35,5 %), high school education (33,6 %), or an undergraduate study education (29,1 %). A smaller number of respondents have completed a postgraduate university study education (Ph.D.) (0,9 %), or a postgraduate specialist study education (0,9 %).

The main objective of this research was to determine the number of respondents who've started their businesses and the number of respondents who are considering or are not considering starting their businesses. Furthermore, the objective was to determine whether the respondents would mark the economic aid and workplace and/or liquidity preservation measures introduced by the government of the Republic of Croatia as efficient.

RESULTS

The majority of the respondents are thinking about starting their businesses (49,1 %), 44,5 % of respondents are not considering starting their businesses and 6,4 % of respondents have already started their businesses.

Analysis of the obtained data indicates that, even though a large number of respondents are not thinking about starting their businesses, the majority of respondents are considering the possibility of becoming an entrepreneur or have already started their businesses. Considering the current pandemic, these results are not surprising, especially given the fact that the coronavirus has gravely affected regular business activity.

The majority of respondents think that the measures introduced by the Republic of Croatia to aid the economy, maintain liquidity and preserve workplaces during the coronavirus pandemic are not efficient (75,5 % of respondents), whereas 24,5 % of respondents think these measures are efficient. Data analysis points out that the majority of respondents think these measures are inefficient. At the time this article was created, there were 162 983 unemployed persons registered with the Croatian Employment Service.

Table 2. The most efficient economic aid measures.

Which measures do you think are most effective for helping economy during COVID-19 pandemic?	
Short-term aid during short-time work schemes adjustment	13,7 %
Measures for protecting workers from exposure to COVID-19	15,1 %
Financial aid to infected workers	19 %
Direct crediting of companies at risk	13,4 %
Complete tax waiver	22,7 %
Tax payment deferrals	16,1 %

The majority of respondents (22,7 %) think that the most efficient economic aid measures during the coronavirus pandemic would be absolute tax exemptions, 19 % of respondents believe that financial aid for ill employees would be the best aid policy, and 16,1 % chose tax deferral as the best aid policy. Furthermore, 15,1 % of respondents said that safety measures aimed at protecting the employees from exposure to the virus would be the optimal solution, 13,7 % of respondents believe short-term aid for companies adjusting their work hours (short-time work schemes) would be beneficial, and 13,4 % of respondents think that the best aid would be issuing direct loans to endangered companies.

Table 3: Business adaptation and the coronavirus pandemic.

In which way can entrepreneurs adjust there bussines model during COVID-19 pandemic?	
Investing in employee education	12,7 %
Price reduction	16,9 %
Adapting to market demand	38 %
Digitalization of businesses	32,4 %

The majority of respondents (38 %) believe that in times of the coronavirus pandemic, entrepreneurs can adapt their businesses by adjusting their supply to the demands of the market, whereas another 38 % believe that said adaptation can be achieved by informatization of businesses. The rest of the respondents believe that the entrepreneurs can adapt by lowering the prices of their goods and services (16,9 %), or by investing in employee education (12,7 %).

Table 4. Measures to prevent further spreading of the coronavirus.

Which measures do you think are necessary to reduce the spread of COVID-19?	
Restoran and bar clousers	8,9 %
Kindergarten and school closures	10 %
Restriction of the number of people in closed space surroundings	23,7 %
Forbid public gatherings and lingering in public places	17,9 %
Reduction of opening times for stores	7,6 %
Working from home	26,4 %
The limitation of intercity migration	5,5 %

The majority of respondents (26,4 %) believe that working from home is a measure necessary to stop the coronavirus from spreading, 23,7 % of respondents think that the key measure is the restriction of the number of people who can enter enclosed spaces, and 17,9 % of respondents said that the key measure is a ban on all kinds of public gatherings. Furthermore, 10 % of the respondents said the key is to close down all kindergartens and schools, 8,9 % said the most efficient measure is to close down all coffee shops and restaurants, another 7,6 % said the key is to shorten the working hours of stores and 5,5 % of respondents said the most important measure is the restriction of intercity migration.

DISCUSSION AND CONCLUSION

The main objective of this research was to determine how many people are thinking of becoming entrepreneurs during the coronavirus pandemic. Further objectives were to determine which measures of fighting back against the coronavirus pandemic are considered the most efficient and which changes entrepreneurs must employ to adapt to this new situation. The research results have shown that there is a very small number of respondents who have started their businesses, whereas nearly half of the respondents are not even thinking about starting their businesses. The respondents also believe that the measures put in place to fight back against the coronavirus pandemic are not efficient.

This research has several limitations. The research was conducted on a sample comprised of 110 people, which is a relatively small sample. The units for the sample were chosen in a way that illustrates the basic set well. Despite this, the aforementioned limitations do not minimize the contribution of the obtained results to the observed issues. In the future, this research could be expanded to better understand the problems that modern entrepreneurs are dealing with – problems related to the coronavirus pandemic, which are actively stopping potential entrepreneurs from pursuing entrepreneurial activities.

In just a couple of short months, the world had to adapt to the extraordinary new situation caused by the coronavirus pandemic. When the pandemic first started, numerous countries; the global health community included; invested great efforts into researching the possibility of discovering a vaccine that would stop the virus in its tracks. Those efforts have resulted in several potential vaccines and a start of clinical trials in a very short period. Great Britain has started administering the COVID – 19 vaccine in December of 2020. In the Republic of Croatia, the vaccination began on December 27th, 2020. After the discovery of the vaccine, the Eurozone investors demonstrated renewed vigor. The investments skyrocketed to the highest levels since the beginning of 2020, encouraged by the hope of renewed economic growth.

REFERENCES

[1] Škrtić, M. and Mikić, M.: *Economic significance of Croatian entrepreneurship*. In Croatian. Zbornik Ekonomskog fakulteta u Zagrebu **4**(1), 191-204, 2006,

[2] Organization for Economic Cooperation and Development: *Fostering Entrepreneurship*. OECD, Paris, 1998,

[3] Ropega, J.: *Novice and habitual entrepreneurs and external business support exploitation.* Interdisciplinary Description of Complex Systems **18**(2-B), 271-285, 2020, http://dx.doi.org/10.7906/indecs.18.2.14,

[4] Arčabić, V.: *Corona crisis and what Croatia can learn from previous recessions*. In Croatian. In: Tica, J. and Bačić, K., eds.: *Economic policy in 2021 – Croatia after the pandemic*. In Croatian. Hrvatsko društvo ekonomista **48**(1), 21-58, 2020,

[5] Jurčić, Lj.: *Challenges of the world economy.* In Croatian. In: Tica, J. and Bačić, K., eds: *Economic policy in 2021 – Croatia after the pandemic*. In Croatian. Traditional Conference **28**, 2020,

[6] Scarborough, N.M.; Wilson, D.L. and Zimmerer, T.W.: *Effective small business management: an entrepreneurial approach.* Pearson Prentice Hall, Upper Saddle River, 2009,

[7] Heck, R.K., et al: *The family's dynamic role within family business entrepreneurship*. In: Poutziouris, P.Z.; Smyrnios, K.X. and Klein, S.B., eds.: *Handbook of Research on Family Business.* Edward Elgar Publishing, Cheltenham, pp.80-105, 2006,

[8] Škrtić, M. and Mikić, M.: *Entrepreneurship.* Sinergija d.o.o., Zagreb, 2011,

[9] Pejic Bach, M.; Skok, M.M. and Suša, D.: *Determinants of entrepreneurial intentions in ICT industry: gender and country of origin perspective.* Naše gospodarstvo/Our economy **62**(1), 37-45, 2016, http://dx.doi.org/10.1515/ngoe-2016-0004,

[10] Moric, I.: *Clusters as a factor of rural tourism competitiveness: Montenegro experiences.* Business Systems Research Journal **4**(2), 94-107, 2013, http://dx.doi.org/10.2478/bsrj-2013-0015,

[11] Zahra, S.A. and George, G.: *The net-enabled business innovation cycle and the evolution of dynamic capabilities.* Information Systems Research **13**(2), 147-150, 2002, http://dx.doi.org/10.1287/isre.13.2.147.90,

[12] Jurčić, M.; Lovrenčić, S. and Kurnoga, N.: *Croatian defense industry competitiveness* cluster*: knowledge management and innovation perspective.*
Business Systems Research Journal **11**(1), 59-72, 2020,
http://dx.doi.org/10.2478/bsrj-2020-0005,

[13] Dumičić, K.; Bregar, L. and Žmuk, B.: *Statistical methods use in small enterprises: relation to performance.*
Business Systems Research Journal **5**(3), 37-48, 2014,
http://dx.doi.org/10.2478/bsrj-2014-0018,

[14] Mencer, I.: *Strategic management: enterprise development management.* In croatian.
TEB poslovno savjetovanje d.o.o., Zagreb, 2012,

[15] Ratten, V.: *Coronavirus and international business: An entrepreneurial ecosystem perspective.*
Thunderbird International Business Review **62**(5), 629-634, 2020,
http://dx.doi.org/10.1002/tie.22161,

[16] Štajduhar D.: *Coronavirus disease 2019: a summary of publications for workers in public health and primary health care.*
http://www.stampar.hr/sites/default/files/Aktualno/novosti/covid_19_sazetak_2020_03_30.pdf, accessed 15th December 2020,

[17] –: *Number of coronavirus-infected patients in the Republic of Croatia from February 25th, 2020 to January 14th, 2021,*
https://www.koronavirus.hr, accessed 14th January 2021,

[18] Čavrak, V.: *Macroeconomics of the COVID-19 crisis and how to approach its solution.* In Croatian.
Faculty of Economics, University of Zagreb, Zagreb, 2020,

[19] Alpeza, M.: *Coronary measures to fight for the sustainability of the economy in seven EU countries.*
Ekonomski fakultet u Osijeku & CEPOR, 2020,

[20] Croatian National Bank: *Macroeconomic Developments and Outlook.*
https://www.hnb.hr/documents/20182/3398618/eMKP_08.pdf/6d99f12b-6a7b-2743-df23-cc417e0c964a, accessed 18th January 2021,

[21] Croatian Bank for Reconstruction and Development: *Assistance to entrepreneurs affected by the covid-19 epidemic.* In Croatian.
https://www.hbor.hr/tema/pomoc-poduzetnicima-za-ublazavanje-negativnih-posljedica-nastalih-pandemijom-covid-19-virusa-koronavirusa, accessed 14th December 2020,

[22] –: *Government measures.* In Croatian.
https://www.koronavirus.hr/vladine-mjere/mjere-pomoci-gospodarstvu/126, accessed, 15th December 2020,

[23] Porezna uprava: *Tax information related to the emergency caused by the spread of the covid-19 virus.* In Croatian.
https://www.porezna-uprava.hr/Stranice/COVID_19_informacije.aspx, accessed 15th December 2020.

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THE IMPACT OF COVID-19 CRISIS ON A COMPANY'S INTERNAL COMMUNICATION

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ABSTRACT

The goal of the article is to identify whether the COVID-19 crisis has had an impact on the company's internal communication – both from leader's and organization member's perspective, that is, to compare the leaders' perceptions of their leadership and communication style on one hand, with the organization members' perceptions of the communication model they use with same-level colleagues and the descriptions of their leaders' philosophy on the other hand. 16th March 2020 is the turning point that marks the start of the pandemic – communication before and after this date was analyzed. Two questionnaires (one for leaders and one for organization members) designed by the authors of this case study were administered to these two targeted hierarchical levels in a privately-owned company in North Macedonia. The analysis showed what both groups stated – after the pandemic outbreak face to face meetings were replaced by virtual communication, shorter meetings became more common, leaders were involved by giving feedback, and they led by logos, with the most welcomed difference being in the leadership model: leaders maintained that their leading was by example in both periods, while organization members claimed that after the start of the crisis their leaders' priority was work-life balance.

KEY WORDS

COVID-19 pandemic, effects, internal communication, leaders, organization members

CLASSIFICATION

JEL: D23, D81, D83

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INTRODUCTION

The COVID-19 pandemic is considered a global health and economic crisis [1]. It hit the world in March 2020 and imposed strict measures on the lives of the whole population, so the unprecedented circumstances affected everybody's both personal and professional wellbeing. In the business context, it meant that 'the new normal' called for drastic changes in the way companies were operating. As it has disrupted many facets of people's lives, it has also necessitated profound changes in the way work is done. Organizations around the world have had to suspend and modify their operations, which has led to major work adjustments and, even worse, loss of employment for numerous workers [2]. Physical distancing and not meeting with people due to measures imposed by the Government and, on a global level, by the World Health Organization, forced the companies to close their premises and move their work online. This dramatically changed the working conditions and everyday work routine, since physical face-to-face meetings, which were the best communication model that ensured immediate feedback, were not an option anymore and had to be replaced with remote work. To protect their own employees' lives, and to stop the spread of the virus, or, at least, to contain it, the companies had to project their work in line with methods that secured the best possible communication flow and information exchange. Virtual platforms were the only tool the companies could use to meet with their colleagues, discuss their everyday activities, plan their business, target their clients, present their products, offer their services, and negotiate prices. As far as communication within a company was concerned, leaders had to learn how to effectively communicate with their employees and to successfully share their leadership knowledge and philosophy so that they yield desired results – something that in normal, non-pandemic circumstances they would have done in physical face to face meetings.

Generally, and within an organization, communication consists of complex, creative processes where the content is constructed and created through the interaction between individuals [3]. Researching Italian companies, Mazzei and Ravazzani found out that a "stream of unambiguous messages resulted in attitudes of realism and trust among the employees" [4]. Frandsen and Johansen [5] show that leaders in organizations must be aware of the importance of horizontal communication and give employees time to interact and thereby create meaning. Speaking of epidemic emergencies, Qiu et al. demonstrated how an open attitude and active engagement of stakeholders to address risk information needs can build trust and facilitate collaborations [6].

Emergency response situations, such as a pandemic, are highly complex and volatile and involve competing priorities and conflicting interests amongst stakeholders, so collaborative planning and shared decision-making is essential [7]. In the case with coronavirus, when a new norm was established – social distancing, which was wrongly named as what was meant was physical distancing – communication had to be founded on new pillars. Electronic means of communication became the only new reality, so digital technologies were adopted to enhance emergency management [8]. Hence, a virtual work environment became an everyday practice, characterized by work arrangements where employees are dispersed in various ways (e.g. geographically) and interact within and outside their company through technology [9].

But, to effectively run an organization and ensure good communication and quality collaboration, especially in a pandemic, it is important to understand what role leaders play in times of crisis, and what aspects of leadership are associated with success. This is particularly evident in a crisis or uncertainty, as people look to the statements, decisions, and actions of various leaders and attempt to discern which set of characteristics is best for addressing the problem at hand. So, since leaders are navigating the team and orchestrating the entire organizational process, much of the current theory and research has been concentrated on the vital part that they play in leading the company. What they suggest is that leaders are most

effective when they can display an outwardly charismatic or transformational style [10]. Everything functions perfectly or, at least, well in times of normalcy but when familiar organizational structures and systems are lost, followers look to their leader for a sense of stability. In such scenarios, leaders with foresight, who were decisive and solutions-oriented, were seen as able to show a way forward [2]. Quick and timely action is the core of effective management since time is not a leader's friend. The longer the crisis, the more likely the organization will be associated with trouble, so the leader should deliver rapid, honest, and transparent communication, which is the lifeblood of successful crisis management [11]. Oftentimes, employees can lack clarity in their tasks and the means of accomplishing them, and therefore leaders should step in to manage the virtual team because they know the goals, resources, and processes of the entire team best [12].

Our study strives to research the impact that the current crisis has had on a company's internal communication by investigating four hypotheses. Namely, we make the following presumptions: (i) leaders have a different model of communication and frequency before and after the crisis; (ii) meetings duration different before and after the crisis is different; (iii) the crisis changed the preferred way of communication among the organization members; (iv) organization members' preferred way of communication does not match with the leaders' preferred way of communication. As far as methodology is concerned, two separate questionnaires (one for leaders and one for employees/organization members) designed by this study's authors were used to survey these two hierarchical levels on the perceptions the leaders had on their ways of communication with their employees before and after the crisis, and how the organization members viewed the communication within their company. Most of the questions are asked to evaluate their leader's style in these two periods – before and after the pandemic outbreak.

The article's contribution is to understand the leader's role in orchestrating the team in a pandemic, and for the successful running of the company, to recognize the importance of communication between the leader and the organization members. It is the common sense of identity and purpose that emotionally glues any group or culture, so great leaders need to ruthlessly protect their people; encourage connection, collaboration, and collective ownership; thus, nurture a safe environment of trust. In times of crisis, ensuring connection, collaboration, and communication is needed more than ever [13]. The leader should try to find a solution to the crisis, consider the financial stability of the organization, but also care for the welfare of the employees, by clearly presenting to them the company's vision, role modeling behaviors, and making their followers feel like they belong [14]. To find answers to how (much) communication has changed in one company before and after the pandemic outbreak due to the COVID-19 crisis, our research instrument encompasses questions regarding the preferred ways of communication practiced in the two surveyed periods, as well as items connected with the group decision-making process and the role model leadership.

The article is organized into four sections. After the Introduction, the Literature Review part discusses internal communication and how leadership and internal communication are connected. This is followed by the Methodology part that is divided into a research instrument, and data and statistical methods. The Results section gives the leaders' attitudes, the organization members' attitudes, with a separate part on their comparison. Finally, the Conclusion discusses our hypotheses by outlining the research findings, followed by the practical implications of our study, the limitations, and future research possibilities.

LITERATURE REVIEW

INTERNAL COMMUNICATION

Various scholars like Dance [15], Losee [16], and Nilsen [17] agree on different approaches to understanding the definition of the word "communication". Jones and George [18] portray

communication as sharing of information between two or more individuals or groups to reach a common understanding. The intense global economic and technological development, the demographic shifts, and the migration of the workforce all have a massive impact on the dynamic environmental settings that organizations must have continually identified, modified, and aligned. In the context of the evolving environment, the stability of the principles of organizational functionality is relative, such as the culture, the vision, the leadership, and the communication [19]. In such circumstances, the degree of success highly depends on the power of the organizational system to effectively maintain the workforce.

The principles of management force the organizational systems towards communicating to secure the productivity of the employees within the organizational system. As information is the force that drives every organization and a foundation on which every company is based and moved forward, the main goal of the organization should be to convert information into doable tasks through a decision-making process. That is why the management of the organization acts as an information system [20]. Information systems are a communicative network knit between the so-called communicative points connected with two-ways communication channels, securing all necessary information for the user, at all times, at the lowest possible costs. In other words, a fully functional system consisted of employees, methods, communication techniques, and devices that enable the distribution of information (hierarchically, upward and downward) to all relevant communication points and decision-making centers.

De Vries, Bakker-Pieper, and Oostenveld [21] consider leadership from a communicative perspective, and therefore they define the leader's communication style as: "a distinctive set of interpersonal communicative behaviors geared toward the optimization of hierarchical relationships to reach a certain group or individual goals". According to Church's model of organizational communication developed as the C-P-R model [19], three components are highlighted as essential for the nature of the process: content, process, and roles. This model portrays the internal organizational communication, organizational culture, internal relationships, and models of teamwork. According to the author of the model, the content of information is the essence of the organizational culture, the beliefs, norms, and values that people hold about the company. The second component of the C-P-R model is a process that refers to the mechanisms, methods, and patterns of interaction to which the actual content is transferred or implemented from one subsystem to another. In other words, it is a form by which messages or information are shared among people, through face-to-face contact, emails, meeting, voicemail, and digital meetings.

The process can have two dimensions: informal and formal. The informal dimension consists of mechanisms such as performance appraisals, meetings, social networks and contracts, politics, rewards systems, and policies and procedures. Regarding the informal dimensions, Jones and George [18] state that first and foremost, no matter how electronically-based, communication is a human endeavor and involves individuals and groups, upon whose involvement the whole communication process relies. Church [19] maintains that the third component of the C-P-R model, the roles that the individuals have, helps identify exactly who is accountable for or involved in the various processes.

When it comes to establishing communication in a company, Bojadjiev [23], in his webinar, recommends eight principles for sustaining culture through communication in times of crisis, and those are: being consistent, leading from the heart, being passionate, leading by example, caring about the followers, building trust and followers, being brave and taking risks, and having open and effective communication. Regarding the last principle, ensuring open and

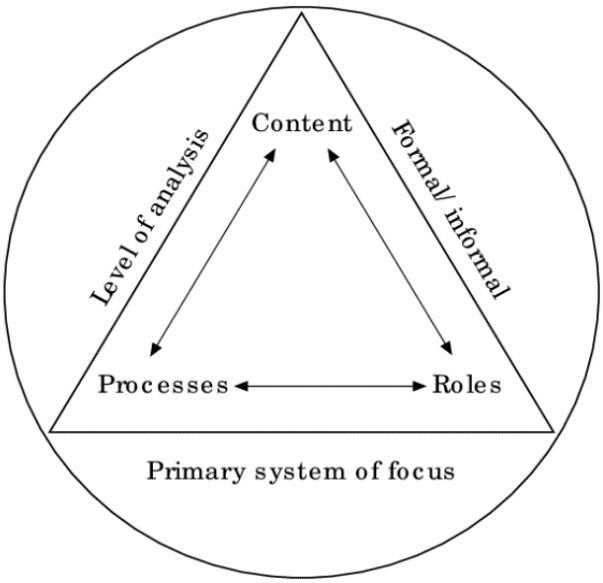

Figure 1. C-P-R model of organizational communication [22].

effective communication, he suggests the model of organizational communication that is based on the Aristotle Rhetorical Triangle (ethos, pathos, logos), which stands for short emotional appeal, backed by facts and personal credibility.

When it comes to reaching a competitive advantage in the market, the increasing demand and impulse of the organization require managers to increase the efficiency of organizational communication. According to the principles of contemporary management in Jones and George [18], the four pillars of competitive advantage (efficiency, quality, responsiveness to customers, innovation) are based on a good organizational communication model.

LEADERSHIP AND INTERNAL COMMUNICATION

Barnard [24] comes up with specific rules to help executives create a system of communication within their organizations, and those are: the channels of communication should be definite; everyone should know the channels of communication; everyone should have access to the formal channels of communication; lines of communication should be as short and as direct as possible; competence of persons serving as communication centers should be adequate; the line of communication should not be interrupted when the organization is functioning, and every communication should be authenticated. This strong correlation between executives and communication that Barnard makes is driven by his knowledge that a true leader cannot lead effectively if they only put themselves in the role of a leader but do not communicate as such.

Benne and Sheats [25] proved that different individuals take on different roles depending on the different groups they take part in, dividing the roles as prosocial; thus, positively affecting the group. As there is a high positive connection between leadership and intercommunication in a company, when combined together, better results, decision-making and improvement should be expected. Therefore, one's leadership effectiveness is measured on the basis of how well they communicate and on the relationships they create with their followers. Many authors have noted that communication is central to leadership (Awamleh and Gardner [26]; Den Hartog and Verburg [27]; Frese et al. [28]; Kirkpatrick and Locke [29]; Riggio et al. [22]; Shamir et al. [30]; Spangler and House [31]; Towler [32]) but for one leader to establish good internal communication, that is, communication with their organization members, one of the main requirements is to have good interpersonal communication skills.

In times of crisis, the whole system of norms and values changes – the leadership style should be adapted to the communication and organizational changes that will inevitably follow. The change in communication and organizational change are two linked processes because the change in the organization is dependent on the ability to change the individual's communication style. A change in the organization followed by no change in communication does not affect the long run and the future of that organization might be critical. For an organization to have an effective change, a clear definition of the change is required; for example: following the current situation, when a change is required during a crisis caused by a pandemic, the goal of the organization should be to change communication to less face-to-face interactive type, and more indirect contact. The change influenced by the environment can be easily endured and, hopefully, accepted if both communication and organizational processes are aligned. During a change, leaders must be supportive and coach their followers to keep them motivated, because for the change to be effective, only low levels of resistance are allowed. This means that the higher the level of resistance is, the harder it will be for the organization to adapt or implement a change. And, once the change has happened and needs to be announced, the change alongside goals must be passed on to the employees in due time and clearly, stating the reasons and the objectives the change aims for. The flow of information should be from the leaders as senders to the followers as receivers.

Changes take time and can cause uncertainty and job insecurity among the employees. In periods of change, the uncertainty of employees will have implications on employees as individuals, or on the environment when that employee is working. The employees are concerned with questions like "Will I still have a job after this change?", "Will I still have the same co-workers after the change?", and "Can I still do my tasks in the same way I used to?", which are questions that mostly occur in periods of crisis, when layoffs are most frequent and people fear for losing their job or the future of their work place is questioned. To cope with the insecurity, leaders must share the knowledge, prepare their followers and keep them up to date, because if the employees know the motives for change, it will help reduce uncertainty and will hopefully create readiness that will eventually lead to an effective change, as shown in the following figure – Figure 2.

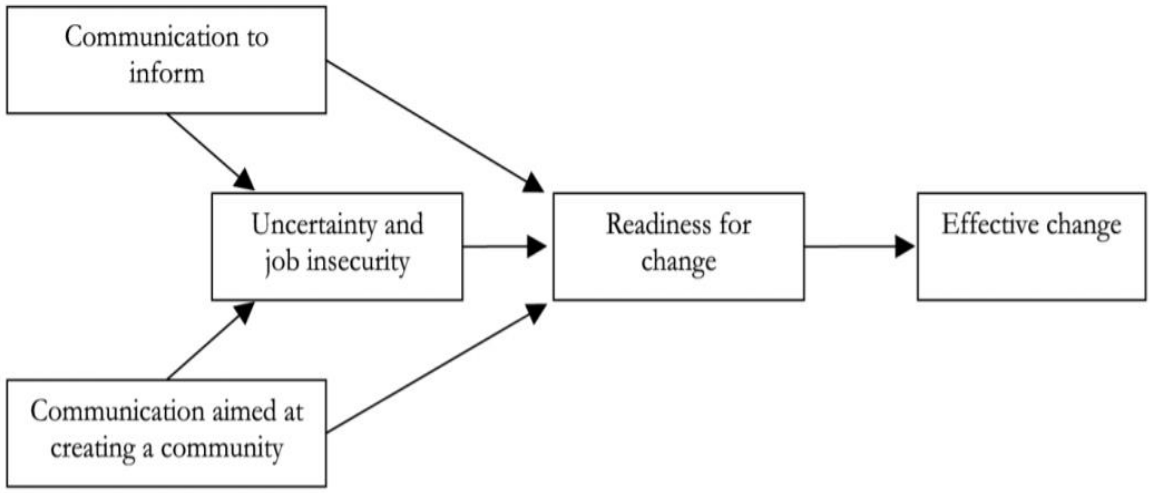

Figure 2. Conceptual model of communication during organizational change [9].

Every crisis creates negative emotions, distress, and feelings of uncertainty and, as the leader is the top figure in one company, it is important that he counters the negative course of action and proves to be in control of his life and those of his employees. The leader is the one to whom the others look for assurance and stability; therefore, his messages, regardless of the

channel, should instill drive and motivation in subordinates, create readiness for change and motivate the employees to act.

COVID-19 is such a crisis; it has affected all aspects of our personal and work lives when organizational leaders must not only work through the economic challenges due to the crisis but also adapt their leadership to the current context. Yet, in the literature, leadership theories emphasize that there is no "one-size-fits-all" approach to leadership; instead, leaders must adapt their styles and behaviors to situational constraints and the needs of their followers. As Charles Darwin reminded us: "it's not the strongest or most intelligent species that survive, but the one most responsive to change [13]". Therefore, acknowledging people's different personal circumstances and different responses to the crisis requires leaders to be attuned to employees not only a professional but at a personal level, too. Thus, for a company to thrive in a crisis, Kapucu and Ustun's (2018) model of collaborative crisis management classified key crisis leadership attributes as traits and skills (decisiveness, flexibility, and communication), and as behaviors (problem-solving, managing innovation, and creativity, team building, planning, and organizing personnel, motivating, networking and partnering, decision-making, scanning the environment and strategic planning). As Perry and Laws [33] say, collaborative planning and shared decision-making are essential in emergency response situations that are highly complex and volatile and involve competing priorities and conflicting interests amongst stakeholders.

This again underscores that, among other things, the leader should assess the crisis or problem situation, should be flexible and understanding to the employees' fears, needs and demands, rebuild the team's strength, which is usually diminished in a crisis, solve problems, make decisions, motivate the followers, but most of all, communicate and network. And this communication part takes a huge 'portion' since it is vitally important for a leader to make connections with people at all levels of the institution during a crisis, as that makes the collaboration to be meaningful. Still, the specific nature of crisis moments, when a significant change is needed and there is a complete departure from norms, craves for communication to be absolutely meaningful because reliable information is scarce. In such cases, leaders must develop their point of view towards the situation and make sure that they communicate it to others in a way they will comprehend. This process, called sense-making by Maitlis and Christianson [34], works to establish a mutual understanding of a problem between leaders and followers that then allows for a cohesive and organized approach to problem-solving. In such times of turmoil, followers need someone to rely on, someone who can guide them through hard times, and that can be seen in communicating clearly what needs to be done to achieve a more positive result. That kind of leader will be surely endorsed by the followers. Getting followers to accept you and cooperate with you is a crucial part of leadership. For one leader it is very important to be liked, accepted, and supported to convey the messages successfully and accomplish their goals. A leader should motivate others to follow them and that is extremely important in turbulent times.

The importance of investigating the role of transformational leaders in shaping and facilitating processes in small firms is emphasized in the literature; first, because transformational leaders are known to demonstrate charisma, resonate with followers by presenting a vision, role modeling behaviors, and making their followers feel like they belong [34]. Also, the focus is on positive emotions framed through a vision for the future [35]. All this undoubtedly helps them to improve communication within the company and increase the quality and quantity of the information exchanged. Second, smaller firms are worth researching because they have a weak market and fewer resources compared to the big corporations, so the way they cope with the new challenges is insightful.

In the case of the coronavirus, leaders with guidance on using remote technology to foster engagement and emotional proximity in new virtual organizations are especially appreciated [36].

When Semaan and Mark [37] researched how technology could be used to make people resilient in maintaining their routines during extreme disruption, informants were asked how they conducted their daily lives *before* and *during* their respective conflict situations. Despite their inability to socialize in collocated settings, through the adoption and use of technological resources (e.g. the mobile phone, Instant Messenger and Facebook) their informants have reported that communication frequency has increased because it is now easier to connect with others. Surely, the new technological advancements such as e-mail, mobile phones, social media, etc., resulted in an even higher percentage of interacting compared to the one leaders had with their followers, let alone the new pandemic situation when electronic communication is not only recommended but imposed as the only possible means.

METHODOLOGY

RESEARCH INSTRUMENT

As a research instrument, the study uses two questionnaires, both of which aim at identifying communication between leaders and organization members in one company, when two periods are surveyed – before the pandemic outbreak (before 16th March) and after the pandemic outbreak (after 16th March). One questionnaire is filled in by leaders, who reveal their perception of their leadership behavior (both before and after the crisis), and another one is filled in by their employees, that is, organization members, who are asked to give their perception on and evaluate their leader's leadership style, as well as describe their communication style with their co-workers.

The leader's questionnaire consists of four sections. The first section covers demographic information about the leaders and asks about their age, gender, if they are a leader in their own company, the number of employees in the company, education, the length of their leadership position, and the company's location. For most of these items, the respondents are offered multiple-choice options and are asked to choose the most appropriate answer, except for the last question, about the company's location, when the respondents provide the country's name. The second section asks the leaders to mark their preferred way of communication with their employees before and after 16 March, by offering them several items (face to face meetings, phone calls, email, Short Message Service (SMS)/Viber/Messenger, video conversation one-on-one or video conversation one-to-many and asking the leaders to mark these from 1 to 5, whereby 1 is the lowest rank and 5 is the highest. The third section shows how the group decision-making process changed in a pandemic in terms of meeting frequency, meeting duration, meeting structure, and communication of goals. For each category, several options are offered and the respondents reply by selecting the field that best answers the question. The fourth and last section displays how effectively leaders position themselves and how the organization members view them as role models through their leadership style by asking how much their engagement in getting the job done is a way to communicate their vision, to influence the organization members, how positive feedback is given, what kind of feedback is given when failing, what the most preferable decision-making style in the organization is, how much care is given to work-life balance, to the working conditions, as well as to rank the leader's leadership style - leading from the heart, leading by example, and to evaluate the leader's communication style: if it is based on credibility (ethos), on facts (logos), our emotions (pathos). When the question is given as a statement, the leaders are asked to rank their answers from 1 to 5; 1 meaning completely disagree and 5 – completely agree, while where several options are offered, the respondents should mark the field that best answers the question.

The organization member's questionnaire consists of the same four sections as in the leader's case, with the same marking procedure applied to each question. The only differences of this questionnaire are the following: In the first section, the organization members are asked about the length of their work experience in the company (not about the length of their leadership position); in the second section, they are asked to mark their preferred way of communication with their colleagues (unlike with their employees); in the third section, to mark how their leader communicates their goals (not how they do it); and in the fourth section, to mark their leader's communication style (unlike their own).

DATA AND STATISTICAL METHODS

The study was conducted in a privately-owned company with a primary activity of betting on the game of chance. The questionnaires were administrated to two hierarchical levels: leaders and organization members, by distributing them to these groups both electronically and in hard copy, and giving the respondents an option to reply in a way more convenient to them. The total number of questionnaires filled in by leaders was 43 and by the organization members was 56. The survey was anonymous, and no signs that could reveal the respondent's identity were made on the questionnaires. The information gathered for this study has been statistically analyzed by descriptive statistics, paired sample t-test, and independent sample t-test between means.

RESULTS

LEADERS' ATTITUDES

The first questionnaire section, which gathered information about the demographic characteristics, showed that most of the leaders, 86 %, were in the age group 30-50, 77 % of the surveyed leaders were male, 91 % worked in their own company, 58 % of the leaders held a Bachelor degree, and the same percentage (58 %) worked in their leader's capacity between one and five years.

The second section, asking about the preferred communication model, showed that before the crisis, the leaders preferred to have face-to-face meetings, while after the crisis, their preferred way of communication switched to SMS, Viber, and Messenger as communication channels.

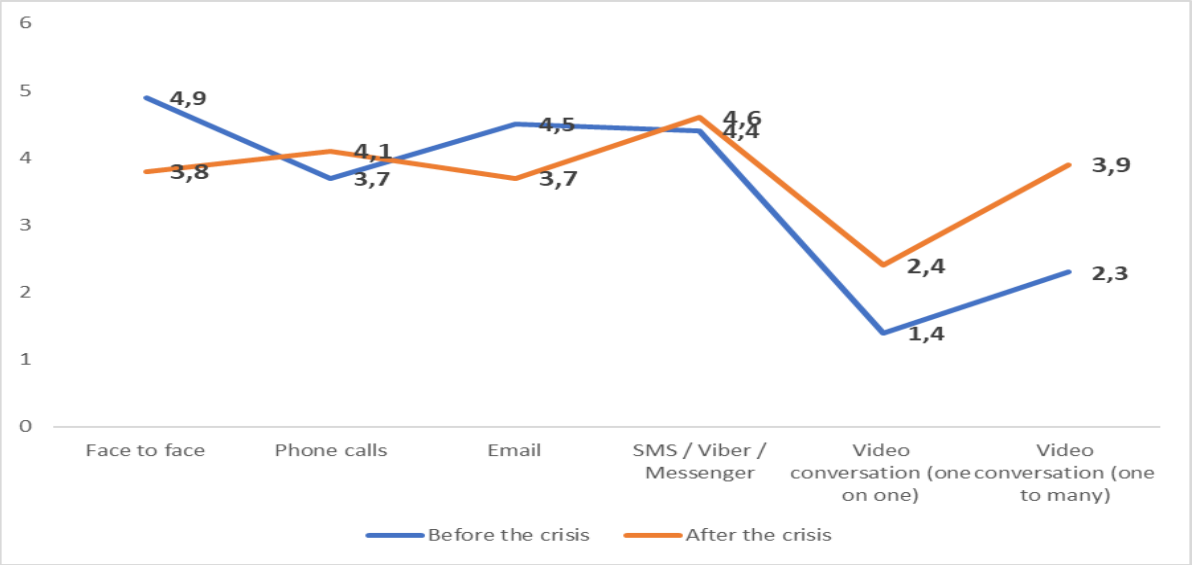

Figure 3. Preferred communication.

Before the crisis (before 16th March), leaders practiced more interactive types of direct communication. They were highly interested in face-to-face communication at the workplace while also using SMS after work. But after the start of the crisis, the focus changed: the leaders focused more on virtual-based interactions such as video conversation one-on-one, emails, face to face was still used, video conversation one-to-many, phone calls; but SMS, Viber, and Messenger had the highest percentage. It is noticeable that even though the company switched to virtual communication, the one-on-one type of communication had fallen off even on virtual platforms. This is because one-on-one virtual communication was not as effective as one-to-many types of communication where the leader addresses all issues, changes, plans, updates, and information to the whole group. Whereas conveying all of this in one-on-one form would take a lot more time, it still is a used way in cases when it is required to share some quick information with only one person. The results from the third section – about group decision-making within the company – are graphically presented in Figure 4.

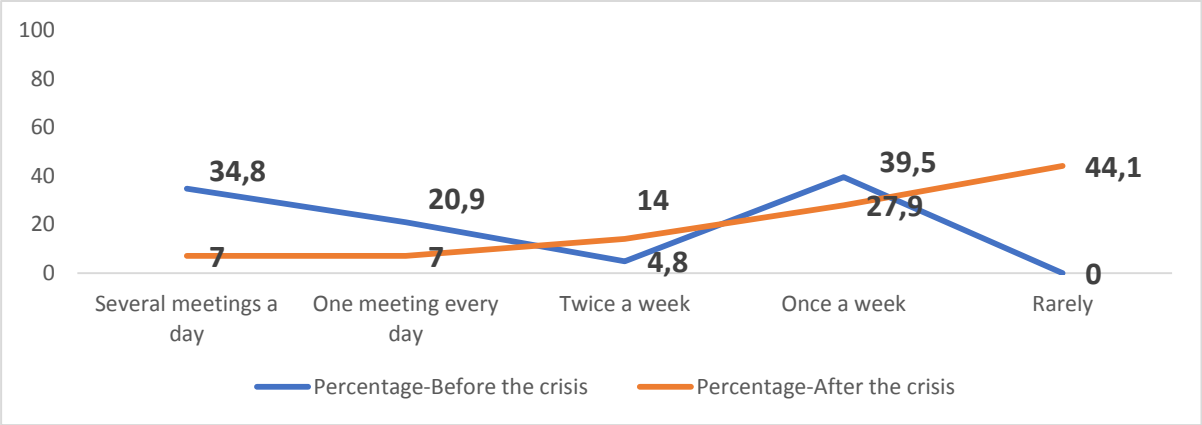

Figure 4. Frequency of meeting.

Namely, the first question from this section asks for the leader's opinion about the frequency of their formally scheduled meetings before and after 16th March. Before the crisis, the most frequent meetings were those held once a week – 39,5 %, while after the crisis, meetings were rarely held, that is, the highest percentage – 44,1 % - in this category was given to the answer option 'rarely'.

When asked about the most effective meeting duration, 60,5 % of the leaders maintained that shorter meetings (less than an hour) were more effective than longer ones. But surprisingly, this situation did not change after the crisis; on the contrary, the already high percentage of shorter meetings increased after the crisis, that is, even 90,7 % tended to practice shorter meetings after 16th March. Undoubtedly, this clearly shows the leaders' preference for shorter meetings, which just escalates after the crisis.

The leaders' ways of communicating their goals and vision to the employees have changed. Before the crisis, one-on-one meeting face to face had the highest percentage – 37,3 %, and after the crisis, this category – one-on-one face meeting still had the highest percentage of all ways of communication – 35,7 %, which is slightly lower than the percentage before the crisis because after the crisis email and phone conversation had higher values compared to the period before the pandemic outbreak. This proves that, once the pandemic had started, the leaders thought of safer ways of communicating, that is, they adapted to the situation by practicing more email, phone, and video conversation, which had lower use-value before 16th March, while maintaining the use of physical, face to face, one-on-one meeting.

Both before and after the crisis, the leaders preferred the participative decision-making style, which implies their consulting with the organization members. Their participation in the company's decision-making processes marks a pretty high percentage of 86. The interesting

fact proven by the statistical analysis is the fact that leaders did not change their preferable decision-making style since statistically there is no significant change in the preferable decision-making style before and after the start of the crisis.

When asked about their dedication to promoting a better work-life balance and working conditions, leading from the heart and leading by example, again the highest value is in the same category. Both before and after the crisis, the leaders thought that their leading was by example.

ORGANIZATION MEMBERS' ATTITUDES

The first questionnaire section determined that 60,7 % of the organization members were in the age group 30-50, their gender distribution was equally divided – 50 % male and 50 % female, and on the education note, 59 % had a college degree, as shown in Graphs 7, 8, 9.

The second section questions the organization members' preferred way of communication. Before the crisis, they preferred face to face meetings, while after 16th March, this mode of communication dropped to an astonishingly low level, whereas the use of all other forms of communication increased: video conversation one-to-many, video conversation one-on-one, SMS, Viber, and Messenger, email, but phone calls were reported as the most preferred communication mode among organization members.

The third section titled Group decision-making surveys the organization members' opinion on the frequency of the formally scheduled meetings with their colleagues. Before the crisis, the highest percentage of 37,5 % was given to one meeting every day, while after the crisis, 39,28 % was given to having meetings once a week. The following figure illustrates this:

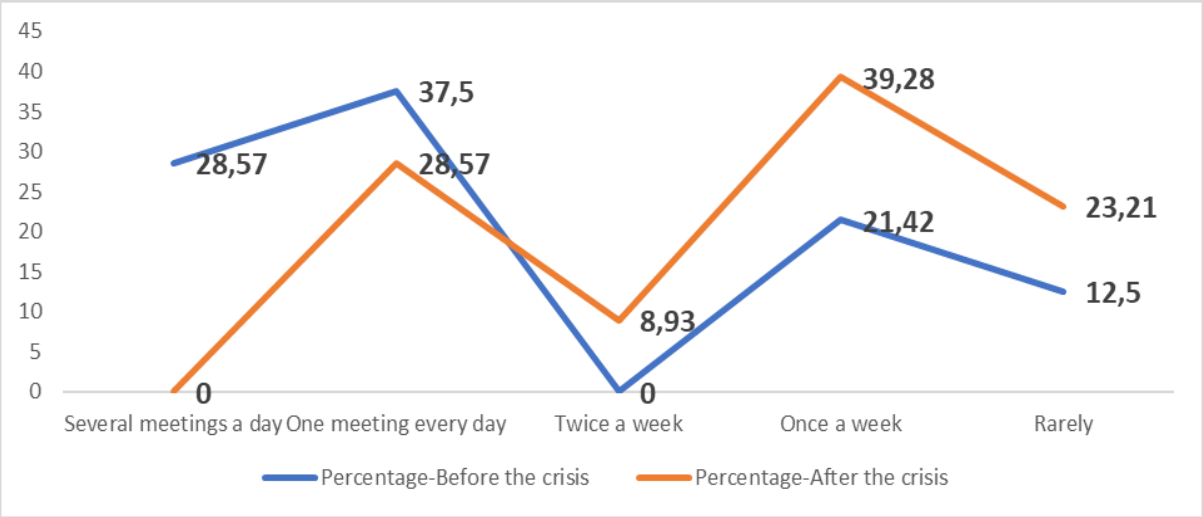

Figure 5. Frequency of meetings.

Shorter meetings were more common before the crisis, with 60,71 %, and this category was still dominating after the crisis – 71,42 % claimed that shorter meetings were more effective than longer ones.

Both before and after the crisis, when communicating with their employees, leaders mark phone conversation as the best way to communicate their goals and vision. Before the crisis, the phone was used 28,22 %, with video conversation, regardless of whether one-on-one or one-to-many, not used at all, while after the pandemic outbreak, the use of phone increased to 38,46 %, video communicating one-to-many remained not to be used at all, but the video conversation one-on-one started to be used and had a percentage of 4,81 %.

According to their employees, the leaders' involvement had not changed due to the pandemic; both before and after the crisis the leaders were involved by giving feedback.

The paired samples statistics for these categories show that before the crisis leaders paid equal attention to work-life balance, and their leading by example, while after the crisis, their priority was balancing between work and life.

COMPARISON

When comparing the leaders and organization members' answers concerning the most preferred way of communication, Table 1 shows that when talking about the period before the pandemic outbreak the leaders and their employees' answers overlapped; both groups claimed that in that period communication was dominantly face to face. However, their answers mismatched when asked about the way they most preferably applied after the pandemic outbreak, that is, the leaders maintained that in the pandemic they preferred SMS, Viber, Messenger, while the employees said that after 16th March phone calls were predominantly used.

Table 1. Comparison of preferred way of communication of leaders and organization members (1 – the lowest rank, …, 5 –the highest rank).

		Mean	Std. Dev.	Mean	Std. Dev.	t-statistic	P-value
		Leaders (n = 43)		Workers (n = 56)			
Pair 1	Face to face before Covid	4,90	1,61	5,60	0,49	3,088	0,000**
	Face to face after Covid	3,79	2,12	3,00	2,01	1,893	0,060
Pair 2	Phonecalls before Covid	3,69	1,99	4,87	0,87	3,950	0,000**
	Phonecalls after Covid	4,11	2,08	5,64	0,69	5,323	0,000**
Pair 3	Emails before Covid	4,51	1,71	4,73	1,68	0,580	0,560
	Emails after Covid	3,68	2,08	5,30	1,27	4,699	0,000**
Pair 4	SMS and Viber before Covid	4,42	1,76	4,64	1,68	0,54	0,590
	SMS and Viber after Covid	4,63	1,84	5,26	1,54	1,964	0,050*
Pair 5	Video conversation one-on-one before Covid	1,42	1,05	1,30	0,46	0,766	0,440
	Video conversation one-on-one after Covid	2,37	2,04	3,71	1,89	3,386	0,000**
Pair 6	Video conversation one-to-many before Covid	2,35	1,96	1,16	0,37	4,411	0,000**
	Video conversation one-to-many after Covid	3,89	2,09	2,94	2,17	2,165	0,030*

*statistically significant at 5 %
**statistically significant at 1 %

Table 2. Comparison of engaging in getting the job done as a way of 'sharing vision', 'influencing', and 'giving feedback' (1 – fully disagree, …., 5 – fully agree).

		Mean	Std. Dev.	Mean	Std. Dev.	t-statistic	P-value
		Leaders (n = 43)		Workers (n = 56)			
Pair 1	Sharing vision before Covid	4,33	0,89	4,58	0,68	1,902	0,060
	Sharing vision after Covid	4,44	0,88	4,37	0,82	0,175	0,860
Pair 2	Influencing before Covid	3,11	1,46	4,69	0,46	7,632	0,000**
	Influencing after Covid	4,02	1,38	4,69	0,46	3,429	0,000**
Pair 3	Feedback before Covid	4,72	0,70	4,89	0,31	0,764	0,450
	Feedback after Covid	4,72	0,70	4,89	0,31	0,764	0,450

**statistically significant at 1 %

In Table 2, the comparison is made between the leader's and their employees' answers regarding how leaders are involved in getting the job done. Both groups of respondents have said that, before the crisis and after the crisis, the leaders were present in doing the job by giving feedback. This shows that the leaders' involvement before and after the crisis has not changed – their 'giving feedback' outnumbered 'sharing vision' and 'influencing'.

Table 3 shows the leader's dedication to four elements as part of their leadership model: whether they care for creating work-life balance, providing better working conditions (their followers' physical and mental health, communicating with employees about what protocols the organization is putting in place to keep them safe), leading by example, or leading from the heart, and if this has changed in the two time periods - before and after the crisis. The leaders answered that before the crisis they had mostly led by example, while when the employees were asked about what their leaders were dedicated to in this same period, they gave the same values to 'creating work-life balance' and 'leading by example'. Talking about the period after 16th March, the leaders insisted on leading by example, while their employees marked attention to work-life balance as a dominant element in their leaders' philosophy after the pandemic outbreak.

Table 3. Comparison of leader's dedication to creating a work-life balance, providing better working conditions, leading by example and from the heart (1 – not implanted at all, …., 5 – fully implemented).

		Mean	**Std. Dev.**	**Mean**	**Std. Dev.**	**t-statistic**	**p-value**
		Leaders (n = 43)		Workers (n = 56)			
Pair 1	Work-life balance before Covid	3,67	1,56	4,69	0,46	4,662	0,000**
	Work-life balance after Covid	3,83	1,49	4,78	0,41	4,126	0,000**
Pair 2	Working conditions before Covid	1,62	1,11	1,08	0,28	3,493	0,000**
	Working conditions after Covid	1,39	0,72	1,00	0,00	3,503	0,000**
Pair 3	Leading from the heart before Covid	3,79	1,53	4,30	0,98	2,006	0,050*
	Leading from the heart after Covid	3,76	1,67	4,48	0,68	2,881	0,000**
Pair 4	Leading by example before Covid	4,13	0,83	4,69	0,46	4,194	0,000**
	Leading by example after Covid	4,58	0,66	4,58	0,49	0,086	0,930

*statistically significant at 5 %
**statistically significant at 1 %

Table 4 shows linearity in the leaders' and organization members' answers when asked how their leaders lead: by ethos, logos, and pathos. Both respondents' groups maintained that in

the period before the crisis and after the pandemic outbreak the leaders were leading by logos. The mean values of this category are dominantly higher compared to the other two categories.

Table 4. Comparison of leader's way of leading by ethos, logos, pathos (1 – not implanted at all, …., 5 – fully implemented).

		Mean	Std. Dev.	Mean	Std. Dev.	t-statistic	p-value
		Leaders (43)		Members (56)			
Pair 1	Leading by ethos before Covid	4,18	0,82	4,01	0,61	1,098	0,27
	Leading by ethos after Covid	4,11	0,85	3,83	0,88	1,515	0,13
Pair 2	Leading by logos before Covid	4,60	0,90	4,35	0,81	1,383	0,17
	Leading by logos after Covid	4,72	0,88	4,58	0,68	0,829	0,41
Pair 3	Leading by pathos before Covid	2,79	1,28	3,28	1,41	1,783	0,77
	Leading by pathos after Covid	2,81	1,41	3,42	1,39	2,142	0,03*

*statistically significant at 5 %

CONCLUSION

In this article, out of the four research propositions that grounded our research, the findings from the questionnaires resulted in accepting half of the research propositions and rejecting the other half.

The first research preposition (RP1), which states that leaders have a different model of communication and frequency before and after the crisis, was accepted. The results have shown that leaders indeed have a different model of communication and frequency before and during the crisis, that is, the face-to-face meetings before the crisis were replaced by safer, virus-free communication channels like SMS, Viber, and Messenger, which is quite expected due to the health recommendations and the imposed measures. However, what is surprising is that the frequency of meetings category results was not aligned with the urgency of the situation, that is, one would expect meetings to be more frequently held after the start of the crisis when more directions and consultations are needed, but what the leaders said is that before the crisis they had meetings once a week, while after the crisis they rarely held meetings. This makes us conclude that the urgency of the situation and the uniqueness of the issues the leaders are facing required them not to have fewer meetings, but on the contrary, to use more informal, electronic, ways of communication rather than calling, even a virtual, meeting.

The second research proposition (RP2), suggesting that the leader's meeting duration is different before and after the crisis, was rejected. Namely, the results have shown that both before the crisis and after the pandemic outbreak, our surveyed leaders preferred shorter meetings and even strengthened that tendency after 16th March. Again, the urgency of the situation and the lack of time must have led to short, straight-to-the-point meetings, but still, the meetings' duration was not different in the two surveyed periods.

As far as the third research proposition (RP3) is concerned, which assumes that the crisis changed the preferred way of communication among the organization members, this is accepted. The research shows that the crisis did change the preferred way of communication among the organization members, as their usual face-to-face form of meetings before the crisis was replaced by virtual modes of communication after 16th March, with phone calls being most frequently used for communication with their coworkers.

And the last, fourth research proposition (RP4), which suggests that the organization members' preferred way of communication does not match with the leaders' preferred way of communication, is rejected. Both surveyed groups: leaders and organization members stated that before the crisis they communicated face to face, while after the pandemic outbreak their mode of communication was virtual: with SMS, Viber, and Messenger applications. This proves that the preferred way of communication of these hierarchical levels was the same, both before and after the pandemic outbreak.

Compared to previous studies [3, 4, 6, 19], this research confirms that communication is very important when leading a company in any normal circumstances, but it becomes even more important in extreme disruptions [37] or in times of a pandemic, when the ways of communication between the leader and organization members, and among the organization members themselves should be cleverly chosen, skillfully practiced and constantly monitored so that the wellbeing of the employees and that of the company are ensured. But, for one company to thrive in such unprecedented conditions, it is not only important to quickly adapt to the virtual forms of communication [8], but it is also the leader's image and leadership style that matter a lot – the company's successful functioning would be guaranteed if the leaders are prepared to give positive feedback, care for the work-life balance, pay attention to the working conditions and lead by example. Of course, collaborative planning and shared decision-making is essential [7], as it is clear presenting to the employees the company's vision, role modeling behaviors, and making the followers feel like they belong [14].

The practical implication of this study is to give the companies' leaders an insight into the perceptions that their organization members have of the type of communication that they have practiced before the crisis and after the pandemic outbreak and, according to that, help the leaders shape the way they communicate with their employees in the future. This research shows leaders how they are viewed by their employees and what can be changed in their leadership style and communication model not only in times of crisis but, generally, in their normal, business everyday communication. The results will offer the leaders a chance to self-critically look at their work and reflect on their way of doing business. They can certainly learn from the answers given to all questions, but it is the last section, role model leadership, that will inform them most about what needs to be changed, in terms of how they communicate their vision, how they influence their organization members, how they give positive feedback, how they react when an employee fails, to reflect on their decision-making style, reassess their attitude to work-life balance and the working conditions, as well as self-analyze their leadership and communication style.

The limitations of this research are that it is conducted at one company, and is related to only one sector. Further research could investigate the impact that the COVID-19 crisis has had on internal communication in several companies from this sector, and to be additionally expanded to companies from several different sectors. In addition, more countries with companies from several sectors can be included in the research to test our hypotheses on a multinational level and investigate the impact that this crisis has had on their companies' internal communication.

Looking into the research itself, based on the C-P-R model of communication, for organization members, communicating the content is far more important than the form by which the information is delivered. This leads to the fact that the informal way of communication, due to the limitations caused by the virus relating to health issues, is a more applicable way of communication and the main way through which the organization members can receive the intended content and inform themselves. In practice, executives have to

communicate quickly and clearly to be in front of potential issues rather than having to counter misinformation. Once found in lockdown, they had an extremely short time to adapt to the new, strange situation; to calm the employees; encourage them to go through the unknown together; support them in their work and show them that the leaders are always available to their organization members.

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REFERENCES

[1] McKee, M. and Stuckler, D.: *If the world fails to protect the economy, COVID-19 will damage health not just now but also in the future*.
Nature Medicine **26**, 640-642, 2020,
http://dx.doi.org/10.1038/s41591-020-0863-y,

[2] Caringal-Go, J.F., et al.:*Crisis leadership from the perspective of employees during the COVID-19 pandemic*.
Leadership and Organization Development Journal **42**(4), 630-643, 2021,
http://dx.doi.org/10.1108/LODJ-07-2020-0284,

[3] Heide, M.; Johansson, C. and Simonsson, C.: *Communication in Organizations*. In Swedish. Kommunikation och Organisation.
Liber, Stockholm, 2012,

[4] Mazzei, A. and Ravazzani, S.: *Manager-employee communication during a crisis: the missing link.*
Corporate Communications: An International Journal **16**(2), 243-254, 2012,
http://dx.doi.org/10.1108/13563281111156899,

[5] Frandsen, F. and Johansen, W.: *The study of internal crisis communication: towards an integrative framework.*
Corporate Communications: An International Journal **16**(4), 347-361, 2011,
http://dx.doi.org/10.1108/13563281111186977,

[6] Qiu, W., et al.: *A comparison of China's risk communication in response to SARS and H7N9 using principles drawn from international practice.*
Disaster Med. Public Health **12(**5), 587-598, 2018,
http://dx.doi.org/10.1017/dmp.2017.114,

[7] Perry, S. and Laws, R.: *Collaborative Planning and Shared Decision Making in Biosecurity Emergency Management.*
Proceedings **36**(1), No. 60, 2019,
http://dx.doi.org/10.3390/proceedings2019036060,

[8] Yang, L.; Yang, S.H. and Plotnick, L.: *How the internet of things technology enhances emergency response operations.*
Technological Forecasting and Social Change **80(**9), 1854-1867, 2013,
http://dx.doi.org/10.1016/j.techfore.2012.07.011,

[9] Huang, R.; Kahai, S. and Jestice, R.: *The contingent effects of leadership on team collaboration in virtual teams.*
Computers in Human Behavior **26**(5), 1098-1110, 2010,
http://dx.doi.org/10.1016/j.chb.2010.03.014,

[10] Dinh, J.E., et al.: *Leadership theory and research in the new millennium: Current theoretical trends and changing perspectives.*
The Leadership Quarterl **25**, 36-62, 2014,
http://dx.doi.org/10.1016/j.leaqua.2013.11.005,

[11] Prewitt, J.E. and Weil, R.: *Organizational opportunities endemic in crisis leadership.*
Journal of Management Policy and Practice **15**(2), 10, 2014,

[12] Liao, C.: *Leadership in virtual teams: A multilevel perspective.*
Human Resource Management Review **27**(4), 648-59, 2017,
http://dx.doi.org/10.1016/j.hrmr.2016.12.010,

[13] Ball, C.G.: *Leadership during the COVID-19 crisis and beyond.*
Canadian Journal of Surgery **63**(4), 370-371, 2020,
http://dx.doi.org/10.1503/cjs.016020,

[14] Tortola, P.D. and Pansardi, P.: *The charismatic leadership of the ECB presidency: a language based analysis.*
European Journal of Political Research **58**(1), 96-116, 2019,
http://dx.doi.org/10.1111/1475-6765.12272,

[15] Dance, F.E.X.: *A helical model of communication.*
In: Sereno, K.K. and Mortensen, C.D., eds.: *Foundations of communication theory*. Harper and Row, New York, pp.103-107, 1970,

[16] Losee, R.M.: *Communication defined as complementary informative processes.*
Journal of Information, Communication and Library Science **5**(3), 1-15, 1999,

[17] Nilsen, T.R.: *On defining communication.*
Speech Teacher **6**(1), 10-17, 1957,
http://dx.doi.org/10.1080/03634525709376841,

[18] Jones, G. and George, M.J.: *Essentials of contemporary management.*
McGraw-Hill, New York, NY, 2003,

[19] Church, A.H.: *Giving your organizational communication C-P-R.*
Leadership and Organization Development Journal **17**(7), 4-11, 1996,
http://dx.doi.org/10.1108/01437739610148321,

[20] Donelly, J.H.; Gibsson, L.J. and Ivancevich, M.J.: *Fundamentals of management.*
Irwin/McGraw Hill, New York, 1998,

[21] De Vries, R.E.; Bakker-Pieper, A. and Oostenveld, W.: *Leadership = Communication? The relations of leaders' communication styles with leadership styles, knowledge sharing and leadership outcomes.*
Journal of Business and Psychology **25**(3), 367-380, 2010,
http://dx.doi.org/10.1007/s10869-009-9140-2,

[22] Riggio, R.E.; Riggio, H.R.; Salinas, C. and Cole, E.J.: *The role of social and emotional communication skills in leader emergence and effectiveness.*
Group Dynamics: Theory, Research, and Practice **7**(2), 83-103, 2003,
http://dx.doi.org/10.1037/1089-2699.7.2.83,

[23] Bojadjiev, M.: *Organizational culture in times of corona crisis – or how did I manage to turn around a university*.
Vox Organizations, Skopje, 2020,

[24] Barnard, C.I.: *The functions of the executive*.
Harvard University Press, Cambridge, 1938,

[25] Benne, K.D. and Sheats, P.: *Functional roles of group members.*
Group Facilitation: A Research and Applications **8**, 30-35, 2007,

[26] Awamleh, R. and Gardner, W.L.: *Perceptions of leader charisma and effectiveness: The effects of vision content, delivery, and organizational performance.*
The Leadership Quarterly **10**(3), 345-373, 1999,
http://dx.doi.org/10.1016/S1048-9843(99)00022-3,

[27] Den Hartog, D.N. and Verburg, R.M.: *Charisma and rhetoric: Communicative techniques of international business leaders.*
The Leadership Quarterly **8**(4), 355-391, 1997,
http://dx.doi.org/10.1016/S1048-9843(97)90020-5,

[28] Frese, M.; Beimel, S. and Schoenborn, S.: *Action training for charismatic leadership. Two evaluations of studies of a commercial training module on inspirational communication of a vision.*
Personnel Psychology **56**(3), 671-697, 2003,
http://dx.doi.org/10.1111/j.1744-6570.2003.tb00754.x,

[29] Kirkpatrick, S.A. and Locke, E.A.: *Direct and indirect effects of three core charismatic leadership components on performance and attitudes.*
Journal of Applied Psychology **81**(1), 36-51, 1996,
http://dx.doi.org/10.1037/0021-9010.81.1.36,

[30] Shamir, B.; Arthur, B.M. and House, J.R.: *The rhetoric od charismatic leadership: A Theoretical extension, a case study, and implications for research.*
The Leadership Quarterly **5**(1), 25-42, 1994,
http://dx.doi.org/10.1016/1048-9843(94)90004-3,

[31] Spangler, W.D. and House, R.J.: *Presidential effectiveness and the leadership motive profile.*
Journal of Personality and Social Psychology **60**(3), 439-455, 1991,
http://dx.doi.org/10.1037/0022-3514.60.3.439,

[32] Towler, A.J.: *Effects of charismatic influence training on attitudes, behaviour, and performance.*
Personnel Psychology **56**(2), 363-381, 2003,
http://dx.doi.org/10.1111/j.1744-6570.2003.tb00154.x,

[33] Perry, S. and Laws, R.: *Collaborative Planning and Shared Decision Making in Biosecurity Emergency Management.*
Proceedings **36**(1), No. 60, 2019,
http://dx.doi.org/10.3390/proceedings2019036060,

[34] Maitlis, S. and Christianson, M.: *Sensemaking in organizations: Taking stock and moving forward.*
Academy of Management Annals **8**, 57-125, 2014,
http://dx.doi.org/10.5465/19416520.2014.873177,

[35] Griffith, J.A.; Connelly, S.; Thiel, C. and Johnson, G.: *How outstanding leaders lead with affect: An examination of charismatic, ideological, and pragmatic leaders.*
The Leadership Quarterly **26**, 502-517, 2015,
http://dx.doi.org/10.1016/j.leaqua.2015.03.004,

[36] Gibson, C.: *From 'social distancing' to 'care in connecting': an emerging organizational research agenda for turbulent times*.
Academy of Management Discoveries **6**(2), 165-169, 2020,
http://dx.doi.org/10.5465/amd.2020.0062,

[37] Semaan, B. and Mark, G.: *Creating a context of trust with ICTs: restoring a sense of normalcy in the environment.*
In: Proceedings of the ACM Conference on Computer Supported Cooperative Work, pp.255-264, 2011.

Interdisciplinary Description of Complex Systems 19(2), 257-280, 2021

STRATEGIC AND DIGITAL MARKETING IN CULTURAL INSTITUTIONS AND THE IMPACT OF THE COVID-19 PANDEMIC – A COMPARATIVE ANALYSIS OF TWO CASE STUDIES

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ABSTRACT

This article investigates the impact of the coronavirus pandemic COVID-19 on marketing within cultural institutions, specifically in the field of digital marketing. The aim is to examine how the pandemic has affected digital strategies, marketing communication, and the performance itself - the presentation of cultural programs. The primary research was conducted in Croatia, using the method of semi-structured in-depth interviews with managers in two cultural institutions in Zadar and Dubrovnik at the end of 2020. A qualitative descriptive analysis was performed to answer the question of how cultural institutions have adapted to the crisis, especially when it comes to the marketing and the performance of cultural programs. The results show a certain degree of flexibility in adapting to the new conditions, in a way that marketing communication after the crisis turned more strongly towards digital media and was followed by adjustments to the cultural programs and their performance, as well as the budget for cultural activities. The marketing digital communication played a key role in this, which proves that cultural management in the era of the pandemic adopted the so-called digital-first paradigm, modeled on the for-profit companies. The authors conclude that culture, as a social need and necessity, will continue its activity after the crisis caused by the COVID-19 pandemic, but that it will also function in new and creative ways.

KEY WORDS

COVID-19, coronavirus, digital marketing, non-profit marketing, cultural institutions

CLASSIFICATION

JEL: M15, M31, Z11

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INTRODUCTION

The current pandemic Covid-19 has had an enormous effect on global society [1]. In doing so, some social activities and sectors are particularly vulnerable, such as sports, tourism, cultural activities, and the event industry in a broader sense. Within a month of its detection, WHO flagged the COVID-19 outbreak as Public Health Emergency of International Concern on 30th January 2020 [2], and on 11th February 2020 the disease and the virus causing the disease was officially named COVID-19 and SARS-CoV2 respectively. By 11th March 2020, the world witnessed the COVID-19 outbreaks in 114 countries, and given its outreach, WHO characterized COVID-19 as a pandemic [3]. The COVID-19 pandemic has become a significant global crisis that is profoundly affecting almost all aspects of economic and social life globally. Governments have closed borders, banned mass gatherings, and enforced social distancing, generating a 'new normal' for businesses and individual citizens. This global crisis has caused the biggest depression of the 1930s [4] and it requires individuals, organizations, and nations to take necessary steps to cope, as pointed out by numerous authors. For example, Lindström proposes to develop a comprehensive and systematic understanding of the impact of the COVID-19 pandemic on individuals' career development and possible coping strategies [5]. In this article, the authors discuss the impact of the COVID-19 pandemic on cultural institutions, and, more broadly, on the event industry. The topic is current and insufficiently researched. Madray states that the event industry, worth $1000 billion, is one of the "most affected industries of this pandemic globally", and adds that "until April 2020 the maximum loss in the event industry is about more than $666 million, due to cancellation of events worldwide" and has "85,9 million jobs at stake" [6, p.533]. The research that analyzes the issue of pandemics in the social context focuses on the following: the impact of the pandemic on economic, social and political relations [7, 8], on the global economy [9, 10], or economies of individual countries or world economic macro-regions – for example, the USA [11], Asia [12] and Great Britain [13]. It is interesting to note that these studies also analyze the experiences of historical pandemics, especially the Spanish flu in 1918, and even the potential pandemic H5N1 (avian flu), which began in late 2003, the outbreak of SARS1 in 2003, as well as the reappearance of the disease in 2005, so it can be said that the mentioned authors Bloom et al. in their 2005 paper, almost prophetically predicted the current global pandemic. Smith et al., in their 2009 paper, cite Macfarlane & Lim, and state that in the 20th century there were three major influenza pandemics – the one in 1918, 1957, and 1968-1969 [13].

Currently, the effects of COVID-19 on the business of cultural institutions remain unexplored. The coronavirus disease (SARS-CoV-2) and the COVID-19 pandemic originated in China in late 2019 and spread throughout the world through international travel causing immediate and immeasurable consequences. The coronavirus and the COVID-19 pandemic have caused a unique crisis in entire human history because they affected the whole world, which has never happened before. Until this event, it was considered that only terrorism, confrontations of great powers, and/or financial crises, such as the one that occurred in 2008, could cause major global disturbances which, in turn, could lead to widespread tectonic consequences [14, p.31]. For now, Croatia has managed to ensure that these events do not overwhelm us, that we do not have a large number of infected and deceased, that there are no significant disturbances in the functioning of the State and everyday life, and that the crisis does not cause domino effects that would create additional significant damage [14, p.49]. The far-reaching consequences of the pandemic on society and the economy, as noted earlier, are still being investigated. Many authors investigate the impact of the pandemic on tourism [15-17] and on sport [18, 19], i.e. sporting events [20]. When it comes to the event industry, and within the context of the topic explored in this article, the research is focused mainly on two

segments. One segment researches the effects of digitalization in the event industry [21], while the other is focused on crisis management [22], and risk management in the aforementioned industry [23, 24]. Mohanty et al. state that, by being the biggest pandemic of the 21st century, the COVID-19 outbreak has had catastrophic impacts on almost all spheres of economic activity, and that the global events, as one of the crucial wings of tourism, have precisely been among the hardest-hit sectors [25]. The same authors add: "The massiveness of the events in terms of volume, size, and scope makes them a potentially easy target for not just COVID-19, but also any infectious disease outbreaks. Events suffer from the innate disadvantage of higher vulnerability to internal or external disturbances meaning any small disturbance in the internal and external environment causes catastrophic impacts on any event no matter how neatly the action plan for the event is designed" [25, p.3].

In this article, the authors are focused on non-profit marketing, specifically marketing in cultural institutions, in the context of the coronavirus pandemic COVID-19. The purpose of the research is to examine how the pandemic caused changes in programs, budgeting, marketing strategy, performance, and marketing channels of communication with users of cultural programs. A comparative analysis of two case studies in the Republic of Croatia was performed - the renowned Dubrovnik Summer Festival in Dubrovnik and the Croatian National Theater in Zadar. The purpose of the article was to examine the extent to which the COVID-19 pandemic caused changes in the marketing strategy and the very performance of the cultural institution's programs. The primary research was conducted using the method of in-depth semi-structured interviews, where, towards the end of 2020, the managers/program managers in the mentioned institutions were interviewed, followed by a comparative qualitative analysis. The limitation of the research refers to the fact that only two case studies have been analyzed in the article. Future researches, therefore, would require an expanded focus directed towards other institutions in the country and abroad.

The expected scientific contribution of this article is premised on the expanding of existing research about the impact of the COVID-19 pandemic on cultural activities. It has already been noted that both previous and current research has focused on the effects of the pandemic on society and the economy, as well as on sports, tourism, and the event industries. However, the research gap is particularly evident when it comes to the impact of a pandemic on cultural activities, such as theater and classical music concerts. The existing research in this area only analyzes the impact of the pandemic on festivals, as one of the "products" in the event industry. Thus, for example, Davis explores the future of festivals in the post-COVID period [26], while Salti questions whether the pandemic will lead to a new paradigm relating to film festivals [27]. Regarding the festivals during a pandemic, Surplice emphasizes the safety risks and the importance of health and safety regulations and crisis management in event management [28], where Surplice quotes Szatan and states that "many festivals are not insured against pandemics; therefore, many have been forced to cancel or postpone throughout the pandemic. "[28, p.2]. Szatan, in a quoted article in The Guardian from April 2020, also writes the following: "The 2020 festival season is over – or is it? Some events are trying to postpone until autumn, but the odds are not looking good." [29]. Mohatny et al., in the aforementioned study, state by citing Ishol & Phin, that events are considered as one of the biggest sources for the transmission of infectious disease. Therefore, cancellation or postponement of the events, at least when it comes to large events, is always considered as the preferred decision when it comes to a pandemic situation. Events and festivals, conducted without any proper regulation can become "super spreading" events. In their 2020 study, the same authors further state that the outbreak of COVID-19 has knocked down the event industry around the world. Amidst the COVID-19 crisis, immediate restrictions were imposed by the government on travel activities and event gatherings. This resulted in

irreparable loss to the tourism sector events. Most events were cancelled and postponed by the organizers as per the guidelines announced by the government – exhibitions, concerts, conferences, sports events, marriages, and trade shows, etc. The same authors also state that to mitigate the chance of shut down or collapse, the event industry may lay off employees or deduct salaries [25]. Davis questions the impact and future of the pandemic on festivals and other events and states the following: What are the long-term impacts for the future of the industry, and accessibility to these events? Will greater restrictions be placed on licensing, with a maximum number of attendees allowed? Will there be a certification scheme for attendees and participants based on current testing methods for COVID-19? Will festivals become more "exclusive", or will there be more smaller-scale accessible organizations that work within a new "sharing economy"? Such thoughts are joined by the authors of this article where they also question some of the issues and possibilities for the future of the festival industry, as well as whether it is a potential shift occurring in economic paradigms as an outcome of the pandemic [26]. In such conditions, it is interesting to note that scientists and practitioners in the event industry have noticed two basic possibilities: to cancel or postpone the festival, or to offer a so-called hybrid event, that will be adapted to the pandemic conditions. In this sense, Mat Schulz, the artistic director of Kraków's Unsound, in April 2020, said the experimental arts festival is still set to run in October (2020) but will take a hybrid form: "We can not simply plow ahead as per usual", Schulz says. "We're trying to consider what form Unsound could take in practical terms, as well as consider how we can respond to the current crisis conceptually" [29]. Schulz also questions the future of music festivals in the post-COVID period and states: "There's going to be a huge craving for live music after this. The experience of collectively listening or dancing together – how that need is met will change in ways we can not yet predict". The research of the authors in this article relies on the abovementioned theses, while they also question in what form the event industry, i.e. cultural activity, has adapted to the current conditions of the pandemic, on the example of two institutions in Croatia, which also represents the main contribution of this research. A similar study was performed by the previously cited authors Madray et al. [6] by surveying experts in the event industry. A special contribution of the proposed paper lies in the analysis of the impact of digitalization in business on the crisis management in cultural institutions caused by the pandemic, especially in the field of marketing communication.

The article is structured as follows. The first part of the article presents a brief overview of literature about marketing orientation and digital marketing in cultural institutions before the COVID-19 pandemic, followed by a synthesis of available research on the impact of the current pandemic on cultural institutions and digital marketing communication. The third segment describes the selected methodology and the comparison with similar research, followed by a presentation of the research results and a comparative analysis. The concluding part of the article states the concluding remarks and discussion.

MARKETING ORIENTATION AND DIGITAL MARKETING IN PUBLIC CULTURAL INSTITUTIONS BEFORE THE COVID-19 PANDEMIC

Marketing orientation was initially exclusively focused on business entities and concentrated on meeting the needs and desires of customers in the business sector. Over the last decades, there has been a change in the understanding of the function and role of marketing orientation, which extends from business to both civil society and the public sector, with an emphasis on cultural institutions. By adopting marketing orientation, cultural institutions have radically changed their business philosophy. The earlier business philosophy focused on objects or exhibits was re-oriented towards visitors of cultural institutions [30].

The marketing orientation in culture focuses on understanding the needs and wants of different cultural content final recipients. According to Hill et al. "marketing is an integrated management process which provides mutually satisfying exchange relationships with customers on the route to achieving organizational and artistic objectives" [31]. Instead of orientation to objects or products, the implementation of cultural marketing achieves harmony between customer preferences and cultural institutions. Marketing orientation plays a key role in the demystification of the contents of cultural institutions; therefore, marketing should be considered as a tool by which a potential demand for contents of cultural institutions is translated into real demand.

Marketing managers in cultural fields should investigate deeply the target cultural consumers' understanding, preferences, and perceptions. It is understandable because marketing strategies can indeed determine appropriate strategies in cultural fields to offer the best services in the most beneficial way for both parts of businesses [32]. Colbert & St James studied three central themes in arts marketing research: an emerging challenge to the traditional "supply-side marketing" assumption underlying arts marketing; the role of consumers as co-creators of artistic experiences; and unique aspects of arts marketing management – that is, branding of artistic products, pricing of artistic products, cultivating customer loyalty, and incorporating unique funding sources such as fundraising and sponsorships [33].

Camarero et al. explored whether museums' external relationships depend on managers and internal relationships as well as on the mode of governance. They concluded that close relationships with the external environment require managerial social capital and supportive culture that favours internal cohesion. Finally, public museums directly run by government entities remain too bureaucratic and lack incentives to promote internal cohesion as well as relationships with customers and other stakeholders. Public cultural institutions turn to build strong partnerships at the community level in which they operate in the spirit of democracy and the culture of dialogue. In this way, cultural institutions strongly contribute to the development of the cultural identity of cities and activity that is in line with the principles of developing a brand of a city or a tourist destination [34].

To raise the overall level of user experience, numerous cultural institutions systematically and continuously invest in the development of interactive content through which visitors are exposed to cultural contents by personal and customized experiences of an active participant. This orientation reflects the trend in the cultural market that can be described by the phrase "culture is not only creative, but it also instigates creation" [35, p.31]. Already in the first phases of marketing development in cultural institutions, the focus of the research was on conceptualizing the experiences of visitors to cultural institutions. As the offer of cultural content become more and more diverse, the marketing of cultural institutions is focused on the question of how to offer visitors additional value for money, how to stand out in the minds of the target group of customers and gain their loyalty. The answer to these questions lies in the need to provide extraordinary, unique, and exclusive experiences that will engulf visitors for their uniqueness and exceptional emotional, multisensory and aesthetic nature [36]. The author also points out that the level of experience of visitors to a cultural event is influenced by the interaction between the overall quality of services, the perceived value for the time and money invested, and the satisfaction of visitors with the overall marketing relationships at the cultural institution level. In his research Lehman seeks to answer the questions: What do museums see as the drivers of change in the museum sector in recent years? How do they think the public has changed? How have museums responded to the changes in both society and their visitors? [37].

The development of information and communication technology is applicable in almost all fields of human activities, as well as in the marketing of public cultural institutions. Digital media represent with their interactivity, multimedia, and real-time user communication capability a very important tool of marketing communication for contemporary cultural institutions, especially concerning attracting new visitors and building loyalty relationships with existing visitors to a cultural institution. Although Digital Transformation initiatives vary from the use of digital technologies for improvement of one process, product or service to the change of the entire work logic and the way how organizations create value for their customers, they present the inevitable path for surviving onto today's market. Mazzone identifies this shift as "Digital or Death", while Kreutzer defines the term "Digital Darwinism", as an evolutional question of survival or extinction depending on company's ability to adapt itself to new digital environment [38, p.126].

Digital marketing can be defined as a process aimed at identifying and satisfying the desires and needs of potential target customers with information and communication technology, with an emphasis on the Internet. Considering that we live in a digital-centric world where "consumer consumerism is on autopilot", the Internet has changed the classic ways of running a business [39]. Technological advances have led to the creation of completely new and different patterns of marketing communication between providers of goods and services, including cultural institutions, and end-users. The term 'digital marketing' has evolved from a term that describes the marketing of products and services using digital channels, to an umbrella term that describes the process of using digital technologies to acquire and build consumer preferences, promote brands, retain consumers and increase sales. Digital marketing can also be defined as an adaptable, technology-enabled process by which companies work with consumers and partners to collaboratively create, communicate, deliver and maintain value for all stakeholders" [40].

Compared to traditional marketing, digital marketing has enabled interactivity and interconnectivity with end-users of products and services. Email, SMS messaging, and social networking services such as Facebook, Myspace, or LinkedIn allow connecting people of similar attitudes and interests around the world, regardless of their geographical location or time zone. Online social communities are created through interactivity and interconnectivity, and they share common attitudes, values, and affinities. According to Wells the term "social networking" cannot be revised without alongside the term "social media". Social networks are considered as platforms which focuses on the relationship between people who share mutual interests, connections and activities, while social media are determined as means of communication, which provides people to reach and influence others [41, pp.102-103]. These digital marketing features greatly facilitate the process of gaining insight into attitudes of particular social groups and the process of segmentation, targeting, and market positioning as well as the development of targeted marketing communication, which is an important feature of digital media over conventional mass media such as radio or television [42]. The frequency of marketing communication and communication, in general, is significantly increasing as information and communication technology speeds up and facilitates the process of creating, publishing, accessing, and consuming digital content. For this reason, the level of consumer awareness of different products, services, or programs has increased significantly in a relatively short time since the disclosure of information. According to Ryan & Jones, this creates the basis for eliminating information asymmetry and developing relationship marketing [43].

Digital (r)evolution has led to a significant increase in the amount of information available to a single user and searching for all available information can cause a lack of concentration and the loss of focus, as well as the inability to delve deeper into meaningful information to reach conclusions. To help the Internet users better navigate the available "abundance of information", they have several filters at their disposal that narrow the search for results

according to the user's interests and preferences. Personalized search features help eliminate unnecessary and irrelevant content for the user. Precisely because of the selectivity of information that the target user accesses, the task of digital marketing staff is to make the content attractive and interesting, enough to capture the attention and interest of target users [44].

In traditional marketing communication, the provider of products and services is the primary initiator of communication, and potential consumers are passive recipients of the message. In the digital marketing era, communication patterns are changing, and potential consumers can look back at the sender's communication message, send reviews, or share content with users with whom they are connected in the digital community. The democracy of digital media is reflected in public debates, forums, polls, user-posted content, and opinion polls [45]. All the above features of the Internet as a medium significantly enhance the bargaining power of users in the market.

The digital marketing era leads to a significant change in the development of relationships between marketers and potential users of their services. Social media has become omnipresent. Statista predicted in 2018 that within three years, a third of Earth's entire population will actively use it [41, p.102]. Due to a high level of information and involvement of users in social networks and their significant bargaining power, customers are actively involved in the process of making decisions about the features of products and services. Through collaborative customer relationships, satisfying the needs, desires, and preferences of potential and actual customers is approached in a new and direct way. Customers who actively participate in the process of creating products and services and whose suggestions are respected by the producer (provider) are called prosumers (PROviders/ConSUMERS) [43].

CULTURE AND CULTURE MARKETING IN THE AGE OF THE COVID-19 PANDEMIC

In the current era of the pandemic, there is the impression that culture and cultural content are often left aside, and that there are "more important" human activities that are given more attention in this time of crisis on a global scale. But participating in cultural events is an important determinant of an individual's quality of life [46, p.74]. In 1948 The Universal Declaration of Human Rights recognized that "everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits" [47]. Kużelewska and Tomaszuk also point out that, following the Declaration, "cultural rights have been understood as inseparable from human rights and require protection mechanisms within particular international (including regional) legal systems" [47]. In that context, they point out that Europe developed one of the most effective mechanisms of human rights protection by establishing the Council of Europe and adopting the European Court of Human Rights. However, the pandemic has almost stopped access to cultural content, so in many cases, online communication has become the only way that most of the world's population can access cultural content now under lockdown: "The recent outbreak of COVID-19 reformulated many concepts of access to human rights and possibilities to enjoy freedoms. Even if access to culture (access to cultural heritage) has been available online for many years, it is the time of globally occurring lockdowns that forced people to stay home and found themselves in a situation when all sudden online access to culture became the only way of access to culture" [47].

Measures taken to protect public health have threatened the global economy, as well as cultural activities, necessitating economic stimulus in most countries and reconfiguring the role of business in society. This applies equally to the public 'quaternary sector' and the provision of public sector services (social upgrades), which includes the cultural sector. Brammer et al. in

their work explore an important issue: Will the role of business in society return to normal after COVID-19, or will it be reconfigured in enduring and impactful ways? In their search for an answer, they use Alexander's theory of 'societalization' to examine how socially disruptive extreme events affect the role of business in society. In this sense, the research in this article can be considered as a questioning of the new, changed, role of culture and cultural content within the context of the phenomenon of 'societalization' [48].

By July of 2020, many restrictions had already been lifted, but the concept of the '1,5-meter society' was retained, thus still prohibiting large-scale gatherings such as festivals, and severely limiting the capacity of leisure venues. The unexpected COVID-19 pandemic has forced the governments in many countries to enforce the total closure of all non-essential structures and activities, museums, and other cultural institutions included. During the lockdown period, people spent more leisure time at home and with their families. This caused a spike in the popularity of social media-related leisure, gaming, television (especially streaming services), but also a revaluing of more 'traditional' forms of leisure. Since many leisure facilities were closed, self-organized outdoor leisure activities such as hiking, running, and cycling became even more popular [49]. Some of the cultural institutions were unable to open their doors to a visiting public making the only available option the spreading of culture and knowledge through online means. This was pointed out by Agostino et al. through their statement that this avenue has caused an acceleration in digital transformation processes, but rather than through dramatic innovative technologies, it has used a channel at the fingertips of almost everyone: that of social media. They continue by pointing out the data that 45 % of the world's population has a social media account [50]. The same authors state that museums are now using social media to reach a wider online public, posting virtual tours, interviews with their directors, and descriptions of artwork, as well as using the so-called gamification model - setting quizzes and running treasure hunts. In this sense, the authors re-examine the role of social media and online communication in culture and announce a change in the paradigm of marketing communication, while stating: "These initiatives have changed social media from channels of communication into tools for spreading cultural material. The current situation has led to conjectures on whether such initiatives are an effective way to increase cultural participation. It also paves the way to other considerations on the role that social media will play and, more broadly, what part will digital technology have in disseminating cultural material during 'phase two', when we are still living in proximity with the virus and going forward into the post-COVID-19 stage" [50].

Samaroudi et al. also warn of a significant increase in online communication activities during a pandemic. They elaborate that, as the impact of COVID-19 on everyday lives dawned on people early in 2020, "digital media consumption behaviour changed dramatically as millions of people converted their work, social and educational activities from land-based to digital platforms to 'shelter in place' or meet requirements for 'social distancing' that were imposed to manage the pandemic", as well as that the "UK reported a 29 % increase on the time spent online and a 20 % increase of people using social media" [51].

During some periods of the COVID-19 crisis, organizations of all kinds were required to restrict physical access to buildings and on-site provision of services. As expected, the galleries, libraries, archives, and museums (GLAM) sector were not exempted from the measures taken in response to the crisis. Apart from the immediate effect on institutions' workforce and finances, organizations have had to close, postpone or cancel projects, performances, exhibitions, and education programs that they offer to their audiences. One possible course of action was to adapt these offerings for online access. It was proposed that online access to these activities could reduce isolation, improve mental health and support the educational and creative needs of diverse audiences [51].

RESEARCH METHODOLOGY

This article presents a comparative qualitative analysis of the primary research conducted in November 2020 in the Croatian cities of Dubrovnik and Zadar. The research was conducted using an in-depth semi-structured interview with the managers of two cultural institutions – the first case being one of the most famous cultural events in Croatia – the Dubrovnik Summer Festival, and the second one focused on a cultural institution – the Croatian National Theater in Zadar [52]. In both cases, the research aimed to analyse the impact of the COVID-19 pandemic on various aspects of the operations of these two institutions, with particular focus being placed on marketing communication and digital marketing. The article relies on the previous research conducted by the same authors, particularly on the research about the development of digital marketing on the example of the Croatian National Theater Zadar. Similar research projects were conducted by Agostino et al. (2020) on the example of Italian museums focused on how the Italian state museums are using social media during their many weeks of enforced closure. During the research particular attention was placed on the role of online communication, the spread of knowledge and culture through social media at a time when physical sites of culture are closed, the engagement of the public in online communications with museums during the lockdown, while also exploring the future of online user access to cultural institutions. It is interesting to notice that these authors, just like the authors of this article, rely on earlier research on cultural transformation in Italian museums by pointing out that digital innovation has taken central stage in museum reforms in 2018 with the foundation of the Italian National Museum System [50].

Similar research was conducted by Samaroudi et al. Their research was conducted during the lockdown period in the UK, from April to July 2020, when memory institutions were closed, and they started to gradually re-open their physical premises to visitors. The research aimed to understand how the cultural heritage institutions adapted during COVID-19 closures by developing their digital capabilities; how new initiatives were integrated into existing digital offerings that enabled audiences to access cultural heritage resources during physical closures; and how the distinctive needs of audiences during the COVID-19 pandemic were met by the sector [51].

Ryder also cites an example of research among 16 cultural institutions in the US to research online communication during the COVID 19 pandemic [53], while Lješnjak questions the online communication model of the Zagreb City Library during the pandemic [54].

In addition to the previous research, the authors compiled a list of questions for the semi-structured interview based on their research intuition, the analysis of existing scientific theories and practices relating to the research topic, and the previous and current business experiences of the authors with strategic and operational planning, as well as subsequent practical application within the event industry and cultural activities. Furthermore, the research was conducted using a qualitative, phenomenological, and case study approach. An exploratory and descriptive analysis was used that was suitable for topics that, according to Papachroni and Lochrie, meet the following criteria: when present literature and knowledge is inadequate; research questions are often broad and the use of hypotheses is rare; they can be deliberately designed to help to build theory through inductive methods to create a hypothesis about new research questions; used when seeking to provide causal explanations – explaining how events occurred; is used to present a rich and comprehensive description of an entity of interest in the context in which it transpired [55], and particularly when, as Yin states "the boundaries between phenomenon and context are not evident" [55, p.80]. According to Yin (quoted in Papachroni and Lochrie), a "case study approach is best suited to circumstances where there is limited knowledge about a phenomenon or where exiting knowledge is contradictory of unclear" [55].

Below is a table with lists of questions taken from the semi-structured interview conducted with the event managers, followed by a descriptive comparative analysis of the obtained answers. Within the analysis, the respondents will be marked with Roman numerals I. (Dubrovnik) and II. (Zadar), while their institutions will be marked with the letters A. (Dubrovnik Summer Festival) and B. (Croatian National Theater Zadar).

Table 1. List of questions for the semi-structured interview with event managers in Croatia.

Study questions	Asked questions
The number of event visitors during a pandemic	Did you record a decrease in the number of visitors during COVID? Can you compare the number of visitors before and during COVID? (If you are able, can you give us the exact number of visitors before and after the appearance of COVID?)
The marketing during the pandemic	Are you paying more attention to marketing now, during the COVID pandemic, or has the engagement remained the same?
The outsourcing of marketing functions during the pandemic	Do you hire marketing professionals outside of your institution? In which segment of marketing do you outsource your activities and which segment do you perform within the institution (before and after the appearance of COVID, separately)?
The strategic and operational impact of the pandemic on the marketing planning function	Given the new situation with COVID, has there been a change in business strategy, marketing strategy, and the annual marketing plan?
The focus of marketing activities and the target market	Did you keep the target market in the COVID era? What was your target market before, and what is the market now during the time of COVID?
Marketing distribution and communication as customized elements of the marketing mix in the pandemic age	Which marketing channels have you used before, and which during COVID in distribution (ticket sales)/marketing (business) communication: a) distribution/ticket sales? b) marketing (business) communication?
Changes in performance management and operational logistics during the pandemic	What has changed in the performance: a) the scope and types of program and the financial value of the program before and during COVID? b) logistics and the program execution? c)arranging the space for the audience?
New models of marketing communication emerged during the pandemic age that will persist later	Which of the existing models of communication and/or performance is so good that you will keep it (in part or in full) even after the pandemic?
The connection between event management and tourism	How do tourists fit into your target market and communication (given that you operate in well-known tourist destinations)?
The general impact of the pandemic on cultural institutions and their business strategies	Open question: The impact of COVID on your business? List the key issues and stakeholders that can help here. How will this affect your future business/marketing strategy?

RESULTS

The following is an overview of the results of the comparative analysis.

THE NUMBER OF EVENT VISITORS DURING THE PANDEMIC

Institution A recorded a significant decline in the number of visitors due to the impact of the pandemic, primarily because of the epidemiological measure requiring maintaining physical distance, which reduced the capacity – the number of seats for the audience – by as much as 2/3. Similarly, the number of performances was reduced. In institution B, the capacity was reduced first to 1/3, and then to even less than 1/6 of the seats, both indoors and outdoors where the programs were performed. If we compare this data with the pre-COVID period, when the audience filled up to 90 % of available seats during the summer, a significant decrease in available capacity can be noticed. This was caused primarily by the introduction of the epidemiological measure to maintain physical distance between seats, which significantly reduces their available number. What also needs to be pointed out is that some epidemiological measures were also related to the determining of the maximum number of visitors per event/gathering (measures aimed at limiting gatherings), which also significantly affects business within the event industry and the cultural sector activities.

THE MARKETING DURING THE PANDEMIC

Both respondents pointed out a shift in marketing goals, with Respondent I emphasize the reduced overall budget of the festival and consequently the budget for marketing activities. Respondent, I also pointed out that significantly less money was spent on advertising in print and electronic media, as well as on the printing of promotional materials. Both respondents pointed out a stronger communication engagement with users on social networks and other online channels, while Institution A pointed out a stronger effort directed towards e-mail newsletter activities. It is interesting to note the change in practices in institution A, which is pointed out by respondent I, who states that “earlier the main goal was to increase ticket sales, while today the goal is to strengthen the brand”. Institution B, on the other hand, has increased its efforts regarding content marketing and strengthening customer relationships. Ticket price reduction for all groups can also be highlighted as part of sustainable marketing and branding, which in institution A reaches up to 50 %, as well as the engagement on the YouTube channel in institution B, which enables their users to watch plays from the comfort of their own home – an especially important feature during lockdown and/or self-isolation of users due to epidemiological reasons. In all these activities, digital marketing has played a key role.

THE OUTSOURCING OF MARKETING FUNCTIONS DURING THE PANDEMIC

Both analysed institutions state that, as a rule, they do not outsource their marketing activities, regardless of the current pandemic, or before it. Institution A states that they have a Department for Public Relations and Marketing that conducts marketing activities, while Institution B points out that "employees in the Marketing Department within their institution regularly attend seminars and social media training to make proper use of all resources." To increase the quality of marketing content on social networks, Institution B sporadically uses outsourcing, for example in cases when the hiring of videographers outside the institution is needed for the making of trailers for the new productions and the like.

THE STRATEGIC AND OPERATIONAL IMPACT OF THE PANDEMIC ON THE MARKETING PLANNING FUNCTION

Both respondents point out that in their institutions, given the new situation with COVID, their business strategy, marketing strategy, and annual marketing plan have changed.

THE FOCUS OF MARKETING ACTIVITIES AND THE TARGET MARKET

Regarding the target market, Institution A points out that the marketing focus, due to epidemiological measures limiting travel, has shifted from the previously targeted group -

mostly foreign tourist visitors, as they point out, “towards the local audience and the national public”. Institution B, unlike Institution A, operates throughout the year, and by being a branch of the National Theater, it is, understandably, predominantly orientated towards the local audience. Before the pandemic, the most significant target groups – the subscribers – consisted of the elderly population, among whom some canceled their subscription due to the global situation, then high school and university students, and finally a group of subscribers aged between 25-40, whose number increased after the beginning of the pandemic. The target group of students remained stable even after the pandemic, which is partly due to the quality cooperation of the Theater (Institution B) with the University of Zadar, and a branch of a bank that co-finances the subscription for students. Part of the program is directed towards the younger population, with an interesting event regularly taking place – an educational get-together between students and actors named ‘Coffee with actors’.

MARKETING DISTRIBUTION AND COMMUNICATION AS CUSTOMIZED ELEMENTS OF THE MARKETING MIX IN THE PANDEMIC AGE

Distribution/ticket sales

Regarding ticket sales, both institutions emphasize that they previously implemented a multichannel distribution strategy, i.e., ticket sales, with Institution A highlighting online sales, local sales, and agency sales, while in the case of Institution B the sales channels were sales at the Institution’s box office, as well as online sales. In both institutions, after the outbreak of the pandemic, only the direct online sales remained stable, which, it should be noted, also contributes to the improvement of epidemiological conditions, given that it reduces congestion and queues at the box office.

Marketing (business) communication

When it comes to marketing tools, Institution A points out the wide distribution of various printed materials – posters, flyers, brochures, printed invitations that existed before the pandemic. At the beginning of the pandemic, only e-mail invitations were used, as well as a minimal number of printed materials with limited distribution, while at the same time the entire online activity increased. This is in line with the previously mentioned marketing goals, set after the occurrence of the pandemic, with the emphasis no longer on increasing the number of tickets sold, which can be classified as a classic paradigm of push or outbound marketing, but a reversal towards strengthening the brand with messages about durability, safety, professionalism, reliability, quality, trust, etc., both concerning the audience and the patrons, sponsors, and donors, which belongs to the modern paradigm of pull or inbound marketing. Institution B points out that social networks (YouTube, Instagram, and Facebook), the official website, and e-mail are all channels they used before and during the pandemic. Due to the reduced number of available tickets during the pandemic, Institution B was particularly focused on the quality of content, or, as stated by Respondent II “For users of social networks to have fun and relax”. It is interesting to notice that within the same institution in their marketing communications they try to avoid placing the focus of the communication on the pandemic, and therefore COVID is not used as a keyword in the published posts.

CHANGES IN PERFORMANCE MANAGEMENT AND OPERATIONAL LOGISTICS DURING THE PANDEMIC

The scope and types of program and the financial value of the program before and during COVID

As a direct consequence of the COVID-19 pandemic on business, Respondent I pointed out: “The reduction of the budget, which resulted in planning difficulties and a significant reduction of

program content, led to postponement or cancellation of some already agreed/contracted international collaborations, theater co-productions, and guest appearances by foreign artists." However, the Respondent continues by stating that "during the planned 47 days in 2020, the Festival presented to its loyal audience almost 50 dramas, musical, dance, folklore, and other performances on 13 different stages and locations in the city of Dubrovnik, which is approximately one third less than usual." Within Institution A the artistic focus of the program was on Croatian artists, both those who have been traditional staples, as well as faithful collaborators and co-creators of the Festival for many years, and those who found themselves as the most vulnerable group due to the pandemic, as well as young creators (freelance artists, freelancers, students, etc.) for whom the engagement at the Festival was an opportunity and an incentive for their professional activity and further development. The latter activity could certainly be included in the promoting sustainability and inclusion group, given that young people and freelancers are often neglected and marginalized population segments when it comes to engagement and inclusion in major cultural programs. Institution B emphasizes that the Drama Subscription Program remained unchanged, while the program outside of the Subscription decreased. For example, as they state, the traditional Gospel concert, which is held every year in December, could not be organized because it is not easy for foreign musicians to travel during the pandemic. During the pandemic, the emphasis is on local artists, so the program is created accordingly. The number of programs that are not organized by CNT Zadar has also decreased, and the reason for this is a reduced capacity of seats or the inability of art organizations to perform normally, which at the end of November 2020, according to epidemiological measures, were shut down completely.

Logistics and the program execution

Respondent I pointed out the difficulties relating to the traveling arrangements of artists to Dubrovnik during the pandemics. For example, she states that the traveling arrangements of the artists during the pandemic were influenced by some minor obstacles, most often due to the decreased number of available flights, while bus or boat trips were less frequent than usual, mostly due to fears of an increased likelihood of infection, as well as a decrease in available traveling options. However, the organization of the accommodation for the artists in summer 2020 was less complicated than usual due to the decline in the number of tourists, and the subsequent increase in available accommodation capacity. Measures to prevent the spread of infection within Institution A were followed in both mentioned organizational segments. It is interesting how the new epidemiological measures affect the performance of the program itself. The Respondent states that "the new situation required finding new ways to establish a relationship between the artist and the audience, so this year the approaches to the engagement, participation, and expression were somewhat different. The formats of the art programs were smaller, as was the number of audiences who had the opportunity to enjoy them, but this in no way affected the quality of the art content." Respondent II also pointed out that her institution also respects all the prescribed epidemiological measures, such as, for example, the fact that the artists on stage are distanced at least 4 meters from the audience. In the dressing room behind the stage, disinfectants have been installed and there is increased control of the entering and exiting of the audience from the theater.

Arranging the space for the audience

Within Institution A, despite unfavourable circumstances, great efforts were made to maintain safety conditions, both for its artists and its loyal audience. They indicate that for each rehearsal and performance, a record list was kept and the body temperature of the persons participating in the program was measured, as well as a spectator record containing the name, surname, contact number, and seat number. Numerous other measures were

implemented for the program to be performed, among which Respondent I points out the following: "Audience entry required slightly more time than usual, but this was included in our organizational assessment. The Festival box offices had special protective barriers between the cashier and the visitors, and contactless payment was ensured. All seats and standing places were marked and at least 1,5 meters apart, and the recommended distance of 4 meters between the audience and the performers on stage was respected. The Festival staff had adequate protective equipment, and in organizational sectors where it was possible, teamwork was organized. Warnings about the rules of conduct were regularly displayed within the used space, while disinfectants were made available at all entrances. The use of protective masks was recommended. After each performance, all spaces (auditorium, stage, technical spaces, etc.), as well as parts of stage equipment, props, and costumes of the artist, were thoroughly disinfected."

Institution B also pointed out that they respect all epidemiological measures to make the audience feel safe. They also highlight several epidemiological adjustments in their business operations, particularly within performance management. These measures were the following: On the day of the show, the theater doors are opened 30 minutes earlier to reduce crowds. Disinfectants are placed at the entrance to the theater. During each program, the employees of CNT Zadar keep a record of the spectators, while both employees and the audience use protective masks. In the auditorium, the seats are 2 meters apart, but after the announcement of the new measures, the distance between the seats was increased to 4 meters. After each performance, the theater premises are disinfected and ventilated. Rehearsals of the latest CNT Zadar production were conducted in a particularly cautious manner, and although the premier was announced for April, due to the increased epidemiological measures, it was performed only in November. All rehearsals were conducted using protective masks.

NEW MODELS OF MARKETING COMMUNICATION EMERGED DURING THE PANDEMIC AGE THAT WILL PERSIST LATER

The respondents state that Institution A will, even after the pandemic, continue to develop and strengthen Internet marketing strategy, while Institution B will certainly continue to use digital marketing channels, especially social networks. In doing so, Respondent II also states: "We will continue to publish interesting content and communicate with our users through video calls from performers, which has proven to be a very good model of communication with the audience."

THE CONNECTION BETWEEN EVENT MANAGEMENT AND TOURISM

The importance of this connection has already been emphasized earlier, when it was stated that before the pandemic, the utilization capacity was reaching 90 % in both institutions during the summer months, i.e., during the tourist season. Institution A – The Dubrovnik Summer Festival, points out that they are one of the oldest and most prestigious European festivals, hosting world-famous artists and performers for 71 years, and, as the Respondent I state, "It is not surprising that the Festival is recognized and appreciated around the world and that many visitors come to Dubrovnik to enjoy Festival performances". Because of that fact, tourists are an important part of their target market, and their marketing communication is largely geared towards them. Respondent I emphasized that the special target group of the Festival consists of British tourists while stating: "The British tourists are the largest group of visitors to Dubrovnik, they have good purchasing power and interest in cultural programs, so the Festival recognizes them as their target group and investments are made in advertising in that market, for example, ads in in-flight magazines of companies connecting British cities with Dubrovnik, advertising in Time-Out Journal, etc." Since Dubrovnik is a tourist destination

where the largest number of visitors arrives by air, and for the Festival to achieve the maximum possible visibility for visitors, most of their marketing activities in the period before the COVID-19 pandemic were planned to follow these needs. They emphasize several things: Large advertising areas are rented in the area of international and domestic arrivals at the Dubrovnik Airport, and printed promotional materials (posters, leaflets, program brochures) in almost all hotels in the city and its surroundings, offices of tourist boards and tourist agencies, in part of the private accommodations as well as a part of taxi carriers; the posters of the Festival that are displayed in public city areas: publicities (20 locations), owned stands (more than 50), city-lights locations at bus stations, and digital totems; promotion of the Festival in the public city areas in the old town - publicity posters, owned stands, banners (3×4 m^2) and daily video projections functioning as a promotional channel. It can be concluded that these forms of promotion during the pandemic have been almost completely replaced by digital marketing, as well as, as noted earlier, by focusing on the local population and domestic tourists. Finally, it should be added that Dubrovnik is one of the strongest tourist brands in the Mediterranean, and therefore the Festival, as a renowned cultural event with a long tradition, will certainly return in its full glory in the post-pandemic era. Institution B also stresses the long tradition of their main summer program – the Zadar Summer Theater Festival that has been running since 1995. It is a rich and informative program that takes place in open locations in the city of Zadar and nurtures primarily comedy as a genre. It is held from June to August. "During its 26 years of existence", as stated by Respondent II, "a total of 19 local productions were performed, with over 200 guest titles from all over Croatia and the world." Since 2005, the event has been enriched with a music program – a three-day festival titled Zadar Jazz & Blues Festival, which, during the past five years, has brought together world-renowned musicians. Zadar is also a coastal tourist destination, so tourists, in a way, fit into the target market of the CNT Zadar. Here it is also important to stress the quality of cooperation with the Zadar Tourist Board which conducts online promotional activities for the Theater.

THE GENERAL IMPACT OF THE PANDEMIC ON CULTURAL INSTITUTIONS AND THEIR BUSINESS STRATEGIES

Respondent I point out that the key problems caused by the pandemic in Institution A – the Dubrovnik Summer Festival are the following: "The uncertain revenues and reduced budgets, a significant reduction in audience numbers and health risks for the audience and employees". Until the end of the pandemic, which, it is assumed, should eliminate the mentioned problems, the most helpful thing is a transparent, open, direct, and honest communication among stakeholders" concludes Respondent I. Respondent II for his/her institution states that the COVID pandemic primarily stimulated creativity in the CNT Zadar, making the Theatre open to the audience in a completely different way. An increase in the engagement and activities on social networks was noticed in that institution, as well as the establishment of new models of communication with foreign artists and teams of authors that sent their video materials that were used as announcements within the communication content on social networks. The organization went beyond the traditional approaches and in such a way brought theater into the home of its audience. In March 2020, during the lockdown period, free online performances produced by CNT Zadar were presented over the CNT Zadar YouTube channel, thus enabling the loyal audience to watch a theatrical play from the comfort of their own home. The fact is that financial resources have decreased during the pandemic, therefore challenging cultural institutions. However, Respondent II states that "CNT Zadar is ready for any situation and all for the benefit of its audience".

DISCUSSION

It seems that the COVID-19 pandemic has blurred the usually sharp dividing line between cultural institutions and their users, although this line seemed to be sharpened at the start of

the pandemic, due to strict epidemiological measures. A significant role was played here by online communication, which kept the relationship between culture and its users alive in almost impossible, and sometimes even completely impossible, conditions for performing events and cultural programs. This is shown by the results of the research conducted in this article, and a similar conclusion reached by Rowen who emphasizes the importance of "creative and pro-social responses of members of one such transformational festival culture" which he calls "subversive inter-subjective inversions" which have as a consequence "the recognition, in-itself, and production, for-itself, of a shared humanity of co-creators and participants in not just ephemeral, but accretive transformational social and environmental projects" [56]. We witness this creative transformation in the field of marketing communication, but also the performance of theater programs on the example of Croatian cultural institutions analysed in this article, with special attempts being made in emphasizing the brand of the cultural institutions in new ways and designing new creative content for users of different online channels. It is especially interesting to point out that the conditions of the pandemic and the reduced number of audience poses a challenge for the artists themselves during the performance, who devise new, creative ways of approaching and communicating with the audience during the program, which is especially noticeable in the Croatian National Theater Zadar. The pandemic did not, therefore, disrupt the sensitive relations between the analysed cultural institutions and the audience. On the contrary, new ways of communication led to an increased interest of part of the audience to consume cultural content, while, for more vulnerable groups, online transmissions of cultural content were devised for them to be able to consume the content from the comfort of their homes (example CNT Zadar). A shift from classic marketing and brand strategies to more modern ones has been noticed, which represents new ways of building competitiveness, even where that competitiveness is less pronounced, as is the case with cultural institutions. This confirms the previously mentioned thesis proposed by Lindström about the importance of a comprehensive and systematic understanding of the impact of the COVID-19 pandemic on possible coping strategies [5].

The justification of the research goal set in this article, which is to investigate primarily the impact of the pandemic on digital marketing, is consistent with the theses presented by Yudiyana et al. [21], who advocate further research of digitization within the event industry. Accordingly, the digitalization of marketing communication is considered one of the key determinants of the sustainability of the event industry and cultural institutions – moreover – it is precisely the digital channels that managed to keep alive the two observed institutions during the pandemic, although on a significantly reduced scale, reduced budgets, and a reduced capacity and number of presented programs. It is these key consequences of a pandemic on the event industry that the previously mentioned author Szatan [29] warns about by pointing out other accompanying risks in the event industry during a pandemic. Szatan is followed by Surplice [28] who emphasizes that "social distancing measures are impossible to control at any festival". The research presented in this article refutes this thesis through the example of the Dubrovnik Summer Festival, which managed, in a very successful and controlled manner during 2020, to maintain its cultural program in a somewhat reduced volume. This was used by the Festival as a type of advantage, at least when it comes to the previously marginalized audience, namely the local population and domestic tourists, to whom the activities were now devoted to a greater extent. The research in this article presents in detail the epidemiological measures taken in cultural institutions during the COVID-19 pandemic, as some authors believe that "events are considered as one of the biggest sources for the transmission of infectious diseases" [25]. A certain "toughness" and flexibility in business should be observed in both analysed institutions. Namely, they have survived the pandemic, at least for now, despite the generally accepted thesis that there are no events and cultural programs during the pandemic, given that most events were cancelled and postponed

by the organizers as per the guidelines announced by the government. It is interesting to notice that the Croatian National Theater also operated during the lockdown, following the so-called hybrid model proposed by the previously cited Schulz (cited in [29]), in a way that the cultural programs were presented using the YouTube channel [29]. Similarly, Ryder finds solutions and answers to the crisis through digital content enrichment and states that digital content builds communities through live and serialized content, partnerships, fundraising, increased transparency, and increased accessibility during temporary closures, categories that are mentioned by both respondents in the interview. The same author emphasizes the importance of increased social media engagement, as well as content campaigns such as videos, blogs, partnerships, and paid educational content, which was also confirmed in the research because social media marketing was highlighted as being very significant for both analysed institutions [53]. If we look at the authors who explore new trends and innovations in digital marketing in culture, which they wrote about before the COVID-19 pandemic, we can see that all these trends accelerated during the pandemic, which is confirmed by the research presented in this article. It can be stated that the pandemic in this sense has acted as a catalyst for change towards better communication and the strengthening of the relationship with customers [30, 41].

These theses can also serve as practical implications for implementation in cultural institutions and their marketing and management system, where the adaptation and digitalization, as well as brand strengthening and a more significantly "sophisticated" use of online marketing tools, especially social networks, as channels used for more informal and personal communication with users, are of crucial importance. This has been proved by international experiences, but also by the research presented in this article. Likewise, both the research in this article and similar international research, for example, Samaroudi et al. [51], show that, under the influence of the pandemic, cultural institutions will increasingly focus on content marketing, integrated marketing channels, and the delivery of values, programs and cultural content that are relevant and in line with the cultural needs of the community. This will also allow faster and easier access to culture, which, according to some, at least in some segments before the pandemic, was somewhat ghettoized and "reserved for elites", and was particularly not interesting to many members of the younger generation. It can therefore be argued that the digital transformation within cultural institutions has already begun, i.e. – it began to develop in a significant manner precisely at the time of the pandemic and because of the pandemic. It is particularly recommended therefore to focus on new or until now marginalized market segments, as well as the strengthening of the Customer Relationship Management (CRM) segment, and the reaffirmation of the brand of the institution and its programs.

The new issues concerning the post-lockdown period are not only those focused on devising optimal operational and user communicational models of cultural institutions. According to the authors of this article, the COVID-19 pandemic has opened some other issues concerning the role and place of culture and cultural content for different social groups, the audience engagement regarding content selection, and the co-creation of cultural programs, the interpretation and audience participation in the programs, as well as several other issues related to the greater permeation of culture and social everyday life, which in some segments of culture before the pandemic seemed more distant than ever. Weed asks the same question when it comes to sports and tourism by stating: "A challenge is set for managers, administrators and researchers working at the interface of sport and tourism to look outwards beyond their development concerns and recognize and accept both a responsibility and an opportunity to make these contributions" [57]. Thus, a crisis creates new opportunities, but also brings new responsibilities. Of course, it must be emphasized that we must not forget the "real" physical space, which will never be able to be completely replaced by an online reality.

Or, as Lješnjak states, that "the best business model is, as always, somewhere in the middle, between the digital and the traditional" [54, p.52].

The scientific contribution of this article is to explore what types of digital content cultural institutions implemented during COVID-19 and their effects on marketing engagement. Existing research identified the role of digital content and social media in cultural institutions, but only in times of normal operations. The study in this article adds to the existing literature by exploring types of digital content implemented, impacts on social media engagement, impacts on other aspects of business, and future implications regarding the COVID-19 pandemic. From the comparison of research results in this article and similar international research, it can be concluded that the response to the pandemic in cultural institutions around the world is probably similar and that many of them are ready to face such a global crisis unprecedented in modern history, based on the principles of flexibility and digitalization of business, brand repositioning, and stronger customer orientation. This hypothesis should be extended through further research and international comparative analysis. This would allow for an in-depth analysis of the adjustment of business and risk management systems in cultural institutions and the event industry.

The mentioned changes that were triggered by the appearance of the pandemic are not ephemeral, but essential, and they enter the very core of the concept of cultural and entertainment gatherings, as well as culture itself and cultural events, today and in the future. In the article titled "Theater in The Apocalypse", Liyanage questions the role of the theater during and after a pandemic by stating: "We think that this proscenium theater is going to be ceased because of the corona outbreak. But theater in its broader sense is not limited to theater as an architectural structure. With this new world order, the theater will be flourished with novel modes of practice and reception" [58]. Katara explains: "Theater has survived through many ages and millennia. Theater thrived during the great depression and the world wars. Theater found more meaning in the conflicts that humanity has faced and emerged with new forms, new content, and new pedagogies. As the world faces the pandemic, with almost every country in the world is either in Lockdown mode or slowly finding its way out the major question is not how theatre will survive the crisis, for it has and it will, irrespective of what the circumstances are, but the question is what will this crisis yield at the end?" [59].

In this sense, further queries should be made, and scientific and professional answers should be researched regarding the question: Quo Vadis, culture? Where is, and what is in general, today, and what will it be tomorrow, a theatre, or some other theatrical, musical, entertaining, or similar event? In his book, The Empty Space Peter Brook tries to answer this question by stating: "I can take any space and call it a bare stage. A man walks across this space whilst someone else is watching him, and this is all that is needed for an act of theatre to be engaged." [60, p.11]. Perhaps this very claim can be an excellent basis for further pursuits of answers in this field.

CONCLUSION

Under the influence of the pandemic, festivals and other cultural events are transforming, and the COVID-19 pandemic has served as a "catalyst for change" for the future. Changes in the space-time sphere when it comes to theatres, festivals, and other events bring a new role and function of cultural institutions and emphasize the importance of culture in the lives of individuals. This is best seen in the conditions of a pandemic in which cultural contents cannot or can only partially be consumed. The lessons learned from the pandemic, therefore, apply equally to cultural institutions as to the public. In both institutions investigated in this article, a quick and creatively designed response to the pandemic situation was found, and

therefore their activities continued despite the difficulties, in an adapted and somewhat "reduced" manner. It should be emphasized that both institutions have relatively good levels of expertise and capacity in terms of digital technologies.

These theses corroborated the claims of the authors who also emphasize the enormous consequences of the pandemic on society [1], as well as those who emphasize the emergence of a "new normal" for citizens and business organizations. The authors emphasize the rapid adaptation of business to the new conditions [5], which was explored in this article, on the example of cultural institutions. Madray [6] points out the losses in the event industry at the global level, which is partially highlighted in the research presented in this article (reduced capacity, number of programs, budget). Although domestic authors to a somewhat lesser extent analyse the issue of the impact of the pandemic on cultural institutions, Mikac [14] nevertheless points out that the Republic of Croatia has responded well to the pandemic crisis. In a narrower sense, the research in this article focuses on the application of digitalization in business, especially in marketing communication, which Yudiyana [21] considers a significant factor in business, while partly being focused on crisis management (for example in the segment where adjustments in performance management within cultural institutions are investigated) relating to the thesis proposed by Surplice [28] and some other authors, as well as some earlier authors who researched the field of risk management [24]. The sensitivity of the event industry and cultural activities, which is as well the area of research in this article, is also discussed by Mohanty et al. [25] by highlighting the particular sensitivity of tourism and global events to the crisis. In this article, the authors also look for answers as to whether the COVID-19 pandemic has built new models in the event industry and cultural activities that will survive in the future, similar to the research conducted by Davies [26] and Salti [27]. Methodologically, the primary research of experts, with the help of in-depth interviews, relies on similar research [6], while the application of the case-study method used in this article is recommended for business and management, particularly when it relates to the meaning of context for the observed phenomenon, which is a very important feature of the researched issue, as well as when it comes to a new and insufficiently researched phenomenon [55], as is the case of the impact and consequences of the COVID-19 pandemic on business.

It has been shown that flexibility in business and dynamization and the "strengthening" of multichannel online communication with the use of several different creative models has played a key role in the "pandemic survival" of cultural institutions. It is therefore recommended to further embed digital marketing within marketing strategies, as well as to strengthen the brand itself and CRM.

The assumption is that even in this post-pandemic era, many of these models will continue to be used by the cultural institutions and that they, similarly to for-profit companies, will become digital-first and costumer-oriented organizations. It seems that these are also the basic trends towards the future, which the pandemic has only accelerated and intensified. This research focuses on the analysis of two Croatian cultural institutions - one is a theater, and the other is one of the most renowned cultural festivals in the region. This is also the basic limitation of this article, so it is recommended for further research to focus on other groups of organizations in culture, but also in sports, entertainment, and other areas of social activities that are more endangered by the pandemic. At the same time, the research can be extended to an international level, so that a comparative analysis of different international experiences can be conducted. This article also contains useful tips for the implementation of certain marketing strategies and tactics, especially digital tools, in the business of cultural institutions and beyond. In a broader sense, the message of this article is to ask in which direction society, business organizations, culture, entertainment, and other social activities will develop, together with attitudes, tastes, and above all, the behaviour of individuals – "consumers"

of such social programs and "products". This is certainly a very complex question that can be answered only through a networked and multidisciplinary collaboration of scientists and experts of different profiles and scientific fields. But certainly, as in any other crisis, this crisis should be accepted as an opportunity, and it should encourage thinking and efforts to make the "new normal" both "better normal", and a path to building a better society, new values, and better relations between people.

REFERENCES

[1] Ratten, V.: *Coronavirus (covid-19) and entrepreneurship: changing life and work landscape*.
Journal of Small Business & Entrepreneurship **32**(5), 503-516, 2020,
http://dx.doi.org/10.1080/08276331.2020.1790167,

[2] World Health Organization: *Rolling updates on coronavirus disease (COVID-19).*
https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-theyhappen, accessed 29th January 2021,

[3] World Health Organization: *WHO Director-General's opening remarks at the media briefing on COVID19 - 11 March 2020.*
https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-atthe-media-briefing-on-covid-19---11-march-2020, accessed 29th January 2021,

[4] Rappeport, A. and Smialek, J.: *I.M.F. Predicts Worst Downturn Since the Great Depression*.
https://www.nytimes.com/2020/04/14/us/politics/coronavirus-economy-recession-depression.html, accessed: 29th January 2021,

[5] Lindström, M.: *The COVID-19 pandemic and the Swedish strategy: Epidemiology and postmodernism.*
SSM-population Health **11**, 100643, 2020,
http://dx.doi.org/10.1016/j.ssmph.2020.100643,

[6] Madray, J.S.: *The Impact of COVID-19 on Event Management Industry.*
International Journal of Engineering Applied Sciences and Technology **5**(3), 533-535, 2020,
http://dx.doi.org/10.33564/IJEAST.2020.v05i03.089,

[7] Madhav, N., et al.: *Pandemics: risks, impacts, and mitigation*.
In: Madhav, N., et al.: *Disease Control Priorities.*
Improving Health and Reducing Poverty **9**, 2017,
http://dx.doi.org/10.1596/978-1-4648-0527-1_ch17,

[8] Qiu, W.; Rutherford, S.; Mao, A. and Chu, C.: *The pandemic and its impacts.*
Health, culture and society **9**(1-11), 2017,
http://dx.doi.org/10.5195/HCS.2017.221,

[9] Correia, S.; Luck, S. and Verner, E.: *Pandemics Depress the Economy, Public Health Interventions Do Not: Evidence from the 1918 Flu*.
SSRN, 2020,
http://dx.doi.org/10.2139/ssrn.3561560,

[10] James, S. and Sargent, T.C.: *The economic impact of an influenza pandemic.*
Canada Department of Finance, Working Paper 2007-04, 2006,
https://epe.lac-bac.gc.ca/100/200/301/finance/working_papers-ef/2007/wp2007-04e.pdf, accessed 30th April 2021,

[11] Meltzer, M.I.; Cox, N.J. and Fukuda, K.: *The economic impact of pandemic influenza in the United States: priorities for intervention.*
Emerging infectious diseases **5**(5), 659-671, 1999,
http://dx.doi.org/10.3201/eid0505.990507,

[12] Bloom, E.; De Wit, V. and Carangal-San Jose, M.J.: *Potential Economic Impact of an Avian Flu Pandemic on Asia*.
http://hdl.handle.net/11540/2165, accessed 30th April 2021,

[13] Smith, R.D.; Keogh-Brown, M.R.; Barnett, T., and Tait, J.: *The economy-wide impact of pandemic influenza on the UK: a computable general equilibrium modelling experiment*.
BMJ **339**(7733), b4571, 2009,
http://dx.doi.org/10.1136/bmj.b4571,

[14] Mikac, R.: *COVID-19 Pandemic and Crisis Management in the Republic of Croatia.*
Anali Hrvatskog politološkog društva **17**(1), 31-55, 2020,
http://dx.doi.org/10.20901/an.17.02,

[15] Benjamin, S.; Dillette, A. and Alderman, D.H.: *"We can't return to normal": committing to tourism equity in the post-pandemic age.*
Tourism Geographies **22**(3), 476-483, 2020,
http://dx.doi.org/10.1080/14616688.2020.1759130,

[16] Fonseca, C.; Jorge, C.; Reis, D. and do Carmo, M.: *Pandemic tourism: the new era of catering sector after Covid-19.*
Anatolia **32**(1), 161-164, 2020,
http://dx.doi.org/10.1080/13032917.2020.1851092,

[17] Zenker, S. and Kock, F.: *The coronavirus pandemic – A critical discussion of a tourism research agenda.*
Tourism management **81**, 104164, 2020,
http://dx.doi.org/10.1016/j.tourman.2020.104164,

[18] Evans, A.B., et al.: *Sport in the face of the COVID-19 pandemic: towards an agenda for research in the sociology of sport.*
European Journal for Sport and Society **17**(2), 85-95, 2020,
http://dx.doi.org/10.1080/16138171.2020.1765100,

[19] Pedersen, P.M.; Ruihley, B.J. and Li, B.: *Perspectives on Covid-19's Impact on the Sport Industry*.
Routledge, London, 2021,

[20] Miles, L. and Shipway, R.: *Exploring the COVID-19 pandemic as a catalyst for stimulating future research agendas for managing crises and disasters at international sport events.*
Event Management **24**(4), 537-552, 2020,
http://dx.doi.org/10.3727/152599519X15506259856688,

[21] Yudiyana, I.M.G.; Sumichan, A. and Ariyani, N.W.S.: *Management Information System of Event Organizer.*
International Journal of Engineering and Emerging Technology **3**(2), 116-122, 2019,

[22] Lee, S.S.; Goldblatt, J.J. and Daniels, M.J.: *A Comparative Analysis of the Perceived Effects of Two Economic Recessions on Event Organizations.*
Tourism Review International **16**(1), 59-67, 2012,
http://dx.doi.org/10.3727/154427212X13431568321582,

[23] Reid, S. and Ritchie, B.: *Risk management: Event managers' attitudes, beliefs, and perceived constraints.*
Event management **15**(4), 329-341, 2011,
http://dx.doi.org/10.3727/152599511X13175676722528,

[24] Tarlow, P.E.: *Event risk management and safety*.
John Wiley & Sons, Inc., New York, 2002,

[25] Mohanty, P.; Himanshi, D. and Choudhury, R.: *Events Tourism in the Eye of the COVID-19 Storm: Impacts and Implications*.
In: Arora, S. and Sharma A., eds.: *Event Tourism in Asian Countries: Challenges and Prospects.*
Apple Academic Press, 2020,
http://dx.doi.org/10.2139/ssrn.3682648,

[26] Davies, K.: *Festivals Post Covid-19.*
Leisure Sciences **43**(1-2), 184-189, 2020,
http://dx.doi.org/10.1080/01490400.2020.1774000,

[27] Salti, R.: *Do Not Go Gentle into That Good Night: Film Festivals, Pandemic, Aftermath.* Film Quarterly **74**(1), 88-96, 2020, http://dx.doi.org/10.1525/fq.2020.74.1.88,

[28] Surplice, P.: *Fear for Festivals*. http://www.open-access.bcu.ac.uk/10852/1/Fear%20for%20Festivals.pdf, accessed 30th April 2021,

[29] Szatan, G.: *Should I stay or should I go: how coronavirus is jeopardising music festivals*. https://www.theguardian.com/music/2020/apr/15/abort-retry-fail-how-coronavirus-is-jeopardising-music-festivals, accessed 30th April 2021,

[30] Mahony, S.; Spiliopoulou, A.; Routsis, V. and Kamposiori, C.: *Cultural institutions in the digital age: British museum's use of Facebook insights.* Participations: Journal of Audience & Reception Studies **11**(1), 286-303, 2017,

[31] Hill, E.; O'Sullivan, C. and O'Sullivan, T.: *Creative Arts Marketing, second edition*. Routledge, Oxon & New York, 2018,

[32] Shahhosseini, A. and Ardahaey, F.T.: *Marketing mix practices in the cultural industry.* International Journal of Business and Management **6**(8), 230-234, 2011, http://dx.doi.org/10.5539/ijbm.v6n8p230,

[33] Colbert, F. and St James, Y.: *Research in arts marketing: evolution and future directions.* Psychology & Marketing **31**(8), 566-575, 2014, http://dx.doi.org/10.1002/mar.20718,

[34] Camarero, C.; Garrido, M.J.; Vicente, E. and Redondo, M.: *Relationship marketing in museums: influence of managers and mode of governance.* Public Management Review **21**(10), 1369-1396, 2019, http://dx.doi.org/10.1080/14719037.2018.1550106,

[35] Weber-Kainz, B.: *Strategies for tourism internationalization of museums: topic 'Museums and cultural tourism'.* In Croatian. Informatica museologica **36**(3-4), 30-34, 2005, http://dx.doi.org/10.1016/S0197-2510(05)70120-0,

[36] Hume, M.: *How do we keep them coming?: examining museum experiences using a services marketing paradigm.* Journal of Nonprofit & Public Sector Marketing **23**(1), 71-94, 2011, http://dx.doi.org/10.1080/10495142.2011.548759,

[37] Lehman, K.: *Australian museums and the modern public: a marketing context.* The Journal of Arts Management, Law, and Society **39**(2), 87-100, 2009, http://dx.doi.org/10.3200/JAML.39.2.87-100,

[38] Tomičić Furjan, M.; Tomičić-Pupek, K. and Pihir, I.: *Understanding Digital Transformation Initiatives: Case Studies Analysis.* *Business Systems Research* **11**(1), 125-141, 2020, http://dx.doi.org/10.2478/bsrj-2020-0009,

[39] Krajnović, A.; Gospić, P. and Sikirić, D.: *Strategic impact of digital marketing and CRM tools in tourism.* In Croatian. In: Dobrinić, D., ed.: Book of Papers of 2nd Croatian Direct Marketing Association Conference, Varaždin, pp.209-221, 2017,

[40] Duka, I.: *New trends and tools in digital marketing.* M.Sc. Thesis. University of Zadar, Zadar, 2017,

[41] Ćurlin, T.; Jaković, B. and Miloloža, I.: *Twitter usage in tourism: literature review.* Business Systems Research **10**(1), 102-119, 2019, http://dx.doi.org/10.2478/bsrj-2019-0008,

[42] Constantinides, E. and Fountain, S.J.: *Web 2.0: conceptual foundations and marketing issues*. Journal of Direct, Data and Digital Marketing Practice **9**(3), 231-244, 2008, http://dx.doi.org/10.1057/palgrave.dddmp.4350098,

[43] Ryan, D. and Jones, C.: *Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation.*
Kogan Page Ltd., London & Philadelphia, 2009,

[44] Rancati, E. and Gordini, N.: *Content marketing metrics: theoretical aspects and empirical evidence.*
European Scientific Journal **10**(34), 92-104, 2014,
http://dx.doi.org/10.1021/cen-09210-ad17,

[45] Ritzer, G. and Jurgenson, N: *Production, consumption, prosumption: the nature of capitalism in the age of the digital 'prosumer'.*
Journal of Consumer Culture **10**(1), 13-36, 2010,
http://dx.doi.org/10.1177%2F1469540509354673,

[46] Baranowski, P.; Korczak, K. and Zając, J.: *Forecasting Cinema Attendance at the Movie Show Level: Evidence from Poland.*
Business Systems Research **11**(1), 73-88, 2020,
http://dx.doi.org/10.2478/bsrj-2020-0006,

[47] Kużelewska, E. and Tomaszuk, M.: *European Human Rights Dimension of the Online Access to Cultural Heritage in Times of the COVID-19 Outbreak.*
International Journal for the Semiotics of Law-Revue internationale de Sémiotique juridique, 1-13, 2020,

[48] Brammer, S.; Branicki, L. and Linnenluecke, M.K.: *COVID-19, Societalization and the Future of Business in Society.*
Academy of Management Perspectives **34**(4), 493-507, 2020,
http://dx.doi.org/10.5465/amp.2019.0053,

[49] van Leeuwen, M.; Klerks, Y.; Bargeman, B.; Heslinga, J. and Bastiaansen, M.: *Leisure will not be locked down–insights on leisure and COVID-19 from the* Netherlands.
World Leisure Journal **62**(4), 339-343, 2020,
http://dx.doi.org/10.1080/16078055.2020.1825255,

[50] Agostino, D.; Arnaboldi, M., and Lampis, A: *Italian state museums during the COVID-19 crisis: from onsite closure to online openness.*
Museum Management and Curatorship **35**(4), 362-372, 2020,
http://dx.doi.org/10.1080/09647775.2020.1790029,

[51] Samaroudi, M.; Echavarria, K.R. and Perry, L.: *Heritage in lockdown: digital provision of memory institutions in the UK and US of America during the COVID-19 pandemic.*
Museum Management and Curatorship **35**(4), 337-361, 2020,
http://dx.doi.org/10.1080/09647775.2020.1810483,

[52] Krajnović, A.; Perković, A. and Rajko, M: *Digital Marketing in Cultural Institutions - Example of Cultural Institutions of the City of Zadar*.
In: Proceedings of the ENTRENOVA - ENTerprise REsearch InNOVAtion Conference, 10-12 September 2020, Zagreb (Virtual Conference). IRENET - Society for Advancing Innovation and Research in Economy, **6**(1), 341-352, 2020,

[53] Ryder, B.N.: *Cultural Institutions Digital Responses To COVID-19 Temporary Closures*.
Honors Undergraduate Theses. 820, 2020,

[54] Lješnjak, I.: *Crisis communication of the Zagreb City Library with its users during the COVID-19 pandemic.* M.Sc. Thesis. In Croatian.
University of Zagreb, Faculty of Humanities and Social Sciences, Department of information and Communication sciences, Zagreb, 2020,

[55] Papachroni, A. and Lochrie, S. *Case Studies and data*.
In: O'Gorman, K. and MacIntosh, R., eds: *Research Methods for Business and Management.* Goodfellow Publishers, Oxford, pp.75-95, 2015,
http://dx.doi.org/10.23912/978-1-910158-51-7-2778,

[56] Rowen, I.: *The transformational festival as a subversive toolbox for a transformed tourism: lessons from Burning Man for a COVID-19 world.*
Tourism Geographies **22**(3), 695-702, 2020,
http://dx.doi.org/10.1080/14616688.2020.1759132,

[57] Weed, M.: *The role of the interface of sport and tourism in the response to the COVID-19 pandemic.*
Journal of Sport & Tourism **24**(2), 79-92, 2020,
http://dx.doi.org/10.1080/14775085.2020.1794351,

[58] Liyanage, S.: *Theater In The Apocalypse*.
https://www.colombotelegraph.com/index.php/theater-in-the-apocalypse, accessed 29th January 2021,

[59] Katara, N.: *The Theater and The Crisis*.
Sambhāṣaṇ **1**(04), 96-101, 2020,
http://dx.doi.org/10.1111/tan.13822,

[60] Brook, P.: *The Empty Space: A Book About the Theater: Deadly, Holy, Rough, Immediate.*
https://cdn.preterhuman.net/texts/religion.occult.new_age/occult.conspiracy.and.related/Brook,%20Peter%20-%20The%20Empty%20Space.pdf, accessed 21st January 2021.

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THE RELATIONSHIP BETWEEN CORPORATE SOCIAL RESPONSIBILITY, CORPORATE REPUTATION, AND BUSINESS PERFORMANCE

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ABSTRACT

Formerly, it was considered that the main task of the corporate sector is to ensure economic performance. Nowadays, this attitude has changed and the term the bottom line has been replaced by the term the triple bottom line. Accordingly, not only financial performance but also the impact on the environment and society in which the organization operates is taken into consideration when measuring its effectiveness. Today, a corporation is not only expected to operate efficiently but also to be socially responsible. On the other hand, thanks to emphasizing social responsibility in their communication with stakeholders, corporations can have a positive reputation and good business performance. Therefore, the main goal of this article is to investigate how corporate communications managers of successful retail companies in Croatia, based on their practical experience, perceive the relationship between corporate social responsibility, reputation, and business performance. Specifically, the in-depth interview method was used to examine the attitudes of corporate communications managers of successful companies in retail market on the relationship between corporate social responsibility, reputation, and business performance. The results show that the surveyed public relations experts notice a positive relationship between corporate social responsibility and reputation, and also see a positive relationship between corporate social responsibility and business performance.

KEYWORDS

corporate social responsibility, public relations, reputation, retail, business performance, corporate communication

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INTRODUCTION

Milton Friedman's idea [1] that the main task of a corporation is to increase profits and stock values belongs to the past [2; p.113]. Nowadays, more and more corporations accept corporate social responsibility as a way of doing business, i.e. they accept their responsibility towards the society in which they operate [2; p.109]. These changes have also affected the area of corporate reputation that no longer only encompasses profits and product quality but also the impact that organizations have on the quality of life of communities in which they operate [2; p.109, 3; pp.271-272,]. A corporation that operates in a socially responsible way should have efficient operations and respect the law, but also be ethical and invest in community resources. Formerly, the ultimate performance of an organization was defined by the *bottom line* and meant financial performance, while today this term has been replaced by the term *triple bottom line*, a term that measures the financial impact of the organization as well as the impact on the environment and society. This new term emphasizes the equal importance of profits, people, and the planet in a corporation's business, and these are three indicators of business performance.

No shortage of research materials shows the benefits of corporate social responsibility [4-7]. Summarizing these advantages, it can be said that corporate social responsibility develops human resources, builds the trust of key stakeholders, and improves business. It also brings many benefits to the economy in general, and organizations that apply CSR principles are more resilient to crises and have a better position in the market.

Although corporate social responsibility has been present among corporations for some time, when it comes to Croatia - this is a recent business practice [8]. Positive changes in this regard are certainly the establishment of the Croatian Business Council for Sustainable Development in 1997, then the National Network for Corporate Social Responsibility established in 2010, and the Institute for Corporate Social Responsibility, which has been operating since 2015. In its beginnings, the practice of corporate social responsibility was mainly implemented in the field of environmental protection, while later it spread to the care for the local community.

The main purpose of this article is to investigate whether corporate social responsibility in practice has a positive relationship with corporate reputation and the business performance of companies. This article aims to investigate the perception of the relationship between corporate social responsibility, corporate reputation, and business performance among corporate communications managers in the retail sector of fast-moving consumer goods in Croatia. The research was conducted by the qualitative method of in-depth individual interviews.

In the theoretical part of the article, an overview of the most important learnings about the relationship between CSR, reputation, and business performance of companies will be presented, and the results of the most important research in this field in Croatia will be summarized. The research part of the article will focus on the methodology and sample, which consists of seven corporate communications managers of Croatian retailers in FMCG, as well as the objectives of the research. We will then present the results of the research with a focus on the relationship between corporate social responsibility, reputation, and business performance. After discussing the results of the research, the conclusions and recommendations for future studies of this topic will be presented.

LITERATURE OVERVIEW

Research on corporate social responsibility can be divided into research at the institutional, organizational, and personal levels [9; p.218]. Also, it can be divided into research with a moral or business orientation [10; p.123]. Business theorists note a cause-and-effect relationship

between CSR programs and corporate financial performance. Furthermore, theories of corporate social responsibility can be divided into four categories: instrumental, political, integrative, and ethical [11]. Accordingly, corporate social responsibility includes several activities in the areas of business, social investment, and philanthropy [12-15]. All this shows how complex the concept of corporate social responsibility is [16]. CSR is present in various scientific fields and the definitions of the concept itself are numerous. Simply put, most would agree that it is based on maximizing the positive impact of an organization on society [17].

CORPORATE REPUTATION

Similar to the case of the term corporate social responsibility, the term corporate reputation has also been studied in various scientific fields. Therefore, it is not surprising that the authors Fombrun and van Reil [18] classified the current theoretical knowledge of corporate reputation according to economic, marketing, sociological and corporate sources, or that Chun [19; p.94] cites three schools of thought concerning the interpretation of corporate reputation: evaluative, impressionistic, and relational. The first school of authors defines corporate reputation as an assessment of the financial achievements of the organization, the second school as the overall impression that interest groups have about the organization. Most authors in the field of communication science make up the third school, and they see corporate reputation as the relationship between the perception of internal and external stakeholders. Similar to the third school, Fombrun [20; p.195] defines corporate reputation as "the overall perception of a company's past activities and vision of future action relating to the preference of key publics toward a particular organization". This coincides with the definition of corporate reputation as "a synthesis of the opinions, perceptions, and attitudes that stakeholders have about an organization made up of employees, consumers, suppliers, investors, and the local community" [21; p.165]. Other authors emphasize that corporate identity, desired identity, and corporate image are fundamental parts of corporate reputation [22]. It is important to point out that identity and image are not the same, accordingly corporate identity and corporate image are not the same, although they are often confused. The authors explain how corporate identity is everything that an organization communicates, either intentionally or accidentally, using a variety of cues. Corporate image, on the other hand, is an image that the public sees. Corporate image is therefore perception and exists only in the mind of the public. The public formulates the image to interpret the identity in a broader context with a broader framework of meaning. As for corporate reputation, the same authors explain how it is represented by all the reflections collected over some time based on which a particular opinion about the organization is formed. Accordingly, Roberts [23] clarifies: since reputation is based on perception it is subjective. Thus, it could be said that reputation is a synthesis of the experience that a particular public has with an organization. In this context, a good reputation is a foundation for building organizational performance.

But to better understand the topic it is necessary to explain the aforementioned notion of corporate identity. What shapes corporate identity? Some authors will say: it depends on what the organization is like [3; p.274]. Corporate identity often referred to as corporate personality is difficult to unambiguously define, especially because some authors also use the term organizational culture. Author Gregory [24; p.1] defines it as follows: "a corporate personality is built on the history, culture, values, and beliefs of an organization (which govern its philosophy of task and strategies) and is realized through employees, systems, structures, products, and services". In short, a corporate personality is portrayed by an identity. Similarly, other authors talk about the values of a corporation, explaining that they are "beliefs that refer to desirable endpoints or behaviors that signify certain situations, guide the selection or assessment of people and events, and are arranged in order of importance to

other values so that the priorities of systemic values can be formed" [25; p.20]. These values shared by employees are often not visible and provide stability over time. Specifically, they influence a company's decision-making or behavior.

Furthermore, it should be mentioned that the concept of corporate identity has changed over time. Previously, it mainly referred to the visual elements with which a corporation presented to the public (for example a logo), and now Schmidt [26; p.40] states there are five elements of corporate identity: products and services, communication, design, corporate behavior, market conditions and strategies, and corporate culture. Corporate social responsibility is part of the corporate identity and core values of the corporation [27]. In this way, corporate social responsibility helps to shape a recognizable corporate identity [28; p.29]. Furthermore, it should be mentioned that corporate identity is one of the two pilasters on which a corporate brand is built. The second pilaster is made from corporate associations that summarize the valuation and feelings of individuals toward companies [29]. Also, corporate communication plays an important role in these processes [28; p.27]. Corporate communication is intentional and planned and aims to achieve a positive image among the target audiences [3]. But it should be emphasized that organizations communicate even when they do not plan to: by their very existence they send messages to their stakeholders. Of course, even this unplanned, unintentional communication affects the corporate image. Therefore, it can be said that corporations cannot directly build a corporate image. Yet, a well-built corporate identity can affect a corporate image.

Corporate social responsibility can contribute to the improvement of both corporate image and corporate reputation [30, 31; pp.444-445]. Also, Lee and Yoon emphasize the commitment of employees in organizations that conduct corporate social responsibility programs [32; pp.628-629]. However, the same authors point out that this commitment depends on the mechanisms of internal and external legitimacy, which employees use in assessing the activities of their organization's corporate social responsibility. Thus, the mechanism of internal legitimacy increases the connection and identification of employees with socially responsible activities, emphasizing the public reasons for including corporate social responsibility in the strategy and culture of the organization. But if external legitimacy is not supported by internal legitimacy mechanisms, it ultimately has a negative result. In other words, when employees witness supporting the internal and external activities of corporate social responsibility, they will perceive the conduct of corporate social responsibility of their company as sincerely committed.

Last but not least, a good reputation increases profits as such corporations are more attractive to customers, investors, and even employees themselves [20; p.81] and this helps them maintain a competitive advantage in the sector [33; p.68]. With this conclusion, we approach the concept of business performance, which will be described in more detail in the following lines.

BUSINESS PERFORMANCE

The relationship between corporate social responsibility and financial performance has long been the subject of scientific research [34]. Some studies prove a positive relationship between the two concepts. However, some have found a negative relationship [35]. This contrast is primarily caused by the diversity in measuring corporate social responsibility and financial performance [36; p.676]. However, when the line is drawn, the most common type of relationship is the positive one. Thus, Baue [37] refers to a report in the Journal of Business Ethics which shows how companies with corporate social responsibility programs occupy high positions on the list of the best corporate citizens. These companies have far better financial performance than the competition that has not incorporated corporate social responsibility into their business programs. Therefore, it is not surprising that some authors

emphasize the competitive advantage of corporate social responsibility as an opportunity as well as innovation [28; p.27, 38] Furthermore, corporate social responsibility also influences consumer purchasing behavior [39; pp.45-48]. The results of these studies have shown that CSR activities indirectly strengthen the reputation, contribute to a positive image and also positively influence purchasing decisions: socially responsible companies will be given priority when buying. And not only that, other research has shown that customers are willing to pay 10-28 % more for a particular product if there is a link between the product and CSR [40]. It can be concluded that a socially responsible company will contribute to society and the planet, but also respond to market needs [39; p.48]. According to some authors, the benefits of corporate social responsibility are multiple and summarized in five categories: easier attraction of resources, attracting quality employees, easier advertising of products and services, and also creating new opportunities and competitive advantages [41]. It is interesting to show the advantages of corporate social responsibility from [42] Weber who emphasizes that it has a positive effect on reputation, employee motivation, and at the same time reduces costs and risks and increases revenues. Other authors also emphasize employee loyalty and stronger support from the local community [18].

Simply put, corporate social responsibility is considered as an indicator of good governance and is now included in business reporting standards within the already mentioned triple bottom line [43; p.68]. Related to corporate social responsibility communication, public relations professionals can make a significant contribution to a company's profitability by making their key publics a true judge of quality business [16].

CORPORATE SOCIAL RESPONSIBILITY IN CROATIA

The acceptance of the practice of corporate social responsibility in Croatia happened late, and some believe that it can be measured only after the process of joining the European Union [8]. The practice of corporate social responsibility was certainly preceded by an awareness of its importance [44]. Thus, initiatives such as the establishment of the Croatian Business Council for Sustainable Development in 1997, and the Croatian Chamber of Commerce as well as the Croatian Business Council for Sustainable Development witch launched a project called the CSR Index in 2008, show not only the presence of awareness about the importance of corporate social responsibility but also the growth of that awareness [45; p.111]. This situation is in line with the results of a piece of research that shows that corporate social responsibility in young countries has become a leader in social change [46]. Awareness is growing in these continues and the concept of corporate social responsibility is increasingly included in business strategies: for example, in 2010 the National Network for Corporate Social Responsibility was established and in 2015 the Institute for Corporate Social Responsibility was launched.

Many pieces of research can be found on the topic of corporate social responsibility in Croatia. An important study was conducted in 2007 and showed that about 200 companies apply some form of CSR [44; p.32]. A five-year analysis of the Corporate Social Responsibility Index showed that the companies that participated in the Index are also more financially successful than the average of the Croatian economy [32-34, 44]. In 2013, the year when Croatia became a full member of the European Union, a national study named "Corporate Social Responsibility for All" was conducted [44]. The results of this study showed that the environment for the implementation of corporate social responsibility in Croatia was considered unfavorable. Also, it was found that large companies are transmitters of knowledge about corporate social responsibility in Croatian subsidiaries. Similar conclusions were reached by research in some other sectors in Croatia [47]. According to the same study [44], respondents stressed that corporate social responsibility is often perceived as limited, within the framework of philanthropy and short-term image management. Therefore, it is not

surprising that the activities of CSR programs are understood as short-term. Nevertheless, respondents confirmed that they are investing in local social initiatives and energy efficiency. Respondents also confirm that ethical, social, and environmental criteria are important and that they are included in business policies. The same research shows that companies often apply corporate social responsibility because of corporate culture and employee motivation.

After all the above, especially comparing the theoretical part with the results of previous research on corporate social responsibility in Croatia, a certain gap can be noticed. Namely, comparing what the theory describes that corporate social responsibility is, with the findings from the field, we conclude that corporate social responsibility is still most often understood through some impoverished images of philanthropy and short-term image improvements. This is where the interest for this research was found: has the understanding of corporate social responsibility in Croatia experienced shifts concerning the above-mentioned results of previous research?

METHODOLOGY

To gain insight into the opinions, attitudes, behaviors, and motives of the respondents, the qualitative scientific method of the individual interview was used. In-depth interviews are a method that enables the discovery of complex relationships between attitudes and behaviors. Specifically, this research was conducted by a method of semi-structured interviews with open-ended questions. This allowed freedom of expression for the respondents and thus a broader insight into the topic.

Previously published research has shown that hat public relations professionals in their practical work mostly help their companies to be socially responsible and most of these activities are part of their daily work [48]. Therefore, it would be interesting to examine their perception of corporate social responsibility, reputation, and business success and their possible relationship.

Accordingly, this article investigates the perception of the relationship between corporate social responsibility, reputation, and business performance among corporate communications managers in the retail sector of fast-moving consumer goods in Croatia. Specifically, the surveyed corporate communications managers belong to the list of the 20 best retailers in the consumer goods sector according to the data of Poslovna Hrvatska for 2018 [49]. As mentioned above, organizations that apply CSR have a better position in the market. Therefore, the research focused on those companies that are presumed to apply CSR. The criterion for selecting respondents is their position as head of the corporate communications department of the leading retail chains in the FMCG sector in Croatia. An invitation to participate in the research was sent to all communication managers from the list (Table 1). The invitation to join the survey was accepted by three men and four women, who represented a non-stratified intentional sample, aged 33 to 44, all highly educated with the majority having a degree in economics. Their work experience in the field of public relations ranges from 8 to 17 years.

Following the chosen method and the theoretical framework presented earlier, which shows that communication activities are related to corporate reputation, it is important to observe the attitudes of corporate communications managers on this issue. Accordingly, the research goals are: (i) RG1: to investigate the perception that the heads of corporate communications have about the relationship between CSR programs and corporate reputation; (ii) RG2: analyze the perception of the heads of corporate communications about the relationship between CSR programs and business performance. Given the first research goal, respondents were asked about whether CSR is embedded in their company's identity and corporate culture, how a company analyzes its reputation, how important media coverage of CSR programs is to them, and how popular those programs are. With regard to the second research goal, the

respondents were asked whether CSR has been implemented in the long-term goals of the company, whether special financial resources have been allocated to them and on the basis of which criteria funds are allocated for CSR programs. Also interviewed corporate communications chiefs were asked about whether CSR is related to a company's business performance.

Table 1. List of the 20 best retailers in the fast-moving consumer goods on the Croatian market [49].

	Retail chain	Location	Revenues in 2017 (in 1000 kn)
1.	KONZUM D.D.	Zagreb	9.348.012
2.	LIDL HRVATSKA D.O.O. K.D.	Velika Gorica	4.718.014
3.	PLODINE D.D.	Rijeka	4.239.653
4.	SPAR HRVATSKA D.O.O.	Zagreb	3.761.928
5.	KAUFLAND HRVATSKA K.D.	Zagreb	3.632.979
6.	TOMMY D.O.O.	Split	2.700.434
7.	DM-DROGERIE MARKT D.O.O.	Zagreb	1.737.663
8.	STUDENAC TRGOVINA D.O.O.	Omiš	1.657.303
9.	KTC D.D.	Križevci	1.478.636
10.	MULLER TRGOVINA ZAGREB D.O.O.	Zagreb	1.404.418
11.	LONIA D.D.	Kutina	602.434
12.	BOSO	Vinkovci	592.690
13.	MLIN I PEKARE	Sisak	545.138
14.	RIBOLA, D.O.O.	Kaštel Lukšić	474.284
15.	METSS D.O.O.	Čakovec	472.855
16.	BIPA D.O.O.	Zagreb	460.440
17.	GAVRANOVIĆ D.O.O.	Zagreb	449.155
18.	TRGOVINA KRK D. D.	Malinska	399.883
19.	STRIDON-PROMET D.O.O.	Dugo Selo	384.617
20.	ISTARSKI SUPERMARKETI D.O.O.	Poreč	366.870

RESULTS

The results of the research will be presented in two groups, according to the research questions.

REPUTATION (RG1)

Firstly we examined how public relations professionals perceive the relationship between corporate social responsibility and corporate reputation. Here we provide insight into the the perception that the heads of corporate communications have about the relationship between CSR programs and corporate reputation (RG1). Therefore, we first sought an answer to the question - Is corporate social responsibility a part of corporate identity or just a short-term quick fix for image repair? All respondents believe that corporate social responsibility is part of their corporate culture. Thus, respondent 06 summarizes their views well when he claims: "corporate social responsibility is one of the foundations of our business, it is part of our identity and a key determinant of the corporate culture." The statement of respondent 07 is also interesting, as she says: "ethics and ecology, along with economics, are our greatest principles and bearers of identity and organizational culture".

Is CSR planned for the long-term or is it related to short-term projects? – was our next question. Heads of corporate communications departments generally agree when they say that goals in the field of corporate social responsibility are included in the organization's

multi-year plans. This is confirmed by respondent 01 when he states: “specific goals in the field of CSR have been implemented in the multi-year goals and plans of the organization." Accordingly, respondent 06 states: “yes, specific goals are built into our multi-year plans, and funds are planned to achieve them through various programs and activities. Of course, there are always opportunities for financial support for programs that are not planned, but we recognize them as activities that bring added value to the communities in which we operate. Slightly contrary to previous respondents, respondent 04 says: “no, only on an annual basis. We set aside a portion of the budget for donations and sponsorships”.

Our question was also – Is there a connection between corporate social responsibility and a positive reputation? Respondent 02 points out: “I do not notice any differences in reputation since we carry out CSR activities throughout the year”. Although respondent 01 is a little more skeptical when he says: “society is only now beginning to valorize the work and effort needed to implement CSR projects”, respondents 03, 07, and 05 also notice reputational differences: “with the implementation of quality programs the reputation grows”. Activities aimed at achieving a positive reputation often include media relations. Respondent 01 represents the attitude of the respondents when he says: “it is very useful to get media attention for CSR projects, and it is even more useful to be nominated and receive awards for such projects”. However, it is important to emphasize the attitude of respondents 06 who say: “media coverage of CSR programs can play an important role in raising public awareness and encouraging others to act, but should not become the purpose of implementing CSR programs”. The answer of respondent 03 is on the same track, who explains: “considering that we make all decisions with the aim of better CSR, we do not have to worry about reputation”.

How are CSR business programs accepted? – was our further question. Respondents confirm that these programs are very popular and well-accepted within the community. It is interesting how respondent 01 points out that: “society generally accepts projects from the philanthropic dimension of CSR well and quickly, while for other projects it takes a little longer until they are accepted and recognized”. Respondent 06 has a slightly more elaborate position, saying: “our stakeholders recognize the resources, resources, and efforts we invest in the implementation of CSR programs and such programs play an important role in building and strengthening our mutual relations, trust and respect. All our CSR programs aim to improve the communities in which we operate, and it is quite understandable that they are popular among all target groups because they provide new value and contribute to building a better society”.

BUSINESS PERFORMANCE (RG2)

The next topic on which we wanted to get the opinion of the research participants is their perception of the relationship between corporate social responsibility and business performance, or in other words to analyze the perception of the heads of corporate communications about the relationship between CSR programs and business performance (RG2). Therefore, we started the discussion with the question – Is it possible to say that good public relations affect the competitive advantage of the organization? It can be said that shareholders are real business judges, and this is confirmed by respondent 06 when he points out: “numerous studies have shown that company stakeholders recognize the importance of socially responsible behaviors, and we have such experiences. It is known that CSR leads to alleviating negative perceptions, reducing costs, improving the quality of management processes, increasing sales and brand value in general. Hiring and retaining quality workers has been greatly facilitated, and customers and consumers are becoming more loyal”. Similarly, respondent 05 emphasizes: “CSR has an impact on economic responsibility and there is a link between activities carried out and business performance”. Respondent 07 agrees with this opinion but adds: “yes, the performance of the company depends on awareness of the impact

on the community, but the results do not come in the short-term." Particularly interesting is the attitude of respondents 02 who says: "I believe that there is still no significant positive relationship between CSR and business performance. On the other hand, I would say that the lack of CSR affects the decline in business performance, especially if it is, for example, a very negative impact on the environment or poor consumer protection, poor food quality control, etc. Poor CSR leads to declining sales, but CSR weakly increases sales. This is because, in our market, the price level is still the primary factor in defining demand".

Is there a relationship between corporate social responsibility and financial performance? – was our next question. Respondent 01 points out: "it pays to be a good corporate citizen or a socially engaged company, since such a company is accepted by the environment in which it operates and gives its fellow citizens trust, and in return, they allocate their resources." In a similar tone, respondent 05 states: "yes. Quality and well-targeted programs contribute positively to the company's business". Respondent 02 also agrees, claiming: "certainly. It is especially profitable in the long run because such activities will be increasingly valued in future periods with the increase of citizens' awareness". Respondent 06 also responds positively, stating: "of course because I repeat - the company's social responsibility has a wide impact on all its stakeholders and their relationship with the company".

Our question was also – What are the criteria for allocating funding to CSR programs? The answers vary, but they have a common focus on the local community. Respondent 06 explains: "In allocating funds, we are mainly oriented towards programs focused on the areas in which we are most active, such as increasing employee welfare, environmental protection, strengthening local initiatives, empowering young people, and educating consumers. Our focus is on projects that are sustainable in the long run and have the potential to continue to develop in cooperation with local partners. Respondent 02 is on the same track, emphasizing: "an important criterion is that the funds are spent specifically for a project and that beneficiaries have a socially useful role: in sports, culture, education, humanitarian activities and the like. These must be local organizations and especially those that find it difficult to obtain funding from national sources. It is also important that these are local organizations within our areas of activity". Several respondents show similar criteria that can be summarized by respondent 07's response: "when allocating funds, we focus on the relevance of the project, the connection with the company's values and the impact on the community". Some respondents pay special attention to the economic element, which is well described by respondent 01, saying: "when allocating funds to CSR programs, we are guided by criteria of economic sustainability, community requirements, interests of all stakeholders and so on. Economic responsibility is the most important dimension of CSR. A socially responsible company must first ensure at least a minimum level of return on investment and thus ensure its survival in society, and only then can it invest more seriously in all other dimensions of CSR. Such an attitude is summarized by respondent 05 when he claims: "when allocating funds, we are guided by the rationalization between what is invested and what is received".

DISCUSSION

It remains to provide concise and relevant answers to the two questions posed at the beginning of this article.

REPUTATION (RG1)

The first research goal of this article seeks the answer on how do public relations professionals perceive the relationship between corporate social responsibility and a positive corporate reputation. Based on the presented results, it can be concluded that public relations

experts in FMCG positively perceive the relationship between corporate social responsibility business and corporate reputation. Namely, for them, CSR is part of the corporate culture, i.e. part of the corporate identity, which confirms the expectations of Lauring and Thomsen [27] and gives it a recognizable shape [28]. Respondents' statements confirm that social responsibility values are part of corporate culture and identity as defined by Gregory [24]. The testimonies are on the trail of Lee and Yoon who point out that employees who witness supporting the internal and external activities of corporate social responsibility, perceive the conduct of the CSR activities of their company as sincerely committed [32].

Heads of corporate communications departments are generally aware of the positive relationship between corporate social responsibility and the company's reputation similar to theoretical expectations [30, 31]. CSR activities that are closely related to strengthening the organizational reputation are relationships with the community, with special support from the local community and the media. Such statements support the exposed theory where it is argued that corporate social responsibility strengthens the support of the local community [18].

The statements of the interviewed leaders show the harmonization of internal and external legitimacy, which affects the positive assessment of the activities of socially responsible business of their organizations. Namely, as explained in the theoretical part, if employees witness the support of internal and external activities of corporate social responsibility, they will perceive its implementation as a sincere effort [32].

BUSINESS SUCCESS (RG2)

The second research goal is to investigate how do public relations professionals perceive the relationship between corporate social responsibility and business performance. Public relations experts in FMCG perceive a positive relationship between corporate social responsibility and business performance. In other words, the attitudes of the respondents confirm previous research showing that corporate social responsibility is a long-term profitable business practice, which is in line with research presented in the theoretical part where a good reputation is a foundation of building business performance. Roberts [23] argues that socially responsible corporate behavior also has a positive effect on customer behavior [39-41].

The results show that the goals related to corporate social responsibility are implemented in the long-term plans of the organization, and most of them are not short-term projects. The allocation of funds is mostly about the well-being of the local community, so it is not surprising that they have the support of the local community, as some authors have already emphasized in the first part of the article [18]. The attitudes of the respondents are in line with previous research that shows that corporate social responsibility is a profitable business practice in the long run. Namely, there is no lack of authors who point out the advantages of corporate social responsibility, emphasizing business improvement, better market position, etc. [4-7].

CONCLUSION

The results show that the goals related to corporate social responsibility are implemented in the long-term plans of the organization, and most of them are not short-term projects. The allocation of funds is mostly about the well-being of the local community, so it is not surprising that they have the support of the local community, as some authors have already emphasized in the first part of the article [18]. The attitudes of the respondents are in line with previous research that shows that corporate social responsibility is a profitable business practice in the long run. Namely, there is no lack of authors who point out the advantages of CSR, emphasizing business improvement, better market position, etc. [4-7].

Corporate social responsibility is considered as a part of the corporate culture and is included in the long-term goals of corporations, and is not seen as a quick fix for repairing the corporate image. The purpose of corporate social responsibility is not just a good image in the media, but it is considered as a part of the corporate identity, where a good media image is just a positive consequence. In other words, corporate social responsibility is considered a core value of corporate culture. Also, it can be concluded that CSR is no longer viewed only in the context of philanthropy, but it is understood much more broadly. These results show a certain positive shift in the understanding of corporate social responsibility in Croatian practice.

The conclusions have limited application and reliability due to the deliberate selection of the sample and the small number of respondents. Therefore, this research could be used to prepare a more comprehensive survey research as one of the possible future directions of research on the relationship between corporate social responsibility, corporate reputation and business performance of companies in Croatia.

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REFERENCES

[1] Friedman, M.: *The social responsibility of business is to increase its profits.*
New York Times, 13 September 1993,

[2] Tench, R.: *Community and society - socially responsible business.* In Croatian.
In: Ralph, T. and Liz, Y., eds.: *Discovering public relations.* HUOJ, Zagreb, pp.108-126, 2009,

[3] Lowensberg, D.: *Corporate image, reputation and identity*. In Croatian.
In: Ralph, T. and Liz, Y., eds.: *Discovering public relations.* In Croatian.
HUOJ, Zagreb, pp.268-282, 2009,

[4] Pérez, R.C.; Alcañiz, E.B. and Herrera, A.A.: *The role of self-definitional principles in consumer identification with a socially responsible company.*
Journal of Business Ethics **89**(4), 547-564, 2009,
http://dx.doi.org/10.1007/s10551-008-0016-6,

[5] Carvalho, S.W.; Sen, S.; de Oliviera Mota, M. and de Lima, R.S.: *Consumer Reactions to CSR: A Brazilian perspective.*
Journal of Business Ethics **91**, 291-310, 2010,
http://dx.doi.org/10.1007/s10551-010-0620-0,

[6] Reilly, J.: *Charitable work sells at a number of firms.*
Marketing News, p.46, 11 September 2000,
http://dx.doi.org/10.1364/OPN.11.12.000046,

[7] Pirsch, J.; Gupta, S. and Grau, S.L.: *A framework for understanding corporate social responsibility programs as a continuum: An exploratory study.*
Journal of Business Ethics **70**(2), 125-140, 2007,
http://dx.doi.org/10.1007/s10551-006-9100-y,

[8] Omazić, M.A.: *Collection of case studies of socially responsible business.* In Croatian.
Hrvatski poslovni savjet za održivi razvoj, Zagreb, 2012,

[9] Mulović, A.; Hunjet, A. and Kozina, G.: T*oward economic reward: corporate social responsibility communication of SMEs*.
Megatrend Review **12**(3), 215-230, 2015,
http://dx.doi.org/10.5937/MegRev1503215M,

[10] Sitnikov, C. and Bocean, C.: *Relationships Between Corporate Social Responsibility and Strategic Planning.*
In: Idowu, S.O. and Vertigans, S., eds.: *Stages of Corporate Social Responsibility: From Ideas to Impacts.* Springer, pp.121-137, 2016,

[11] Garriga, E. and Mele, D.: *Corporate social responsibility theories: Mapping the territory*.
Journal of Business Ethics **53**(1), 51-71, 2004,
http://dx.doi.org/10.1023/B:BUSI.0000039399.90587.34,

[12] Wartick, S. and Cochran, P.: *The evolution of the corporate social performance model*.
Academy of Management Review **10**(4), 758-769, 1985,
http://dx.doi.org/10.5465/amr.1985.4279099,

[13] Marsden, C. and Andriof, J.: *Towards an understanding of corporate citizenship and how to influence it*.
Citizenship Studies **2**(2), 329-352, 1998,
http://dx.doi.org/10.1080/13621029808420686,

[14] Gray, R.: *Accounting and environmentalism: An exploration of the challenge of gently accounting for accountability, transparency and sustainability*.
Accounting, Organizations and Society **17**(5), 399-426, 1992,
http://dx.doi.org/10.1016/0361-3682(92)90038-T,

[15] Shleifer, A. and Vishny, R.: *A survey of corporate governance*.
Journal of Finance **52**(2), 737-783, 1997,
http://dx.doi.org/10.1111/j.1540-6261.1997.tb04820.x,

[16] Baric, A.: *Corporate social responsibility and stakeholders: review of the last decade (2006-2015)*.
Business Systems Research **8**(1), 133-146, 2017,
http://dx.doi.org/10.1515/bsrj-2017-0011,

[17] Krkač, K.: *Introduction to business ethics and corporate social responsibility*.
Mate, Zagreb, 2007,

[18] Fombrun, C.J.: *Reputation*: *Realizing Value from the Corporate Image*.
Harvard Business School Press, Boston, 1996,

[19] Chun, R.: *Corporate Reputation: Meaning and Measurement*.
International Journal of Management Reviews **7**(2), 91-109, 2005,
http://dx.doi.org/10.1111/j.1468-2370.2005.00109.x,

[20] Fombrun, C.J.: *Reputation: Realizing Value from the Corporate Image*.
Harvard Business School Press, Boston, 1996,

[21] Post, J.E. and Griffin, J.J.: *Corporate reputation and external affairs menagemen*t.
Corporate Reputation Review **1**(1), 165-171, 1997,
http://dx.doi.org/10.1057/palgrave.crr.1540038,

[22] Davies, G. and Miles, L.: *Reputation management: theory versus practice reputation*.
Corporate Reputation Review **2**(1), 16-27, 1998,
http://dx.doi.org/10.1057/palgrave.crr.1540064,

[23] Roberts, D.: *Reputation management for education: A review of the academic and professional literature*.
http://www.Theknowledgepartnership.com/uk/wp-content/uploads/2011/10/Reputation-Manage mentfor-Education-2009.pdf, accessed 25th March 2020,

[24] Gregory, A. and Tafra-Vlahović, M.: *Corporate social responsibility: New context, new approaches, new applications: A comparative study of CSR in a Croatian and a UK company.*
http://www.bledcom/com/uploads/documents/Gregory.Tafra.pdf, accessed 25th March 2020,

[25] Schwartz, S.H.: *Are there universal aspects in the structure and contents of human values?*
Journal of social issues **50**(4), 19-45, 1994,
http://dx.doi.org/10.1111/j.1540-4560.1994.tb01196.x,

[26] Schmidt, K.: *Corporate identity: an evolving discipline*.
Corporate Communications: An International Journal **2**(1), 40-45, 1997,
http://dx.doi.org/10.1108/eb046533,

[27] Lauring, J. and Thomsen, C.: *Ideals and practices in CSR-identity making: The case of equal opportunities*.
Employee Relations **31**(1), 25-38, 2009,
http://dx.doi.org/10.1108/01425450910916805,

[28] Mishra, M. and Mohanty, S.: *Impact of Corporate Social Responsibility Communication on Corporate Brand Personality Assessment*.
The IUP Journal of Management Research **11**(4), 26-39, 2013,

[29] Hoeffler, S. and Keller, K.L.: *Building Brand Equity Through Corporate Societal Marketing*.
Journal of Public Policy and Marketing **21**(1), 78-89, 2002,
http://dx.doi.org/10.1509/jppm.21.1.78.17600,

[30] Lewis, S.: *Reputation and corporate social responsibility.*
Journal of Communications Management **7**(4), 356-364, 2003,

[31] Tkalac Verčić, A. and Sinčić Ćorić, D.: *The relationship between reputation, employer branding and corporate social responsibility*.
Public Relations Review **44**(4), 444-452, 2018,
http://dx.doi.org/10.1016/j.pubrev.2018.06.005,

[32] Lee, S. and Yoon, J.: *Does the authenticity of corporate social responsibility affect employee commitment?*
Social Behavior and Personality **46**(4), 617-663, 2018,
http://dx.doi.org/10.2224/sbp.6475,

[33] Roelofsen, M.; Blok, V. And Wubben, E.: *Maintaining the CSR-Identity of Sustainable Entrepreneurial Firms The Role of Corporate Governance in Periods of Business Growth*.
In: Samuel O.I.; Claus S.F.; Asli Y.M. and Morten E.J.N., eds.: *Corporate Social Responsibility and Governance Theory and Practice.* Springer, pp.63-88, 2014,
http://dx.doi.org/10.7588/worllitetoda.88.6.0063,

[34] Alexander, G.J. and Buchholz, R.A.: *Corporate social responsibility and stock market performance*.
Academy of Management Journal **21**(3), 479-486, 1978,
http://dx.doi.org/10.5465/255728,

[35] Margolis, J.D. and Walsh, J.P.: *Misery loves companies: Rethinking social initiatives by business.*
Administrative Science Quarterly **48**(2), 268-305, 2003,
http://dx.doi.org/10.2307/3556659,

[36] Galant, A. and Černe, K.: *Non-Financial Reporting in Croatia: Current Trends Analysis and Future Perspectives.*
Management **12**(1), 41-58, 2017,
http://dx.doi.org/10.7827/TurkishStudies.11306,

[37] Baue, W.: *Business ethics: 100 Best Corporate Citizens Outperform*.
http://www.csrwire.com, accessed 25th March 2020,

[38] Porter, M.E. and Kramer, M.R.: *Strategy and Society: The Link Between Competitive Advantage and Corporate Social Responsibility*.
Harvard Business Review, December 2006,

[39] Bocean, C.G.; Sitnikov, C. and Tudor, S.: *Theoretical Perspectives Concerning Modeling Consumer Behavior Influences on CSR and Marketing Roles in Shaping Consumer Perceptions*.
In: Samuel, O.I.; Catalina, S.; Dalia, S. and Claudiu, G.B., eds.: *Current Issues in Corporate Social Responsibility: An International Consideration.* Springer, pp.45-62, 2017,

[40] Ferreira, D.A.; Avila, M.G. and de Faria, M.D.: *Corporate social responsibility and consumers' perception of price*.
Social Responsibility Journal **6**(2), 208-221, 2010,
http://dx.doi.org/10.1108/17471111011051720,

[41] Barnett, M.L. and Salomon, R.M.: *Beyond dichotomy: The curvilinear relationship between social responsibility and financial performance*.
Strategic Management Journal **27**(11), 1101-1122, 2006,
http://dx.doi.org/10.1002/smj.557,

[42] Weber, M.: *The business case for corporate social responsibility: A company level measurement approach for CSR*.
European Management Journal **26**, 247-261, 2008,
http://dx.doi.org/10.1016/j.emj.2008.01.006,

[43] Gregory, A. and Tafra-Vlahović, M.: *Socially responsible business - Company approach.* In Croatian.
Medianali **4**(8), 65-85, 2010,
http://dx.doi.org/10.1007/s00190-010-0428-9,

[44] HUP: *Socially responsible business for all, national study.* In Croatian.
https://www.hup.hr/EasyEdit/UserFiles/Petra%20Senti%C4%87/Nacionalni%20DOP%20HR.pdf, accessed 25th March 2020,

[45] Bačun, D.; Matešić, M. and Omazić, M.A.: *Lexicon of sustainable development.* In Croatian.
Hrvatski poslovni savjet za održivi razvoj, Zagreb, 2012,

[46] Ward, H.: *CSR and Developing Countries: What scope for government action?*
https://sustainabledevelopment.un.org/content/documents/no1.pdf, accessed 25th March 2020,

[47] Pejić Bach, M.; Omazić, M.A. and Zoroja, J.: *Transparency as a Precondition of Systemic Behavior: the Case of European Retailing Banks Regarding Social Responsibility Communication*.
Systems Research and Behavioral Science **32**(2), 256-264, 2015,
http://dx.doi.org/10.1002/sres.2267,

[48] Božić, B.; Kolić Stanić, M. and Jurišić, J.: *Corporate Social Responsibility in the Practice of Public Relations Professionals*.
Proceedings of the ENTRENOVA – ENTerprise REsearch InNOVAtion Conference (Online) **6**(1), 388-397, 2020,

[49] InStore magazine: *A Guide to Croatian Retail.* In Croatian.
Miremaks d.o.o., Zagreb, p.17, 2018,
https://www.instore.hr/read/vodic-kroz-hrvatsku-maloprodaju-2018-254.html#page16, accessed 25th March 2020.

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AN EMERGING TREND OF SLOW TOURISM: PERCEPTIONS OF HUNGARIAN CITIZENS

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ABSTRACT

Besides slow food, slow city, slow fashion, education, and marketing - slow tourism is one of the several different slow movements. Several trends justify the importance and the reasons for the existence of slow tourism: the aging society, the growing power of women in making travel decisions.

Slow tourism was born as a possibility for those, who would like to live their life in a different way even during their travels: giving respect to the environment and to the local people, too. In case of slow tourism local culture, traditions, gastronomy is in the center. Sustainability is also a priority, meanwhile, the well-being and interests of the inhabitants of the destination are also taken into account. Instead of mass tourism products authentic, not standardized experiences are in the supply. The research aimed to investigate the attitudes and perceptions of respondents towards different slow tourism elements. The study is based on quantitative data from an online survey conducted with 386 Hungarian respondents in the framework of omnibus research. To reveal the perceptions and attitude of the respondents towards slow elements multidimensional scaling model and principal component methods were applied. Based on the results it can be concluded, that the "local" elements of a journey are important for the respondents, meanwhile, the personalized services, the spirituality of the destination, and the sustainable approach do not matter. Only a small proportion of respondents avoids crowded destinations, so traveling to hidden places is not a favorite holiday option for the majority of Hungarians. However, the coronavirus epidemics can strengthen the demand for this tourism product, since expectedly there will be more tourists, who want to avoid crowded places during their holiday. Service providers can also benefit from the results of the research, and concentrate on the elements that proved to be important for Hungarian travelers.

KEY WORDS

slow tourism, locality, sustainability

CLASSIFICATION

JEL: Z32

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INTRODUCTION

People live their lives at an extraordinary speed. Virtual reality interweaves and spans every minute, the instant life has become typical for most people. However, there is a revolution in society against the speedy lifestyle – which is incorporated in the slow movements, the roots of which date back to the 1970s. As Honoré summarizes: „It is a cultural revolution against the notion that faster is always better. The Slow philosophy is not about doing everything at a snail's pace. It's about seeking to do everything at the right speed" [1; p.13].

The slow philosophy of life started with the slow food movement, which emphasizes, that the food must have good quality, should be tasty, and must serve the health. It should not contain any pesticides, and the production should be environment-friendly as well, furthermore, the producers themselves should also get a fair profit. Finally, the protection of regional traditions and the joy of gastronomy are also in the focus. However, this originally quite narrow movement has extended to several areas of life. Now we know and can enjoy among others the concept of the slow city, slow medicine, slow fashion, slow blogging, slow industry, or money [2-7]. The slow movement has also appeared in tourism as well, which can be considered as a counterpoint of mass tourism. Several trends confirm and strengthen the validity and actuality of the concept: aging society, the possible consequences of coronavirus pandemics, the growing income of women, and the growing power of women in making travel decisions [2, 8].

Although slow tourism draws the attention of researchers, tourism professionals, and the general public as well, there is still a lack of systematic researches in this field [9, 10]. The existing literature concentrates on the descriptive, qualitative approach from different aspects [10, 11]. In Hungary, the situation is very similar to this. Only Pécsek has carried out systematic empirical research about the issue [12]. There are more possible reasons for that: the topic is relatively new. Furthermore, it is severely criticized even by tourism professionals. According to Weaver, it is merely a good promotional tool [13, 14]. Besides only some of its elements are researched, but not the concept as a whole [10].

The above-mentioned tendencies seem to justify our proposition, that people are opened to slow elements. We examined, what are the attitudes of Hungarians towards the topic and this special philosophy of tourism. The article examines the legitimacy of this concept today when Instagram tourism is boosting, and analyses the results and lessons of the survey conducted among Hungarian respondents. The following two research questions are drawn up:

RQ_1: What is the attitude of Hungarian respondents towards different "slow" elements of a journey?

RQ_2: How does demographics such as age influence the attitude of the respondents?

With our research, we would like to contribute to the enrichment of knowledge about the attitude of Hungarian people towards this special type of tourism. The results can serve as a starting point for tourism service providers – with special regard to the fact, that after the coronavirus epidemics the whole tourism industry must be rebuilt. In this process, taking into consideration the possible future trends, avoiding the places of mass tourism, and gradually creating tourism products can be a potential way.

THE CONCEPT AND ELEMENTS OF SLOW TOURISM

In slow tourism, the journey itself is the goal. This draws a parallel with slow travelers of our days and pilgrims: both groups try to escape from the everyday obligations and transform

themselves [12, 15, 16]. As Howard formulates:" Slow travelers temporarily liberate themselves from the immediacies of 'fast life' ... Such liberation presents the possibility for alternative experiences of time, pace and self – giving forth new modes of being-in-the-world." [1; p.12]. Thus, the journey transforms the soul and spirituality of the traveler, so these slow journeys can become a kind of pilgrimage [17]. Slow travelers are transformed spiritually during the slow journey, and because they have more freedom, they have a feeling that they can control their own life much better. To make a long journey has also the consequence that they can get rid of their social obligations for a longer time, and they can live a self-controlled life in time with a sense of inner peace [17].

In Canada, the touristic marketing campaign of the Yukon region is also built on this spiritual feature. On one of the pictures above the mountains which are wrapped into fog and clouds the following subtitle can be seen: „Somewhere down there is your soul" [18; p.145]. "On Yukon Time" marketing campaign (2000-2005.) sketched the essence: "Hit the Brakes! Slow down and enjoy the moment. Take time to meet locals, discover special spaces … Relax. Breathe in our clean, fresh air. Spend a little extra time nourishing your soul" [19; p.164].

Slow travel is also a part of the slow tourism experience. It can be considered to be rather several connecting ideas, a kind of attitude regarding travel [20]. It "constitutes a framework which creates the alternative of traveling by car and flights, this way people travel on a much slower way, uses local transportation and discover local food, traditions, and culture, meanwhile, their attitude is environment friendly" [21; pp.2-3].

If the image of "slow tourists" is drawn, the following should appear on the picture: they are happy to submerge into local culture and traditions and open to everything new. They are experienced travelers; collect information about the destination in advance. They avoid crowded places and are thirsty for an authentic, original relationship with the locals. Besides they respect nature and their hosts [22; pp.144-145]. Their journey has a minimal effect on the environment, only limited resources are needed. A slow tourist does not want a lot of attractions, he wants experiences instead of sights, stays at a certain place for a longer period and enjoys the atmosphere of the place, and concentrates on some things to see [23]. For him, the authenticity and specialty give the spice of a journey. Instead of a globalized, uniform taste world, he confesses the slow food philosophy.

According to Lumsdon and McGrath slow tourism can be considered to be a social and cultural reality [24]. As reported by Dall'Aglio it is a new generation tourism product [25]. This kind of tourism is based on flexible, bottom-up initiations. Instead of pure materialism, it has a strong connection with spiritualism. Further, it is sustainable: eco-tourism, green tourism, agritourism, health, culture, and gastro tourism are perfect examples for that. – they can be reviewed in a slow key [15, 26].

The locality is a central element: tourists should get to know the local culture, gastronomy, meanwhile local service providers come under focus. All services are provided under the aegis of sustainability, tourists should consider their ecological footprint.

The stay of tourists should be longer, this way they can "live" the local experience and become a little bit „part of the destination", they experience it more deeply. They do not get standardized, boring experiences, but something unique from the destination [27].

This approach does not only concentrate on the tourists' side, but as the other side is also important, the social well-being, cohesion, and decision-making possibility of the local population are in the spotlight [12, 15]. The active involvement of local society in the "process of tourism" is in the center. They should not be simple supplies or victims of tourism, but active "participants" who profit from the appearance of tourists [28].

However, there are some contradictions as well: the travelers who are devoted to slow tourism get to the place often by flights, car, or coach, where they can start their „slow journey". Furthermore, laptops and other smart, modern technical devices are inevitable necessities of suitcases even for travelers who want to escape most from their modern life. Then later they keep connection with the world they wanted to escape from with social media, blogs, web pages. Of course, we can say that that's how they get information and share experiences [29-31].

In this respect there is a shift from the services to the personal experiences: the feelings, senses, emotions, minds, spirituality must be awakened to reach tourist satisfaction [32-34]. Pécsek draws the model of slow tourism, which is based on four pillars, the following components should be emphasized: Locality, sustainability, social well-being, and experience-based approach [12, 15], Figure 1.

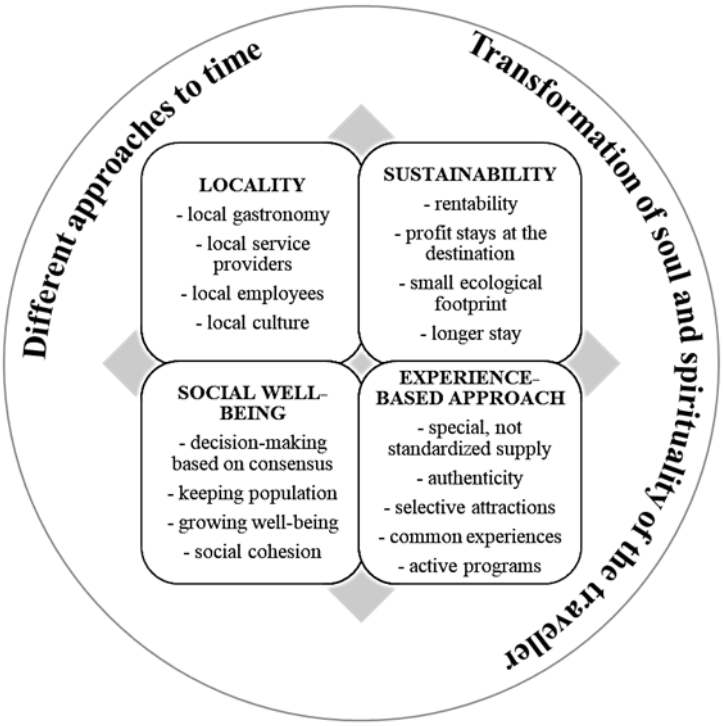

Figure 1. The components of the slow tourism model [12, 15].

METHODOLOGY

This study draws on quantitative data from an online survey conducted with 386 Hungarian respondents under omnibus research in Autumn 2019. The sample consists of people having tourist experiences since 98 % of them make a trip at least once a year. 61,7 percent of respondents travel once or two times a year, 22,5 % travel three or four times (Table 1). Regarding the demographic profile of the survey sample, 71,2 % of the respondents were female, 28,8 percent were male. Most of them (69,9 %) belong to the youngest age group (18-25). The sample was collected using the snowball approach.

In our empirical investigation, we have researched, what are the attitudes and perceptions of the respondents towards different slow elements of tourism. Survey questions were compiled based on the model of slow tourism presented. We have examined, how important different aspects are for respondents, and how their perceptions regarding the slow elements relate to each other, and how the age of the respondents influences the attitude, and what differences can be identified between the different age groups.

To reveal the similarities and differences in perceptions, we applied the method of multidimensional scaling (MDS) with the ALSCAL procedure, and to identify the main attitude components, factor analysis was run. The MDS model by creating a perception map illustrates the perceptions and preferences of the respondents in two-dimensional space [35]. Stress-value is the goodness-of-fit statistic that MDS tries to minimize; its value varies between 0 and 1. The less the value of stress is, the better the fit is [36; p.188]. In the analyses, the scales all used five-point Likert measures, the slow elements were analyzed through 10 items. One-way ANOVA was applied to see if there are significant differences between the age groups.

Table 1. Demographic profile of the sample.

	n	%
Age		
18-25 years	270	69,9 %
26-35 years	32	8,3 %
36-45 years	45	11,7 %
46-55 years	21	5,4 %
55-65 years	13	3,4 %
> 65 years	5	1,3 %
Gender		
Female	275	71,2 %
Male	111	28,8 %
Education		
Primary school	11	2,8 %
Secondary school	302	78,2 %
College/ university	70	18,1 %
Postgraduate/ PhD	3	0,8 %
Occupation		
Student	240	62,2 %
Entrepreneur	9	2,3 %
Public sector employee	42	10,9 %
Private sector employee	88	22,8 %
Retired	1	0,3 %
Other	5	1,3 %
Frequency of travel		
Less than a year	8	2,1 %
1-2 times a year	238	61,7 %
3-4 times a year	87	22,5 %
> 4 times a year	53	13,7 %

RESULTS

DESCRIPTIVE STATISTICS

Table 2 indicates, that the most significant characteristic of the respondents is their willingness to stop for the sake of a beautiful landscape to admire that – since the vast majority of them (73,1 %) have answered this, only 6,5 % said it was not typical for them at all. It was otherwise true for all age groups. The second most important factor is related to eating: the vast majority of the respondents (63,9 %) like to try the local specialties. 63,4 % of the respondents like discovering the destination very thoroughly, which is also a significant manifestation of the "slow" attitude. In a significant ratio (56 %) they prefer buying from local producers if they

have the opportunity. (Only 16,8 % of the respondents are not interested in this at all). It is important for around half of the respondents (47,6 %) to get to know the local culture, local people and to take part in their programs; only 20 % say the opposite. 36,8 % of the respondents are happy to visit the local market, however, a bigger ratio of them (38,9 %) is not interested in that. Spirituality, getting personalized services is not so important, either, since nearly half of the respondents do not demand it on a holiday (45,9 %). Sustainability is the least important since only 15,2 % of the respondents would choose environmental-friendly transportation. It is quite sad, since the CO2 submission, the carbon footprint of vehicles creates a significant environmental burden. Furthermore, only 21,5 % of the respondents would avoid crowded, touristic places, so most of them are not opened for hidden, calm destinations.

Table 2. The attitude of respondents towards slow elements.

Statements	1-not agree	2	3	4	5-fully agree
The target destination should provide a spiritual experience.	20,7 %	23,8 %	31,6 %	15,5 %	8,3 %
Getting personalized services is important for me.	15,5 %	25,4 %	34,5 %	18,9 %	5,7 %
I avoid crowded tourist places as much as possible	17,4 %	27,7 %	33,4 %	15,0 %	6,5 %
Choosing an environmentally friendly transportation tool is important for me.	12,7 %	36,8 %	35,2 %	11,1 %	4,1 %
I like discovering my destination as much as possible.	1,6 %	6,0 %	30,1 %	38,6 %	23,8 %
I like meeting local people, their lives, and their cultures.	3,4 %	16,6 %	32,4 %	30,8 %	16,8 %
I go to the local market if I have the opportunity.	11,7 %	27,2 %	24,4 %	23,1 %	13,7 %
I like to try the local specialties.	3,6 %	9,1 %	23,6 %	32,1 %	31,6 %
I prefer buying from local producers if I have the opportunity.	2,8 %	14,0 %	27,2 %	32,4 %	23,6 %
I modify my original schedule to admire a nice landscape.	1,3 %	5,2 %	20,5 %	34,2 %	38,9 %

Based on the above-analyzed survey results, the respondents are opened to certain slow factors, but not for the whole concept in general. Most of them are opened to take time in a different approach, like to get to know the local culture, people, and cuisine and to buy from local producers – which seem to fit into the general stereotypes about Hungarians. However, the respondents are lazier to go to the local market, and they do not desire personalized services, spiritual experiences at the destination. Besides, the sustainable approach got really low scores – showing, it is the least important of the examined factors.

ANOVA ANALYSIS OF AGE GROUPS

By running One-way ANOVA, we analyzed the impact of age groups on the degree of attitude to different travel aspects. Significant differences were justified in case of the followings on 5 percent significant level: (i) avoidance of crowded places ($p = 0{,}002 < 0{,}05$); (ii) spiritual experience ($p = 0{,}010 < 0{,}05$); (iii) local market ($p = 0{,}001 < 0{,}05$).

Due to the results of the test of Homogeneity of Variances (Levene statistics), in cases, 1-2, LSD post-hoc test, in case 3, Tamhane post-hoc test helped to reveal the significant differences between age groups based on the category means.

It is the least important for respondents aged 26-35 (average: 2,0) and 65+ (average: 2,0), to get a spiritual experience at the destination, meanwhile, the average score for this statement was 2,78 in the case of respondents aged 18-35. As the respondents became older, their willingness to visit the local market became higher as well: meanwhile, the average at the age group 18-25 was 2,84; in the case of the age group 65+ this number was 4,0. A similar tendency could be detected in the case of the element "avoiding crowded places", Table 3.

Table 3. The attitude of Hungarian responders towards slow tourism elements according to age groups.

Statements	18-25	26-35	36-45	46-55	55-65	65+	Total
I modify my original schedule to admire a nice landscape.	4,04	3,91	3,98	4,19	4,23	4,20	4,04
I like to try the local specialties.	3,81	3,41	3,78	3,95	4,00	3,80	3,79
I like discovering my destination as much as possible.	3,79	3,78	3,64	3,76	4,08	3,40	3,77
I prefer buying from local producers if I have the opportunity.	3,56	3,50	3,71	3,86	3,92	3,20	3,60
I like meeting local people, their lives, and their cultures.	3,39	3,22	3,47	3,57	3,85	3,40	3,41
I go to the local market if I have the opportunity.	2,84	3,09	3,33	3,33	3,92	4,00	3,00
Getting personalized services is important for me.	2,76	2,59	2,76	2,71	2,62	3,00	2,74
The target destination should provide a spiritual experience.	2,78	2,00	2,58	2,76	2,38	2,00	2,67
I avoid crowded tourist places as much as possible	2,51	2,78	3,13	3,10	2,69	3,40	2,66
Choosing an environmentally friendly transportation tool is important for me.	2,60	2,41	2,44	2,62	2,85	2,40	2,57

MULTIDIMENSIONAL SCALING

As the result of the MDS configuration, we can see that the respondents link certain items together in their perception, Figure 2. The Stress-value is 0,08929 meaning that the map is suitable for reliable interpretation.

According to the perceptions (distances between the points along the coordinate axis), survey participants differentiate 4-5 areas in the field of slow tourism. As we can see on the map 'trying local specialties', 'meeting local people', 'discovering the destination' and 'buying from local producers' are related items; people have similar attitudes, insights in connection with them. For instance, people perceive the items of 'destination discovery' and 'buying from local producers' exactly in the same way. Visiting local markets and getting personalized services, as well as, the 'spiritual experience' is located in two opposite points of Dimension 1, meaning that respondents have different perceptions related to these items (areas). Dimension 1 can be called a "preference dimension", to the left of the origo those items are located which are priority aspects in travel, while on the opposite side the less preferred items

can be seen. Furthermore, Dimension 1 has an interpretation, content of locality approach, since to the left of the origo, we can find only "locality" related items. Dimension 2 also determines and helps the interpretation of the group of items on the perceptual map. This dimension displays the points related to "socializing". The need for spiritual experience and personalized services are closely related items, and both of them follow individualistic aspects. On the other side of Dimension 2, the degree of individualism decreases, and more global aspects can appear.

Based on the above-mentioned perceptions, the elements of slow tourism can be categorized into the following 4-5 areas, which are highly compatible with the theoretical background.

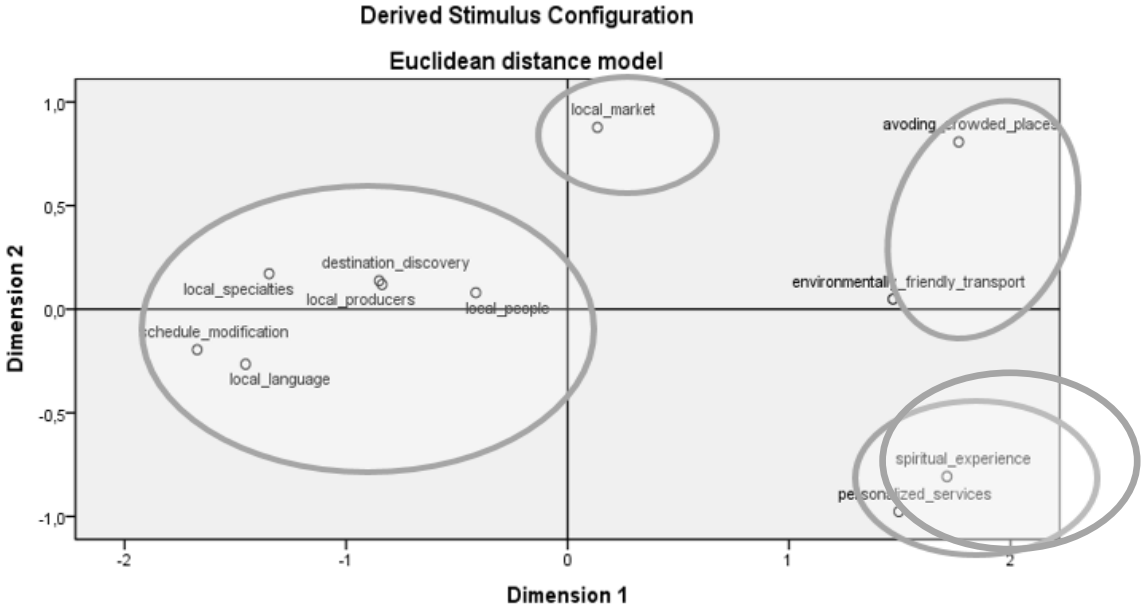

Figure 2. The MDS configuration of the slow tourism-related items.

FACTOR ANALYSIS

In addition to MDS analysis, a factor analysis with the principal component method and varimax rotation was done to reveal the related factors regarding the respondents' attitudes. The suitability of the data for structure detection the KMO test was applied, which indicates the proportion of variance in the variables. Its value is 0,751, which is middling. Based on the result of Bartlett's test of sphericity ($p = 0{,}000 < 0{,}05$), there is a correlation between the variables that makes the further analysis possible, such as the extraction values (commonality for each value is above 0,25). The total variance explained is 54,258 %, which is also an acceptable criterium for the analysis.

As a result of data reduction, three components were generated. Table 4 shows the components (1-3) and the related items which are included. The principal component method brought very similar results as the MDS model did, apart from one item (local market), Figure 1. However, the before-mentioned item can be integrated into the component associated with the locality.

Analyzing the importance of the items based on the results of MDS and factor analysis, Table 5 shows that the respondents were the most opened for the "local pillar" (average: 3,59). The "local" pillar has avg score 3,65 based on the importance of the four related statements. Then the well-being of the local community (average 3,3) was the next in the row. Finally, the least important pillars are the personalized services and spirituality (average 2,705) and the matter of sustainability (average 2,61).

Table 4. Rotated Component Matrix. Extraction Method: Principal Component Analysis; Rotation method: Varimax with Kaiser Normalization; Rotation converged in 4 iterations

	Component		
	1	2	3
I like meeting local people, their lives, and their cultures.	0,726		
I like to try the local specialties.	0,722		
I like discovering my destination as much as possible.	0,688		
I prefer buying from local producers if I have the opportunity.	0,685		
I go to the local market if I have the opportunity.	0,685		
I modify my original schedule to admire a nice landscape.	0,565		
The target destination should provide a spiritual experience.		0,754	
Getting personalized services is important for me.		0,718	
I avoid crowded tourist places as much as the possible tool is important for me.			0,867
Choosing environmentally-friendly transportation			0,648

Table 5. The importance of different slow elements for respondents; average (1 – not agree at all; 5 – fully agree).

I. LOCALITY	
I modify my original schedule to admire a nice landscape.	4,04
I like discovering my destination as much as possible.	3,77
I like meeting local people, their lives, and their cultures.	3,41
I like to try the local specialties.	3,41
I go to the local market if I have the opportunity.	3,00
I prefer buying from local producers if I have the opportunity.	3,60
Total	3,59
II. PERSONALIZED SERVICES AND SPIRITUALITY	
Getting personalized services is important for me.	2,74
The target destination should provide a spiritual experience.	2,67
Total	2,71
III. SUSTAINABILITY	
I avoid crowded tourist places as much as the possible tool is important for me.	2,66
Choosing environmentally-friendly transportation	2,57
Total	2,61

DISCUSSION AND CONCLUSION

To give an adequate answer for the challenges of today in tourism, “a transformation of the consciousness of all stakeholders” is inevitable; slow tourism can be a good basis for that [37, 38]. However, it must be added, that we should not have illusions: “absolute escape” is possible only for a few [31].

Based on the research results, we can conclude that slow tourism is not in the focus of the Hungarians. According to perceptions of the slow elements and the latent correlation among them, the research results indicated that people consider the slow elements similar to the theoretical model assumes. Only one aspect (social well-being) did not appear as a separate factor or component neither in the MDS model nor in the principal component method. Nevertheless, the other aspects (locality, personalized services/ spirituality, and sustainability) of the slow tourism model could be identified. Social well-being elements (according to the theoretical model) were integrated into the “locality” component regarding

the Hungarian responses. Furthermore, certain slow elements are important factors for the Hungarian respondents, other elements are less so. The "local" components are essential for them, they are looking for authenticity in the destination, should it appear in the local cuisine, local products, or in the marketplace [39, 40]. They love to dive into the depth of the destination – and have not adhered to the original schedule and itinerary for the sake of a beautiful landscape.

However, spirituality is far from them; personalized services do not matter, either. It shows a strong connection with the fact, that only 21,5 % of the respondents avoid crowded destinations, so visiting hidden, calm destinations is a perfect holiday scene only for a few. The age of the respondents caused significant differences in the attitude towards certain slow elements like visiting crowded places, shopping and going to local markets, and searching for spiritual experiences. Middle-aged people are those who are more open to spirituality and find it more important during travel. In the case of the other two elements, the older the people became, the more willing they testify to go to the local market and to avoid crowded places. So both hypotheses are accepted.

The present coronavirus epidemics may change the travel patterns of people significantly. Amadeus' surveys detected, that a big percentage of travelers (55 %) plan to take longer trips, they would like to travel for at least two weeks [41]. It can be a perfect basis for trips, holidays organized slowly.

The presented research has limitations that need to be taken into account. The questionnaire survey was carried out by snowball sampling technique that resulted in a non-representative sample. Furthermore, the research was accomplished before the COVID pandemic, which has the potential to change travel patterns and attitudes. Based on this, the results may not reflect the present situation. It would be worth re-making the research to see the possible changes in attitudes.

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REFERENCES

[1] Howard, C.: *Speeding Up and Slowing Down: Pilgrimage and Slow Travel Through Time.* In: Fullagar, S.; Markwell, K.W.; Wilson, E., eds.: *Slow Tourism: Experiences and Mobilities.* Channel View Publications, Bristol, pp.11-24, 2012,

[2] Ernszt, I. and Lőrincz, K.: *Slow tourism as a direstion of tourism product development. The case study of Kőszeg*. In Hungarian. Comitatus, Különszám, pp.54-59, 2017,

[3] Blackshaw, P.: *It's Time for a Movement Toward 'Slow Marketing'.* https://adage.com/article/digital-columns/digital-time-a-movement-slow-marketing/137644, accessed 13th May 2020,

[4] Lewis, H.R.: *Slow Down Getting More out of Harvard by Doing Less.* https://lewis.seas.harvard.edu/files/harrylewis/files/slowdown2004_0.pdf, accessed 10th May 2020,

[5] Slow Flowers: *The conscious choice for buying and sending flowers.* https://slowflowers.com, accessed 26th January 2021,

[6] Slow Medicine: *What is Slow Medicine?* https://slowmedicine.org/slow-medicine, accessed 2nd May 2020,

[7] Slow Food: *Our Philosophy.*
https://www.slowfood.com/about-us/our-philosophy, accessed 12th May 2020,

[8] Ernszt, I.: *The possibilities of Kőszeg in "slow tourism".* In Hungarian.
In: Miszlivetz, F., ed.: *Renaissance of small towns: The example of Kőszeg.*
Savaria University Press, Szombathely, Kőszeg, pp. 331-363, 2016,

[9] Fullagar, S.; Markwell, K. and Wilson, E.: *Slow tourism – Experiences and Possibilities.*
Channel View Publications, Bristol, 2012,

[10] Oh, H.; Assaf, G. and Baloglu, S.: *Motivations and Goals of Slow Tourism.*
Journal of Travel Research **55**(2), 205-219, 2014,
http://dx.doi.org/10.1177/0047287514546228,

[11] Cosar, Y.; Timur, A. and Kozak, M.: *The influence of slow city in the context of sustainable destination marketing.*
Marketing Places and Spaces, Advances in Culture, Tourism and Hospitality Research **10**, 209-220, 2015,

[12] Pécsek, B.: *Slow tourism as a sustainable alternative for the development of city tourism destinations.* Ph.D. Thesis. In Hungarian.
PhD értekezés tézisei, Gödöllő, 2018,
https://szie.hu/sites/default/files/pecsek_brigitta_tezis.pdf, accessed 10th May 2020,

[13] Weaver, D.: *Towards sustainable mass tourism: paradigm shift or paradign nudger?*
Tourism Recreation Research **32**(3), 65-69, 2007,
http://dx.doi.org/10.1080/02508281.2007.11081541,

[14] Duignan, M.B.; Kirby, S.I.; O'Brien, D. and Everett, S.: *From "clone towns" to "slow towns": examining festival legacies.*
Journal of Place Management and Development **11**(3), 350-366, 2018,
http://dx.doi.org/10.1108/JPMD-07-2017-0071,

[15] Pécsek, B.: *Accelerating time, slowing tourism.* In Hungarian.
Turizmus Bulletin **XVI**(1), 3-10, 2014,

[16] Terzidou, M.; Scarles, C. and Saunders, N.K.: *Religiousness as tourist performances: A case study of Greek Orthodox pilgrimage.*
Annals of Tourism Research **66**, 116-129, 2017,
http://dx.doi.org/10.1016/j.annals.2017.06.009,

[17] Tiyce, M. and Wilson, E.: *Wandering Australia: Independent Travellers and Slow Journeys Through Time and Space.*
In: Fullagar, S.; Markwell, K.W. and Wilson, E., eds.: *Slow Tourism: Experiences and Mobilities.* Channel View Publications, Bristol, 2012,

[18] De La Barre, S.: *Place Identity, Guides, and Sustainable Tourism in Canada's Yukon Territory.* Ph.D. Thesis.
University of Alberta, Edmonton, 2009,

[19] De La Barre, S.: *Travellin' Around on Yukon Time in Canada's North.*
In: Fullagar, S.; Markwell, K.W. and Wilson, E., eds.: *Slow Tourism: Experiences and Mobilities.* Channel View Publications, Bristol, pp.157-169, 2012,

[20] Lumsdon, L.M. and McGrath, P.: *Developing a conceptual framework for slow travel: a grounded theory approach.*
Journal of Sustainable Tourism **19**(3), 265-279, 2011,
http://dx.doi.org/10.1080/09669582.2010.519438,

[21] Dickinson, J. and Lumsdon, L.: *Slow Travel and Tourism.*
Earthscan, London, 2010,

[22] Salvo, de P.; Mogollón, J.M.H. and Di Clemente, E.: *Repellent "Tourists Versus Slow Tourists".*
European Journal of Tourism, Hospitality and Recreation **4**(2), 131-148, 2013,

[23] Gardner, N.: *A manifesto for slow travel.*
http://www.hiddeneurope.co.uk/a-manifesto-for-slow-travel, accessed 2nd May 2020,

[24] Di Clemente, J.M.H.; Mogollón, E.; Salvo, P. and Cerro, C.A.M.*: Slow Tourism: An Alternative Model for Local and Tourist Development.*
In: Jiménez, J.M., et al., eds.: *Sustainable Tourism: A Collection of Tools and Best Practices.* Chartridge Books, Oxford, pp.23-36, 2014,

[25] Dall'Aglio, S.: *Slow Tourism Seminar, Slow Tourism Project.*
European Cross-border Programme Italia-Slovenia 2007-2013, 2011,

[26] Moric, I.; Oekovic, S.; Janinovic, J.; Perovic, D. and Griesbeck, M.: *Cultural Tourism and Community Engagement: Insight from Montenegro.*
Business Systems Research **12**(1), 164-178, 2021,
http://dx.doi.org/10.2478/bsrj-2021-0011,

[27] Losada, N. and Mota, G.: *Slow down, your movie is too fast: Slow tourism representations in the promotional videos of the Douro region (Northern Portugal).*
Journal of Destination Marketing and Management **11**, 140-149, 2019,
http://dx.doi.org/10.1016/j.jdmm.2018.12.007,

[28] Wearing, S.; Wearing, M. and McDonald, M.: *Slow'n Down the Town to Let Nature Grow: Ecotourism, Social Justice and Sustainability.*
In: Fullagar, S.; Markwell, K.W. and Wilson, E., eds.: *Slow Tourism: Experiences and Mobilities.* Channel View Publications, Bristol, pp.36-49, 2012,
http://dx.doi.org/10.21832/9781845412821,

[29] Kounavis, C.D.; Kasimati, A.E. and Zamani, E.D.: *Enhancing the Tourism Experience through Mobile Augmented Reality: Challenges and Prospects.*
International Journal of Engineering Business Management **4**, 1-6, 2012,
http://dx.doi.org/10.5772/51644,

[30] Markwell, K.; Fullagar, S. and Wilson, E.: *Reflecting Upon Slow Travel and Tourism Experiences.*
In: Fullagar, S.; Markwell, K.W. and Wilson, E., eds.: *Slow Tourism: Experiences and Mobilities.* Channel View Publications, Bristol, 2012,

[31] Ćurlin, T.; Jaković, B. and Miloloža, I.: *Twitter usage in Tourism: Literature Review.*
Business Systems Research **10**(1), 102-119, 2019,
http://dx.doi.org/10.2478/bsrj-2019-0008,

[32] Morena, M.; Truppi, T. and Del Gatto, M.L.: *Sustainable tourism and development: the model of the Albergo Diffuso.*
Journal of Place Management **10**(5), 447-460, 2017,
http://dx.doi.org/10.1108/JPMD-08-2016-0057,

[33] Uriely, N.: *The tourist experience: conceptual developments.*
Annals of Tourism Research **32**(1), 199-216, 2005,
http://dx.doi.org/10.1016/j.annals.2004.07.008,

[34] Williams, A.: *Tourism and hospitality marketing: fantasy, feeling and fun.*
International Journal of Contemporary Hospitality Management **18**(6), 482-495, 2006,
http://dx.doi.org/10.1108/09596110610681520,

[35] Malhotra, N.K.: *Marketing Research.* In Hungarian.
Közgazdasági és Jogi Kiadványok, Budapest, 2002,

[36] Wilkinson, L.: *Multidimensional Scaling.*
http://cda.psych.uiuc.edu/multivariate_fall_2013/systat_scaling_manual.pdf, accessed 1st January 2021,

[37] Sheldon, P.J.: *Designing tourism experiences for inner transformation.*
Annals of Tourism Research **83**, 2020,
http://dx.doi.org/10.1016/j.annals.2020.102935,

[38] Lebe, S.S.; Mulej, M.; Bach, M.P.; Zoroja, J. and Merkac-Skok, M.: *Social responsibility in tourism: system archetypes approach.*
Kybernetes **43**(3/4), 587-600, 2014,
http://dx.doi.org/10.1108/K-09-2013-0195,

[39] Quan, S. and Wang, N.: *Towards a structural model of the tourist experience: an illustration from food experiences in Tourism.*
Tourism Management **25**(3), 297-305, 2004,
http://dx.doi.org/10.1016/S0261-5177(03)00130-4,

[40] Meng, B. and Choi, K.: *The role of authenticity in forming slow tourists' intentions: Developing an extended model of goal-directed behavior.*
Tourism Management **57**(5), 397-410, 2016,
http://dx.doi.org/10.1016/j.tourman.2016.07.003,

[41] Hyland, P.: *Top 5 Travel Trends for 2021.*
https://www.tourism-review.com/the-travel-trends-of-2021-news11834, accessed 26th January 2021.

Interdisciplinary Description of Complex Systems 19(2), 308-327, 2021

THEORETICAL CONCEPTS OF CONSUMER RESILIENCE TO ONLINE PRIVACY VIOLATION

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ABSTRACT

Resilience is a multifaceted concept used to explain both system and individual behavior across disciplines. Although definitions and research concepts of resilience vary significantly, resilience has become a boundary object in diverse academic fields calling for a holistic approach.

This work aims to elaborate the theoretical concepts that might be applied in the research of consumer resilience to online privacy violation, a new and unexplored aspect of consumer behavior in the digital environment. The purpose of the research is to develop the future research frontiers in investigating consumer resilience to online privacy violation.

It contributes to the privacy resilience debate and lays the groundwork for developing a conceptual model of online consumer resilience that would explore how individual behaviour is affected after online privacy violation occurrence. Developing a conceptual model of consumer resilience to online privacy violation that would include a set of individual and environmental variables, will contribute to the existing understanding of resilience at the intersection of psychology, economics, and privacy studies. Furthermore, it will also contribute to the understanding of adaptive responses of resilient individuals to privacy breaches in an online environment, as well as to the understanding of processes by which resilience affects adaptive responses of consumers in the specific context of online privacy breaches.

KEY WORDS

resilience, theoretical concepts, consumer behaviour, privacy online

CLASSIFICATION

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INTRODUCTION

Resilience is a multifaceted and multidisciplinary concept that attracts a great deal of research across numerous and diverse academic disciplines - from ecology, engineering and computer sciences [1-4], across psychology, medical sciences and social work [5, 6], to marketing, management and accounting [7-9]. Consequently, there is no straightforward definition of resilience.

At an individual level, resilience is conceptualized as the capability of individuals to recover from adversities or as the process of adaptation to adversity [10-12]. Sparse studies of consumer resilience conceptualize resilience at an individual level and explore how consumers recover or adjust their consumption habits after experiencing some form of adversity situation. However, the concept of adaptive responses is not developed in these studies, while antecedents and consumer behavior consequences remain under-explored. This is particularly valid in the online context which is gaining importance with increasing digitization of the entire value chain.

Other key aspect of this research – online privacy – involves the rights of an individual concerning the storing, (re)using or provision of personal information to third parties and displaying of information pertaining to oneself on the Internet. In the digital era, the online privacy concept focuses on personal information shared with family, friends, businesses, and strangers, while at the same time engaging in self-protection of sensitive information [13]. Modern lifestyle increased demand for information and the spread of new technologies that gather personal information that limit the purely private spaces and increase the number of privacy violation cases in terms of unauthorized collection, disclosure, or other use of personal information.

This research connects these two concepts – resilience and online privacy violation. Nowadays, resilience attracts increasing research interest in the new domains, such as the context of information security, digitalization of trade and services, and extent of Internet usage. On the other hand, understanding privacy issues related to resilience and their effect on consumer behavior, specifically in an online environment, is limited and studies on consumer resilience to online privacy violation are missing. This subject is worth exploring, since individuals who experienced online privacy violations might change their subsequent online behavior and intentions to adopt new online services and/or technologies. If the trust after online privacy violation is not restored or if new online activity equilibrium is established at the lower level of consumer activity, the implications might be disturbing for business and public policies. Although research on privacy and resilience certainly has its applicative value in everyday life, the phenomenon of resilience to privacy violations remains largely under-explored.

This literature review paper has threefold aim: (i) it aims to provide a contemporary literature review of resilience related concepts, with special emphasis on resilience concepts used in social research environment focusing on individual consumer and their behavior; (ii) it also provides a contemporary literature review of privacy related concepts, with special focus on privacy and privacy violation in an online environment; and (iii) this research aims to set grounds and offer suggestions for future development of both conceptual and empirical research frameworks to assess consumer resilience to online privacy violation. We employed a non-systematic literature review of resilience and privacy concepts and definitions across various academic disciplines which may be adapted for the specific purpose of researching consumer resilience to privacy violation in an online environment and to define future research directions.

Our work adds to the existing literature in several ways. Firstly, as already stated above, evolving economic and technological advances are constantly increasing the rate of digitalization of

entire value chain, which in turn increases the need for large amount of (individual) information to be available online, and raises the opportunity of online privacy violation. Therefore, growing attention of both academic and professional community is given to individual resilience to these adverse privacy intrusion events. Furthermore, online privacy has recently gained importance, especially since the introduction of General Data Protection Regulation (GDPR). Governments and businesses are shaping their strategies to be in line with these regulations and to improve security for their online purchases. Thirdly, since both concepts of "resilience" and "privacy" have originated outside of social domain and outside of online environment, this research presents an important novelty since these two concepts are adapted to suit the consumer-based analysis in digital society. Finally, as resilience to online privacy violations may become more important given the current level of digitalization, this research provides an avenue for future research on both conceptual and empirical research frameworks on this topic.

This paper starts with a brief description of methodology used for literature review. The third section introduces the concept of resilience across various disciplines, and presents context and issues related to consumers' resilience. The fourth section elaborates an individual approach to researching consumer behavior related to privacy violation in an online environment, followed by the section which combines concepts presented in previous two sections i.e. it connects resilience with online privacy violation concerns. The sixth section identifies key issues for future research and offers suggestions on how to develop a research model of consumer resilience to online privacy violation, and the last section concludes.

METHODOLOGY

As the main purpose of this paper is to develop a future research framework for assessing consumer resilience to online privacy violation, we conducted a non-systematic literature review [14, 15], also called a narrative style literature review [16]. The main goal of this method is to identify a gap in the literature, to summarize relevant published research studies, and to define future research directions that have not been previously addressed [16]. This literature review type is considered vital for articles "devoted specifically to reviewing the literature on a particular topic" [17; p.311], as well as "a valuable theory-building technique" [17; p.312]. Since the present study aims to contribute to the existing theory by analysing and describing theoretical and empirical findings of previous research studies, and thus creating a conceptual model as a future framework for assessing consumer resilience in an online setting, the applied narrative literature review approach can be considered valid.

This article represents an overview article (also known as a narrative overview or an unsystematic narrative review; according to Green et al. [18] and it is one of the three possible types of narrative reviews of the literature (for other types see Green et al. [18]). To assure the objectivity of the narrative literature review approach, as well as the structural consistency with the previous overview articles, the authors of this article followed one of the widely adopted standard patterns of a narrative literature review explained by Green et al. [18]. After the article title and structured abstract were given, the main components of a narrative overview included in the article are Introduction, Methods, Discussion, and Conclusion, following by Acknowledgement and References section. The very similar IMRaD approach – Introduction, Methods, Results, and Discussion [16, 19] – has not been applied, since the Results section of the article is missing in this study as it is not empirical but conceptual in its nature.

For the present study, literature searches were conducted within the Google Scholar database using relevant keywords related to resilience, its antecedents, and its outcomes. The following keywords were used as starting search terms: "resilience", "antecedents of resilience", "outcomes of resilience", and "consequences of resilience". Upon authors' decision, the inclusion criteria

referred to the academic articles from various scientific areas, since resilience is a multidisciplinary concept. The exclusion criteria were also established by authors, and they referred to articles not available through the full-text option and not written in English. The authors made a conscious, joint, and iterative decision to consider each found article as relevant and to include them in this review.

THE CONCEPT OF RESILIENCE

This section starts by briefly elaborating different views on resilience concept across various academic disciplines. It then focuses on explaining key concepts related to resilience of systems and individuals.

RESILIENCE AS A HOLISTIC CONCEPT

Resilience can be defined as a broad application of failure-sensitive strategies that reduce the potential for and consequences from erroneous actions, surprising events, unanticipated variability, and complicating factors [20]. Many argue, however, that resilience has become a "boundary object" across disciplines which share the same vocabulary, but with different understanding of the precise meaning. Brand and Jax [1; p.9] note that resilience as a boundary object is "open to interpretation and valuable for various scientific disciplines or social groups, (…), and can be highly useful as a communication tool in order to bridge scientific disciplines and the gap between science and policy". Most of related literature develops resilience as a theoretical concept in their relevant fields, but empirical research (case studies, surveys, or modelling) which would test these theoretical approaches are rather rare.

The term resilience originates from the Latin word *resilire*, meaning to spring back. It was first used in physics and technical sciences to describe the stability of materials and their resistance to external shocks. In his seminal work, Holling [21] defined engineering resilience as the ability of a system to return to an equilibrium or steady-state after a disturbance, measuring how long it takes for a system to bounce back after a shock.

Hollings' [21] concept of resilience refers to the robustness or resistance on the one hand, versus adaptive capacity on the other, i.e. from these two approaches it is not clear if a resilient system resists adverse conditions in the first place or adapts to them after they have occurred [22] and in what time span it occurs. Longstaff, Koslowskib and Geoghegan [23] in their attempt to systemize holistic resilience concepts across various disciplines describe four types of resilience:

a) Resilience defined as the *capacity to rebound and recover* is predominantly adopted in traditionally engineered and other designed systems where resilience is seen as a system property or measure of stability.
b) Resilience defined as the *capability to maintain a desirable state or to bounce back to an approved equilibrium or assumed normal state* is predominantly employed in business, psychology, and other social sciences disciplines.
c) Resilience defined as the *capacity of the systems to withstand stress where high resilience implies sufficient robustness and buffering capacity against a regime shift* and/or the ability of system components to self-organize and adapt in the face of fluctuations.
d) Resilience defined as the *capability to adapt and thrive* is often conceptualized in social systems and psychology as a skill that an individual or group can use when facing disturbance that will allow them to reach a level of functionality which has been determined to be "good". These disciplines acknowledge the existence of multiple possible states after the disturbance event, ranging from a worse-than-before, acceptable level to an even better post-disturbance state.

While resilience has a clear definition within engineering and psychology, this is not the case within the social complex adaptive systems research domain. Masten and Obradovic [24] pointed out that resilience theory across the developmental and ecological sciences was rather similar and that findings from the developmental theory and social resilience research were instructive for both individual and community resilience. Adaptive systems are crucial for the resilience of people, including their intelligence, behavior regulation systems, and social interactions with family, peers, school, and community systems. These adaptive systems for human resilience include regulatory systems, personal intelligence, and motivation to adapt, macrosystems (such as governments, the media), as well as knowledge, memories, and experience of individuals, families, and communities. A process of adaptation after a disturbance or adversity is influenced by economic development, social capital, information and communication, competences, and trusted sources of information [25].

There are two different approaches to the concept of resilience. The first approach deals with the resilience at the systemic level. This approach analyses resilient systems, their characteristics, and responses. In general, resilient systems are able to restore their functions after disturbance. The second approach refers to the resilience at the level of individuals. Resilient individuals have the capacity to adapt positively to stressful events. Studies within this approach are mainly focused on the characteristics of resilient individuals and the processes of attaining resilience.

KEY RESILIENCE CONCEPTS

The concept of resilience in systems is mostly developed in the context of ecological and environmental systems. The focus on system properties that emphasizes constant change and reorganization has been a great strength of this concept of resilience. Resilience thinking is very valuable in framing and discussing aspects of sustainability and sustainable development. Furthermore, this concept of resilience is highly flexible and can be applied to a range of systems across a range of scales from individuals to households, communities, regions, and nations.

Resilience thinking represents a conceptual vagueness of the definition of resilience and reveals blurred boundaries among concepts used in the research of resilience. Resilience thinking deals with the dynamics and development of complex social–ecological systems, addressing three central aspects: resilience itself, adaptability, and transformability [26]. To better understand the application of resilience concepts, the main terms used in the resilience thinking (resilience, adaptive capacity, adaptability, transformability, adaptation, vulnerability and robustness) will be explained according to Martin-Breen and Anderies [27].

Resilience in complex adaptive systems is best defined as the ability to withstand, recover from, and reorganize in response to crises. It is the appropriate framework to be applied to conditions prevailing in dynamic systems that undergo permanent internal changes. In such systems there is no fixed normal state, only functions of the systems are fixed and known. Therefore, after the disturbance, a resilient system will have its functions restored, yet not at the same level or in the same way as it was before the disturbance. Application in the literature is mostly in ecology and developmental psychology, specifically in child development.

Adaptive capacity is closely related to resilience. According to Dalziell and McManus [28], adaptive capacity is a mechanism for resilience since it reflects the ability of the system to respond to external changes, and to recover from damage. System characteristics that enhance resilience are diversity, efficiency, adaptability, and cohesion [29], but it remains unclear how to connect these system characteristics with the characteristics of an individual. Adaptive

capacity and transformability are two aspects of resilience. Adaptive capacity refers to the capability of a particular system to effectively cope with shocks. Increased adaptive capacity would facilitate adaptation to changes, thus increasing resilience.

Adaptability is the key feature of complex adaptive systems which, if resilient, maintain their functions after the disturbance, but, due to the adaptability, not in the same structure as before the crisis. Complex adaptive systems may also assume new functions, so transformability is also often a feature of complex adaptive systems.

Adaptation is adjustment in the face of change. It may be positive, negative, or neutral. Change may be based on immediate conditions, knowledge of past conditions or new information about predicted conditions. A person, society or species can adapt. As opposed to adaptation, *coping* is the process of individual intentional change in response to a stressor.

In the resilience literature, *vulnerability* denotes the opposite of resilience. Vulnerability and adaptation have been used to refer to individuals. Terms such as adaptive capacity, transformability, and robustness, on the other hand, are traditionally used to refer to collectives of decision-making units (villages, cities, nations, etc.). Similarly, individual vulnerability is the antonym of individual resilience. Resilience in this sense means the speed at which a person returns to normal, while *sensitivity* is the degree of disturbance experienced when facing a certain magnitude of crisis.

Robustness, like resilience, refers to the capacity of a system to continue functioning after experiencing external shocks, but in a short period of time. Resilience, on the other hand, emphasizes learning and transformation that occur over long periods.

THE CONCEPT OF PRIVACY

Thus far, we have delved into the concept of resilience and its diverse range of applications. In this chapter we switch focus to the other fundamental concept in our research, and that is privacy. Chapter starts with a brief overview of different privacy dimensions, before exploring deeper the key aspects of privacy in an online environment. We continue with the presentation of arguments for balancing the need for online information with the need for online privacy. Finally, chapter concludes with elaboration and recent literature of online privacy violations.

DIFFERENT DIMENSIONS OF PRIVACY

The notion of privacy is very individual; it differs from person to person and from one situation to another. Thus, much like with resilience, it is not surprising that privacy is also viewed and researched in many different scientific fields and disciplines. The concept of privacy has also been described through its various dimensions and the approaches may vary depending on the context of studying privacy issues across disciplines.

Among the most cited definitions of *general privacy* is the one by Alan Westin, who defines it as “claim of individuals, groups or institutions to determine for themselves when, how, and to what extent information about them is communicated to others” [30; p. 10]. Buchanan et al. [31] go into more detail and emphasize different dimensions of privacy concept: (1) *informational privacy* refers to a concept of controlling how personal information is collected and used, and is especially pronounced in the digital age when the Internet made personal information easy to collect, store, process and use by multiple parties; (2) *accessibility privacy* overlaps with informational privacy in cases where “acquisition or attempted acquisition of information involves gaining access to an individual”, but it also extends to cases where physical access is at stake; (3) *physical privacy* is defined as the degree to which a person is physically accessible to others; (4) *expressive privacy* “protects a realm for expressing ones’ self-identity

or personhood through speech or activity"; and (5) *social/communicational privacy* refers to an individual's ability and effort to control social contacts. Similarly, Clarke [32] distinguishes four dimensions of the privacy concept: (1) *privacy of the person*, concerned with the integrity of the individual's body, (2) *privacy of personal behavior*, concerning sexual preferences and habits, political activities and religious practices, (3) *privacy of personal communications*, referring to the freedom to communicate without routine monitoring of their communications by third persons; and (4) *privacy of personal data* which covers the issue of making the data about individuals automatically available to third parties.

Past research concentrated on privacy issues from many perspectives (as is to be expected given its broad range of applicability), ranging from defining the meaning of privacy, analysing public opinion trends regarding privacy, evaluating the impact of surveillance technologies, consumers' responses to privacy concern, causes and different behavior of privacy protection, and the need for balance between government surveillance and individual privacy rights [33]. Previous research has shown differentiated effects on privacy concerns based on various factors such as culture [34], trust in online companies or institutions [35] or different demographic characteristics [23] and personality traits [36].

PRIVACY IN AN ONLINE ENVIRONMENT

Moving on to somewhat more recent concept of online privacy, Gellman and Dixon [37] emphasize the importance of the intertwinement of online and offline privacy issues by noting that what happens offline affects what is done online and vice versa, especially in the age of fourth industrial revolution when the entire supply chains are becoming predominantly digitalized. The Oxford dictionary defines "online" as "controlled by or connected to a computer" and as an activity or service which is "available on or performed using the Internet or other computer network". Similarly, Gellman and Dixon [37] define "online" as connections to the Internet in very broad terms and in its most technical sense refers to computers or devices that connect to the Internet and the World Wide Web.

Online privacy has a different dynamic than offline privacy because online activities do not respect traditional national and/or conceptual borders. Online privacy involves the rights of an individual concerning the storing, reusing or provision of personal information to third parties, and displaying of information pertaining to oneself on the Internet. In the digital era, the online privacy concept focuses on personal information shared with family, friends, businesses, and strangers, while at the same time engaging in self-protection of sensitive information [13]. Before the digital era, securing personal information and maintaining privacy simply meant safeguarding important documents and financial materials in a safe "material" place, but with the rise of the Internet, an increasing amount of personal information is available online and vulnerable to misuse. Even a simple online activity such as using various search engines can be potentially misused for consumer profiling. Reed (2014) coined the term "digital natives" to describe new generations of children who have grown up with the Internet as a presence throughout their entire lives and are accustomed to these online activities from very young age. However, Walther [38] emphasizes that most people, including these "digital natives", fail to realize that, once uploaded, information stays online more or less forever, and as such can be retrieved and/or replicated, despite subsequent efforts to remove it.

Finally, it is important to distinguish between concepts of *privacy* and *data protection*. European Commission [39] defines data to be classified as personal data for "any information that relates to an identified or identifiable living individual. Different pieces of information, which, collected together, can lead to the identification of a particular person, also constitute personal data. Personal data that has been de-identified, encrypted or pseudonymised, but can

be used to re-identify a person, remains personal data and falls within the scope of the GDPR." Furthermore, under Article 4 of the General Data Protection Regulation (GDPR), personal data is defined as "any information relating to an identified or identifiable natural person ("data subject"); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person." Currently, data protection is believed to be the most critical component of privacy protection as more and more aspects of everyday lives are being automated and digitized.

BALANCING THE NEED FOR ONLINE PRIVACY

In a modern society, privacy is recognized as an individual right, but also as a social and political value [40, 41]). With the coming of the fourth industrial revolution and the emergence of technology-based surveillance, a galloping volume of online transactions and usage of private client data in developing business strategies, both state and private sector are holding, processing and sharing a large amount of personal information. Thus, many governments have put in place privacy protection policies to meet the demands for safety, security, efficiency, and coordination in the society. The flip side of this coin is that governments themselves, in the process of securing individual privacy, might gain too much power over individuals in terms of profiling behavior and purchasing habits. Thus, there is a certain need to balance the privacy of individuals against the legitimate societal need for information [42]. For this need to be positively perceived in the eyes of the public, it must be done in a professional and transparent way. Adding to this debate, Smith, Dinev and Xu [43] explain two interesting concepts: *privacy paradox* and *privacy calculus*. The former is a phenomenon where an individual expresses strong privacy concerns, but then behaves in a contradictory way, for example, by sharing personal information online. On the other hand, privacy calculus can be explained as a trade-off between privacy concern "costs" and "benefits" in the form of the service obtained. Rational expectations theory in this concept states that users are willing to disclose personal information if their perceived benefits outweigh the perceived privacy concerns.

Solove [40] argues that in a modern society the value of privacy must be determined based on its importance to society, and not in terms of individual rights. Goold [44] argues that citizens would demand a decrease in state surveillance if they perceived it as a threat to their political rights and democracy in general. Several articles have also shown that privacy concerns or previous privacy violations act as a hindrance to the growth of e-commerce [45]. Companies have realized that protecting consumers' private information is an essential component in winning their trust and is a must in facilitating business transactions [46]. Wirtz, Lwin and Williams [47] indicate that citizens who show less concern for internet privacy are those individuals who perceive that corporations are acting responsibly in terms of their privacy policies, that sufficient legal regulation is in place to protect their privacy, and have greater trust and confidence in these power-holders.

PRIVACY VIOLATIONS ONLINE

Privacy violation is a stressful event in which occurrence cannot be predicted in a specific point in time and its scope and consequences are not known in advance. Like the concept of privacy, the concept of privacy violations is extremely difficult to measure, as an individuals' subjective notion of online privacy violation is complex, and it differs across different individuals. Increased demand for information and the spread of new technologies that gather personal information indeed limit the purely private spaces and increase the number of

privacy violation cases. The violation of privacy on the Internet includes change in the privacy norms i.e. what information is gathered, how information is used, and with whom information is shared [48, 49]. However, perceptions of privacy violations can be very subjective and therefore difficult to be legally defined and protected, especially when it comes to implementation [50].

Online privacy violations became a real threat that should be addressed by both the government [51] and businesses [52] in order to increase trust of consumers and downgrade the perceived risk [53]. Since the offset of the fourth industrial revolution, information privacy has been in the focus of e-commerce and marketing strategies towards consumers, as online companies want to collect consumer information (often times not allowing them to proceed with their purchase without providing some sensitive personal information), and consumers often view this practice as a privacy violation [54].

While privacy theft can be carried out on the systems that are easily fooled by spoofing [55], these thefts have a large impact on consumers' feeling of security. Information privacy concerns and violation present a significant obstacle to more people engaging in e-commerce [56]. There is also an enormous impact if consumers' financial position is affected from the privacy theft, for example by unauthorized online payment. These situations occur because traditional online payment systems (e.g. banking) require a consumer to be authorized using only his/her own information, such as a username and password [57]. To tackle this problem, new technologies such as Artificial Intelligence (AI) can be leveraged to secure consumers' positions on the market, as well as their identity [58].

As a response to previous privacy violation experiences or as a means of preventing privacy violation, individuals adopt different strategies to make them more secure online. Gurung and Jain [59] list the suggested typologies of individuals regarding their online privacy violations: (1) *privacy aware*, referring to being knowledgeable and sensitive about risks associated with sharing personal information online; (2) *privacy a*ctive, referring to active behaviors adopted by consumers in regards to their privacy violation concerns; and (3) *privacy suspicious*, referring to concerns about particular company's or individual's behavior regarding their privacy practices. In terms of protection against privacy violation, Yao [60] and Gurung and Jain [59] posit that, from an individual perspective, it can be either passive or active. Passive protection involves reliance on a government or other external entities, and it is beyond the direct control of an individual. The level of this protection is also dependent on collective actions and institutional support, as well as on cultural and socio-political norms. On the other hand, active protection relies on individuals themselves actively adopting various protective strategies. Examples of these strategies may include abstaining from purchasing, falsifying information online, and adjusting security and privacy settings in the Internet browsers [61].

COMBINING RESILIENCE AND ONLINE PRIVACY VIOLATION

After introducing and discussing the concepts of resilience and privacy violation of consumers in an online environment in previous two chapters, this chapter aims to connect the concepts of resilience and online privacy violation from the point of consumer living in age of high digitalization of entire value chain.

Proposed research of consumer resilience to privacy violation online is exploring resilience at the intersection of an individual and psychology, and in engineering contexts. To assess this research issue, one should examine the capacity of an individual to recover from adversity, depending on their individual characteristics and their environment. In the specific context of exploring resilience to online privacy violation, it should be considered that resilient individuals possess three common characteristics: an acceptance of reality, a strong belief that

life is meaningful, and the ability to improvise [62]. Thus, one should consider definitions from organizational and disaster management pointing out the importance of the period of regressive behavior, as well as accounting for previous experiences.

From an individual's point of view, resilience is an interactive concept that is concerned with the combination of serious risk experiences and a relatively positive psychological outcome, despite those experiences [63]. Early studies on individual resilience focused on child development in adverse settings, especially poverty, where the traditional approach included identifying risk-factors. The risk-approach aims to identify psychological, familial, and environmental factors to reduce these risks. Consumer behavior is inevitably determined by psychological factors. Application of resilience in psychology can be found in two streams: one originating from the study of the impacts of crises and abrupt changes that impact families; the other looks at child development after a traumatic event. In developmental psychology, to determine resilience one chooses outcomes and risk factors to be measured. In some studies, resilience is observed if good outcomes are achieved despite the threats to adaptation or development. However, defining what is good or normal is not precisely set. Studying resilience as a positive adaptation in the context of significant adversity seems to be more applicable to different psychology research. Resilience is then defined as an ongoing process of continual positive adaptive changes to adversity, which enable future positive adaptive changes. Such a definition assumes bidirectional interactions, as well as recognition that history, including previous adaptations, determine (positive) adaptive outcomes. Since the introduction of adversity and positive adaptation concepts to the resilience literature [10, 64], most researchers agree that, for resilience to be demonstrated, both adversity and positive adaptation must be evident [63].

Once the wide variety of resilience concepts across disciplines and practical applications have been introduced, the principal question is which field of resilience is appropriate to research consumer resilience to online privacy violation, so naturally one has to look back at the research of resilience in social sciences. Raab, Jones and Székely [65] explore societal resilience to the threats to democracies posed by the current mass surveillance of communications and other applications of surveillance technologies and practices. The authors use an example of public goods to illustrate the distinction between the concepts of resistance and resilience: resistance prevents deviations from the ideal state (so no recovery is needed), while resilience helps to recover after stress provided that deviation from ideal state has occurred. In distinction to resistance which implies invulnerability to stress, resilience implies an ability to recover from negative events and the ability of a system to experience some disturbance and still maintain its functions. There are two possible outcomes of resilience: full recovery, which is the return to the previous ideal state, and partial recovery, where the real state after recovery is not equal to the ideal state before the shock.

Two streams of research are particularly important for the context of consumer resilience to online privacy violations. The first stream explores the complex inter-relationship between privacy and system resilience, i.e. resilience is here conceptualized at the system-wide level, ranging from small information systems to the entire social system. Studies within this research stream mainly deal with the question of how to maintain resilience of the system when its privacy is endangered [66]. Another related field of research, with the same system-wide conceptualization of resilience, explores the relationship between surveillance and resilience, and how surveillance (and privacy as its antipode) contributes to or hampers resilience of societies to various threats [65, 67].

The second stream of research deals with consumer behavior and resilience on an individual level, which is the stream where we position this research as well. Studies within this body of literature, although still rather rare, conceptualize resilience at the individual level and explore

how consumers recover or adjust their consumption habits after experiencing some form of adversity situation [7, 68]. These studies explore resilience at the individual level and conceptualize it as the capability of individuals to recover from or adjust to various adversities and misfortunes or as the process of adaptation to adversity [10, 11, 69].The main fields that apply this conceptualization of resilience are psychology, medical sciences, criminology, social work, and business studies [7].

Literature on consumer behavior is abundant (for a historical overview see [70]) and more recent studies explore consumer behavior in an online environment [71-73] that gains importance due to the development of the online marketplace. Recently, Islam [74] stated that cultural and social factors, demographics, motivation, perceived risk, trust, and attitude of consumers all affect their buying intentions online. However, behavior consequences, which are more complex in the online environment compared to offline, remain under-explored [75]. National and local governments across different countries are continuously adopting digital technologies in different spheres, from collecting data to providing different digital services with the goal of improving the quality of citizens' lives. In this context, citizens' concerns about online privacy and their behavior are different depending on the kind and purpose of data collection [73]. In addition to that, digitalization raises consumer protection issues for the future development and implementation of e-services in the public sector or implementation of the smart city concept [76], and requires improved consumer skills, awareness, and individual engagement that would result in sustainable buying decisions [77]. Twenty years ago, back in 1999, consumers were not willing to provide personal information online when asked, and this rate exceeded 95 %. This rate was highly affected by the privacy concerns, which was in turn highly influenced by skills of consumers [78]. As complexity for protecting of the digital consumer rose, movements for simplifying and defining explicit statements on how consumer data will be used and directives on how to improve consumer skills increased [79]. Internet skills diminish as the population age increases, and that affects overall consumer activities over the Internet [80]. An important characteristic of digital consumerism is that digital goods are not effective for structuring social relationships, as everyone can have everything [81].

FRAMING FUTURE RESEARCH

In the previous chapter we have combined the notions of resilience and privacy violation online. This section aims to set grounds and offer suggestions for future development of both conceptual and empirical research frameworks to assess consumer resilience to online privacy violation.

To assess consumer resilience to online privacy violation, one should find an appropriate theoretical concept and proceed with building and testing the developed model. Research on consumer resilience to online privacy violation should borrow and adapt theoretical concepts used in studying resilience in diverse academic disciplines. Researchers should primarily consider approaches used in resilience of individuals, considering individuals' protective factors in addition to risk factors. Individual resilience is not only determined by relatively rigid personality characteristics, but it also to a greater extent affected by broader micro- and macro-environmental factors.

Previous studies that explored resilience at the individual level identified several contributing factors or antecedents that lead to resilience [5, 82]. Some of personal antecedents to resilience include various psychological attributes (personality traits, locus of control, self-efficacy, self-esteem, optimism) [82, 83] while others are socio-demographic factors, such as age, gender, education [84, 85]. Carver, Scheier and Segerstrom [86] have identified optimism as an individual difference variable that reflects the extent to which people hold generalized

favourable expectancies for their future. Also, different aspects of psychological well-being should be analysed and related to different aspects of resilience because those who have higher resilience are effective in improving psychological well-being [87]. Finally, there is evidence that personality traits in general have high impact on resilience. Some studies showed that among different personality factors, honesty, humility, and openness to experiences occurred in a stressful situation prior to other personality factors, thus affecting the development of resilience, while extraversion and agreeableness affected innate and acquired resilience.

Environmental antecedents to resilience should include various micro-environmental factors (social support, family relationships, peers, stability), as well as macro-environmental factors (community, institutions, cultural factors) that affect resilience [10]. Three elementary groups of antecedents of consumer resilience to online privacy violation are shown in Figure 1.

Resilience differs from traditional concepts of risk and protection in its focus on individual variations in response to comparable experiences [63]. Accordingly, the focus of future research needs to be on those individual differences and causal processes that they reflect, rather than on resilience itself as a general quality.

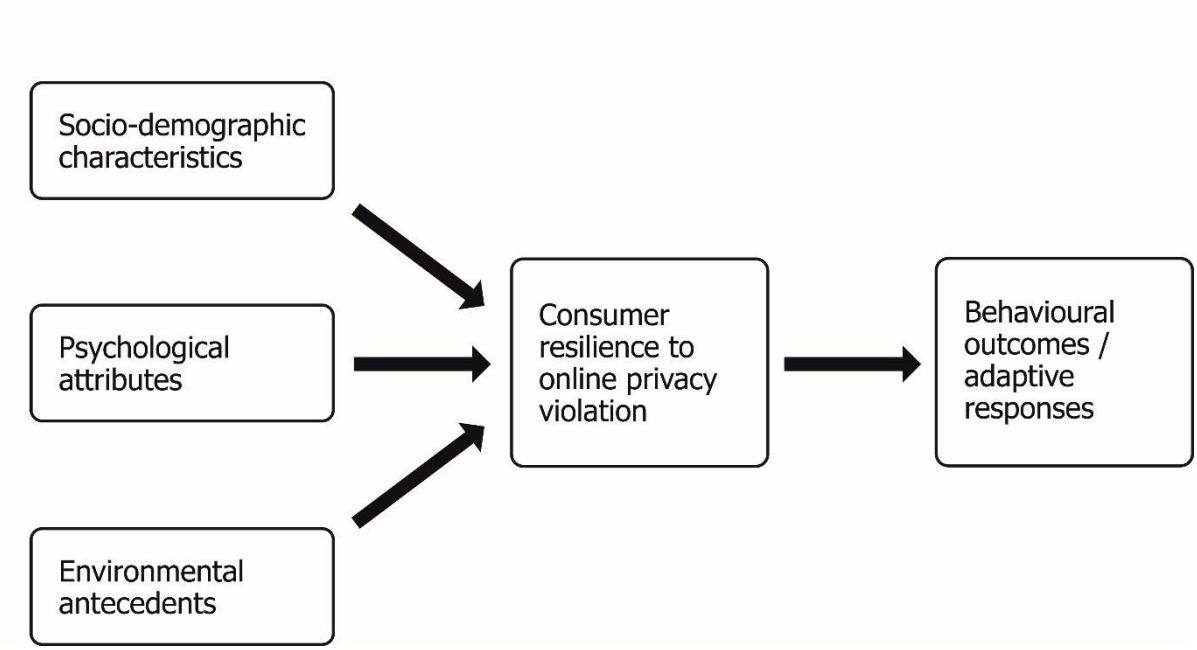

Figure 1. Baseline model of research.

There are two sets of research findings that provide a background to the notion of resilience. First, there is the universal finding of huge individual differences in people's responses to all kinds of environmental hazard. Before inferring resilience from these individual differences in response, there are two major methodological artefactual possibilities that have to be considered. To begin with, apparent resilience might be simply a function of variations in risk exposure. Resistance to (environmental hazards) may come from exposure to risk in controlled circumstances, rather than avoidance of risk. This possibility means that resilience can only be studied effectively when there is both evidence of environmentally mediated risk and a quantitative measure of the degree of such risk. The other possible artifact is that the apparent resilience might be a consequence of measuring a too narrow range of outcomes. The implication is that the outcome measures must cover a wide range of possibly adverse consequences. Second, there is evidence that, in some circumstances, the experience of stress or adversity sometimes strengthens resistance to later stress— the so called 'steeling' effect. Although literature on individual differences in response to environmental hazards is more abundant, there are some empirically-based examples of stress experiences increasing the

resistance to later stress. Risk and protection both start with a focus on variables, and then move to outcomes, with an implicit assumption that the impact of risk and protective factors will be broadly similar in everyone, and that outcomes will depend on the mix and balance between risk and protective influences. Resilience starts with a recognition of a huge individual variation in people's responses to the same experiences, and considers outcomes with the assumption that an understanding of the mechanisms underlying that variation will cast light on the causal processes and, by so doing, will have implications for intervention strategies with respect to both prevention and treatment.

Adaptive responses of resilient individuals to various adversities and misfortunes are mainly explored in literature as possible indicators of resilience [88, 89]. Specifically, in the context of resilience in research on consumer behavior, the concept of adaptive responses is not developed. The closest concept that might be applied is that of adaptive capacities which include preventive strategies to avoid event and impact-minimising strategies, which seek to facilitate recovery [90].

CONCLUSION

The purpose of this article is to develop the future research frontiers in investigating consumer resilience to online privacy violation. Therefore, a range of the theoretical concepts that might be applied in the research of consumer resilience to online privacy violation are examined. Based on the non-systematic literature review we conducted mainly on resilience and to a lesser extent on consumer behavior theory, we came to the proposal of a conceptual model of consumer resilience to online privacy violation. The model should be based on the premise that after the stressful event individual consumer is acting differently than before this adverse event. A set of individual socio-demographic characteristics as well as micro- and macro-environmental conditions affect the specific consumer resilience to privacy violations, and in turn affect their behavior outcomes.

Distinctive to the resilience concepts applied in investigating system resilience, resilience in disaster management, in ecological or psychological fields, resilience of organizations and other resilience domains, this article proposes an interdisciplinary approach to assess resilience of consumers to online privacy violation. Compared with the previous research, we offer a unique research approach to this new and unexplored aspect of consumer behavior in the digital environment.

The article has practical implications for researchers. The model that would include a set of individual characteristics and environmental variables will contribute to the existing understanding of resilience at the intersection of psychology, economics, and privacy studies. Furthermore, it will also contribute to the understanding of adaptive responses of resilient individuals to privacy breaches in an online environment, as well as to the understanding of processes by which resilience affects adaptive responses of individuals in the specific context of online privacy breaches.

This study is not without limitations and open questions for future research. Firstly, a very practical limitation was that it was not feasible to incorporate all the resilience theoretical contributions from all resilience domains in this review. Secondly, during future selection and testing of the prospective variables to enter our conceptual model, researchers could get additional insights in the resilience, privacy online and related consumer behavior, and thus amend this model with new variables. Finally, this model is set to analyse online privacy violation effects on consumer future behaviour (via their degree of resilience), while these adverse events many also have other spill over effects to consumers themselves and to their closer circle of relatives and friends, which are currently not included in the proposed model. The future research implications stem from the fact that the extant resilience literature is

scarce in empirical analyses and mostly based on the case studies and to a lesser extent to surveys. The survey of Internet users having experienced the privacy violation online would be an appropriate data collection method and the structural equation modelling could serve the most appropriate to test the relations in the model.

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REFERENCES

[1] Brand, F.S. and Jax, K.: *Focusing the meaning(s) of resilience: resilience as a descriptive concept and a boundary object*.
Ecology and Society **12**(1), 23, 2007,

[2] Klein, R.J.T.; Nicholls, R.J. and Thomalla, F.: *Resilience to natural hazards: How useful is this concept?*
Global Environmental Change Part B: Environmental Hazards **5**(1), 35-45, 2003,

[3] Callister, W.D. and Rethwisch, D.G.: *Materials science and engineering: an introduction*.
Wiley, New York, 2018,

[4] Hiller, J.S. and Russell, R.S.: *Modalities for Cyber Security and Privacy Resilience: The NIST Approach*.
Proceedings of the ISCRAM 2015 Conference, Kristiansand, 2015,

[5] Herrman, H., et al.: *What is resilience?*
The Canadian Journal of Psychiatry **56**(5), 258-265, 2011,
http://dx.doi.org/10.1177/070674371105600504,

[6] Johnson, J.; Gooding, P.A.; Wood, A.M. and Tarrier, N.: *Resilience as positive coping appraisals: Testing the schematic appraisals model of suicide (SAMS).*
Behavior Research and Therapy **48**(3), 179-186, 2010,
http://dx.doi.org/10.1016/j.brat.2009.10.007,

[7] Deans, K. and Garry, T.: *Consumer Resilience and the Quest for Alternate Third Places in Post-Quake Christchurch*.
Conference, Academy of Marketing, 2013,

[8] Bhamra, R.; Dani, S. and Burnard, K.: *Resilience: the concept, a literature review and future directions.*
International Journal of Production Research **49**(18), 5375-5393, 2011,
http://dx.doi.org/10.1080/00207543.2011.563826,

[9] Ledesma, J.: *Conceptual frameworks and research models on resilience in leadership.*
Sage Open **4**(3), 1-8, 2014,
http://dx.doi.org/10.1177/2158244014545464,

[10] Luthar, S.; Cicchetti, D. and Becker, B.: *The construct of resilience: A critical evaluation and guidelines for future work*.
Child Development **71**(3), 543-562, 2000,
http://dx.doi.org/10.1111/1467-8624.00164,

[11] Luthans, F.; Vogelgesang, G.R. and Lester, P.B.: *Developing the psychological capital of resiliency*.
Human Resource Development Review **5**(1), 25-44, 2006,
http://dx.doi.org/10.1177/1534484305285335,

[12] Bourbeau, P.: *Resiliencism: premises and promises in securitisation research.*
Resilience **1**(1), 3-17, 2013,
http://dx.doi.org/10.1080/21693293.2013.765738,

[13] Markos, E.; Labrecque, L.I. and Milne, G.R.: *Web 2.0 and consumers' digital footprint: managing privacy and disclosure choices in social media.*
In: Close, A.G., ed.: *Online consumer behavior: theory and research in social media, advertising and e-tail*.
Routledge, New York, pp.157-182, 2012,

[14] Huelin, R.; Iheanacho, I.; Payne, K. and Sandman, K.: *What's in a name? Systematic and nonsystematic literature reviews, and why the distinction matters.*
The Evidence Forum, 2015,

[15] McDougall, R.: *Reviewing Literature in Bioethics Research: Increasing Rigour in Non-Systematic Reviews.*
Bioethics **29**(7), 523-528, 2015,
http://dx.doi.org/10.1111/bioe.12149,

[16] Ferrari, R.: *Writing narrative style literature reviews.*
Medical Writing **24**(4), 230-235, 2015,
http://dx.doi.org/10.1179/2047480615Z.000000000329,

[17] Baumeister, R.F. and Leary, M.R.: *Writing Narrative Literature Reviews*.
Review of General Psychology **1**(3), 311-320, 1997,
http://dx.doi.org/10.1037/1089-2680.1.3.311,

[18] Green, B.N.; Johnson, C.D. and Adams, A.: *Writing narrative literature reviews for peer-reviewed journals: secrets of the trade.*
Journal of Chiropractic Medicine **5**(3), 101-117, 2006,
http://dx.doi.org/10.1016/S0899-3467(07)60142-6,

[19] Bertin, M.; Atanassova, I.; Lariviere, V. and Gingras, Y.: *The Distribution of References in Scientific Papers: an Analysis of the IMRaD Structure.*
14th International Society of Scientometrics and Informetrics Conference, **1**, 591-603, 2013,

[20] Patterson, E.S., et al.: *Three key levers for achieving resilience in medication delivery with information technology*.
Journal of Patient Safety **2**(1), 33-38, 2006,

[21] Holling, C.S.: *Resilience and stability of ecological systems.*
Annual Review of Ecological Systems **4**(1), 1-23, 1973,
http://dx.doi.org/10.1146/annurev.es.04.110173.000245,

[22] Davoudi, S., et al.: *Resilience: A Bridging Concept or a Dead End? "Reframing" Resilience: Challenges for Planning Theory and Practice Interacting Traps: Resilience Assessment of a Pasture Management System in Northern Afghanistan Urban Resilience: What Does it Mean in Planning Practice? Resilience as a Useful Concept for Climate Change Adaptation? The Politics of Resilience for Planning: A Cautionary Note.*
Planning Theory and Practice **13**(2), 299-333, 2012,

[23] Longstaff, P.H.; Koslowskib, T.G. and Geoghegan, W.: *Translating resilience: a framework to enhance communication and Implementation*.
In: 5th Resilience Engineering Association Symposium on Resilience Engineering, Soesterberg, 2013,

[24] Masten, A.S. and Obradovic, J.: *Disaster preparation and recovery: lessons from research on resilience in human development.*
Ecology and Society **13**(1), No. 9, 2007,

[25] Norris, F., et al.: *Community Resilience as a Metaphor, Theory, Set of Capacities and Strategy for Disaster Readiness.*
American Journal of Community Psychology **41**(1-2), 127-150,

[26] Folke, C., et al.: *Resilience thinking: integrating resilience, adaptability and transformability.*
Ecology and Society **15**(4), No. 20, 2010,

[27] Martin-Breen, P. and Anderies, J.M.: *Resilience: A literature review*.
Institute of Development Studies, Brighton, 2011,

[28] Dalziell, E.P. and McManus, S.T.: *Resilience, vulnerability and adaptive capacity: implications for system performance.*
International Forum for Engineering Decision Making, University of Canterbury, Christchurch, 2004,
[29] Fiksel, J.: *Designing resilient, sustainable systems.*
Environmental Science and Technology **37**(23), 5330-5339, 2003,
http://dx.doi.org/10.1021/es0344819,
[30] Westin, A.F.: *Privacy and Freedom*.
Atheneum, New York, 1970,
[31] Buchanan, T.; Paine, C.; Joinson, A.N. and Reips, U.D.: *Development of measures of online privacy concern and protection for use on the Internet*.
Journal of the American Society for Information Science and Technology **58**(2), 157-165, 2007,
[32] Clarke, R.: *Privacy impact assessment: its origins and development.*
Computer Law and Security Review **25**(2), 123-135, 2009,
http://dx.doi.org/10.1016/j.clsr.2009.02.002,
[33] van der Sloot, B. and de Groot, A., eds.: *The Handbook of Privacy Studies: An Interdisciplinary Introduction.*
Amsterdam University Press, Amsterdam, 2018,
[34] Ur, B. and Wang, Y.: *A cross-cultural framework for protecting user privacy in online social media.*
In: *Proceedings of the 22nd international conference on World Wide Web companion*, International World Wide Web Conferences Steering Committee, pp.755-762, 2013,
[35] Škrinjarić, B.; Budak, J. and Rajh, E.: *Perceived Quality of Privacy Protection Regulations and Online Privacy Concern*.
Ekonomska istraživanja **32**(1), 982-1000, 2019,
http://dx.doi.org/10.1080/1331677X.2019.1585272,
[36] Škrinjarić, B.; Budak, J. and Žokalj, M: *The Effects of Personality Traits on Online Privacy Concern*.
Ekonomski pregled **69**(2), 106-130, 2018,
http://dx.doi.org/10.32910/ep.69.2.2,
[37] Gellman, R. and Dixon, P.: *Online privacy: a reference handbook.*
ABC Clio, Santa Barbara, 2011,
[38] Walther, J.B.: *Introduction to privacy online.*
In: Trepte, S. and Reinecke, L., eds.: *Privacy Online: Perspectives on privacy and Self-Disclosure in the Social Web*
Springer, Berlin, pp.3-7, 2011,
[39] European Commission: *What is personal data?*
https://ec.europa.eu/info/law/law-topic/data-protection/reform/what-personal-data_en, accessed 22st September, 2020,
[40] Solove, D.J.: *Understanding privacy.*
Harvard University Press, Harvard, 2008,
[41] Sax, M.: *Privacy from an Ethical Perspective*.
In: van der Sloot, B. and de Groot, A., eds.: *The Handbook of Privacy Studies: An Interdisciplinary Introduction*
Amsterdam University Press, Amsterdam, pp.143-172, 2018,
[42] Zureik, E.: *Globalization of personal data project international survey concept paper.*
In: *The Surveillance Project Public Opinion Workshop.* Kingston, 2004,
[43] Smith, J.H.; Dinev, T. and Xu, H.: *Information privacy research: An interdisciplinary review.*
MIS Quarterly **35**(4), 989-1015, 2011,
http://dx.doi.org/10.2307/41409970,
[44] Goold, B.: *How much surveillance is too much? Some thoughts on surveillance, democracy and the political value of privacy.*
In: Schartum, D., ed.: *Surveillance in a Constitutional Government*. Fakbokforlaget, Bergen, pp.38-48, 2010,
http://dx.doi.org/10.3917/ver.038.0048,

[45] Miyazaki, A. and Fernandez, A.: *Consumer perceptions of privacy and security risks for online shopping.*
The Journal of Consumer Affairs **35**(1), 27-44, 2001,
http://dx.doi.org/10.1111/j.1745-6606.2001.tb00101.x,

[46] Koot, M. and de Laat, C.: *Privacy from an Informatics Perspective.*
In: van der Sloot, B. and de Groot, A., eds.: *The Handbook of Privacy Studies: An Interdisciplinary Introduction.*
Amsterdam University Press, Amsterdam, pp.213-255, 2018,

[47] Wirtz, J.; Lwin, M. and Williams, J.: *Causes and consequences of consumer online privacy concern.*
International Journal of Service Industry Management **18**(4), 326-348, 2007,
http://dx.doi.org/10.1108/09564230710778128,

[48] Martin, K.: *Understanding privacy online: Development of a social contract approach to privacy.*
Journal of Business Ethics **137**(3), 551-569, 2016,
http://dx.doi.org/10.1007/s10551-015-2565-9,

[49] Martin, K.: *The penalty for privacy violations: How privacy violations impact trust online.*
Journal of Business Research **82**, 103-116, 2018,
http://dx.doi.org/10.1016/j.jbusres.2017.08.034,

[50] Benett, C.: *In defense of privacy: the concept and the regime.*
Surveillance and Society **8**(4), 485-496, 2011,
http://dx.doi.org/10.24908/ss.v8i4.4184,

[51] Chang, Y.; Wong, S.F.; Libaque-Saenz, C.F. and Lee, H.: *The role of privacy policy on consumers' perceived privacy.*
Government Information Quarterly **35**(3), 445-459, 2018,
http://dx.doi.org/10.1016/j.giq.2018.04.002,

[52] Beke, F.T.; Eggers, F. and Verhoef, P.C.: *Consumer Informational Privacy: Current Knowledge and Research Directions.*
Foundations and Trends in Marketing **11**(1), 1-71, 2018,
http://dx.doi.org/10.1561/1700000057,

[53] van Schaik, P., et al.: *Security and privacy in online social networking: Risk perceptions and precautionary behavior.*
Computers in Human Behavior **78**, 283-297, 2018,
http://dx.doi.org/10.1016/j.chb.2017.10.007,

[54] Nguyen, H.L. and Akerkar, R.: *Modelling, Measuring, and Visualising Community Resilience: A Systematic Review.*
Sustainability **12**(19), 7896, 2020,
http://dx.doi.org/10.3390/su12197896,

[55] Wolfond, G.: *A Blockchain Ecosystem for Digital Identity: Improving Service Delivery in Canada's Public and Private Sectors.*
Technology Innovation Management Review **7**(10), 35-40, 2017,
http://dx.doi.org/10.22215/timreview/1112,

[56] Pavlou, P.A. and Fygenson, M.: *Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior.*
MIS Quarterly **30**(1), 115-143, 2006,
http://dx.doi.org/10.2307/25148720,

[57] Cai, Y. and Zhu, D. *Fraud detections for online businesses: a perspective from blockchain technology.*
Financial Innovation **2**(1), 2-20, 2016,
http://dx.doi.org/10.1186/s40854-016-0039-4,

[58] Contissa, G., et al.: *Towards Consumer-Empowering Artificial Intelligence.*
In: Proceedings of the Twenty-Seventh International Joint Conference on Artificial Intelligence IJCAI-18, pp.5150-5157, 2018,
http://dx.doi.org/10.24963/ijcai.2018/714,

[59] Gurung, A. and Jain, A.: *Antecedents of online privacy protection behavior: towards an integrative model*.
In: Chen, K. and Fadlalla, A., eds.: *Online Consumer Protection: Theories of Human Relativism.*
IGI Global, New York, pp.151-190, 2008,

[60] Yao, M.Z.: *Self-protection of online privacy: a behavioral approach*.
In: Trepte, S., and Reinecke, L., eds.: *Privacy Online: Perspectives on Privacy and Self-Disclosure in the Social Web.*
Springer, Berlin, pp.111-125, 2011,

[61] Chen, K. and Rea, A.: *Protecting personal information online: a survey of user privacy concerns and control techniques.*
Journal of Computer Information Systems **44**(4), 85-92, 2004,
http://dx.doi.org/10.1016/j.entcs.2003.12.024,

[62] Coutu, D.L.: *How resilience works.*
Harvard Business Review **80**(5), 46-56, 2002,

[63] Rutter, M.: *Implications of resilience concepts for scientific understanding.*
Annals of the New York Academy of Sciences **1094**(1), 1-2, 2006,
http://dx.doi.org/10.1196/annals.1376.002,

[64] Luthar, S.S.: *Resilience in development: A synthesis of research across five decades.*
In: Cicchetti. D. and Cohen, D., eds.: *Developmental psychopathology: Risk, disorder and adaptation.*
Wiley, New York, pp.739-795, 2006,

[65] Raab, C.D.; Jones, R. and Székely, I.: *Surveillance and resilience in theory and practice.*
Media and Communication **3**(2), 21-41, 2015,
http://dx.doi.org/10.17645/mac.v3i2.220,

[66] Hiller, J.S. and Blanke, J.M.: *Smart Cities, Big Data and the Resilience of Privacy.*
Hastings Law Journal **68**(2), 309-356, 2017,
http://dx.doi.org/10.1007/s10611-017-9709-z,

[67] Jones, R.; Raab, C. and Székely, I.: *Surveillance and resilience: Relationships, dynamics and consequences.*
Democracy and Security **14**(3), 238-275, 2018,
http://dx.doi.org/10.1080/17419166.2017.1423472,

[68] Bhattacharyya, A. and Belk, R.W.: *Consumer resilience and subservience in technology consumption by the poor.*
Consumption Markets and Culture **22**(5-6), 489-507, 2019,
http://dx.doi.org/10.1080/10253866.2018.1562686,

[69] Kotzé, M. and Nel, P.: *Psychometric properties of the adult resilience indicator.*
Journal of Industrial Psychology **39**(2), 1-11, 2013,
http://dx.doi.org/10.4102/sajip.v39i2.1132,

[70] Solomon, M.R.; Bamossy, G.J.; Askegaard, S.T. and Hogg, M.K.: *Consumer behavior. A European perspective.* 5th edition.
Pearson, Harlow, 2013,

[71] Shrif, M.S.; Shao, B.; Xiao, F. and Saif, M.K.: *The impact of psychological factors on consumers trust in adoption of m-commerce.*
International Business Research **7**(5), 148-155, 2014,
http://dx.doi.org/10.5539/ibr.v7n5p148,

[72] Oliveira, M.G. and Toaldo, A.M.: *New times, new strategies: proposal for an additional dimension to the 4 P's for e-commerce dot-com.com.*
Journal of Information Systems and Technology Management **12**(1), 107-124, 2015,
http://dx.doi.org/10.4301/S1807-17752015000100006,

[73] Anić, I.D., et al.: *Extended model of online privacy concern: what drives consumers' decisions?*
Online Information Review **43**(5), 799-817, 2018,
http://dx.doi.org/10.1108/OIR-10-2017-0281,

[74] Islam, S.: *Factors Influencing Customer's Intention to Adopt Online Shopping: A Holistic Approach.*
International Journal of Business and Technopreneurship **9**(1), 57-66, 2019,
[75] Ginosar, A. and Ariel, Y.: *An analytical framework for online privacy research: what is missing?*
Information and Management **54**(7), 948-957, 2017,
http://dx.doi.org/10.1016/j.im.2017.02.004,
[76] van Zoonen, L.: *Privacy concerns in smart cities.*
Government Information Quarterly **33**(3), 472-480, 2016,
http://dx.doi.org/10.1016/j.giq.2016.06.004,
[77] Gazzola, P.; Colombo, G.; Pezzetti, R. and Nicolescu, L.: *Consumer Empowerment in the Digital Economy: Availing Sustainable Purchasing Decision*s.
Sustainability **9**(5), 693, 2017,
http://dx.doi.org/10.3390/su9050693,
[78] Hoffman, D.; Novak, T.A. and Peralta, M.: *Building Consumer Trust Online.*
Communications of the ACM **42**(4), 80-85, 1999,
http://dx.doi.org/10.1145/299157.299175,
[79] Mosco, V.: *Citizenship in a Post-Internet World.*
In: Mosco, V., ed.: *Becoming Digital.* Emerald Publishing, pp.175-212, 2017,
[80] Hargittai, E. and Dobransky, K.: *Old Dogs, New Clicks: Digital Inequality in Skills and Uses among Older Adults.*
Canadian Journal of Communication **42**(2), 195-212, 2017,
http://dx.doi.org/10.22230/cjc.2017v42n2a3176,
[81] Lehdonvirta, V.: *A History of the Digitalization of Consumer Culture: From Amazon Through Pirate Bay to Farmville.*
In: Denegri-Knott, J. and Molesworth, M., eds.: *Digital Virtual Consumption.* Routledge, New York, pp.11-28, 2012,
[82] Joseph, S. and Linley, P.A.: *Growth following adversity: Theoretical perspectives and implications for clinical practice.*
Clinical psychology review **26**(8), 1041-1053, 2006,
http://dx.doi.org/10.1016/j.cpr.2005.12.006,
[83] Nakaya, M.; Oshio, A. and Kaneko, H.: *Correlations for Adolescent Resilience Scale with Big Five Personality Traits.*
Psychological Reports **98**(3), 927-930, 2006,
http://dx.doi.org/10.2466/pr0.98.3.927-930,
[84] Campbell-Sills, L.; Forde, D.R. and Stein, M.B.: *Demographic and childhood environmental predictors of resilience in a community sample.*
Journal of psychiatric research **43**(12), 1007-1012, 2009,
http://dx.oi.org/10.1016/j.jpsychires.2009.01.013,
[85] Bonanno, G.A.; Galea, S.; Bucciarelli, A. and Vlahov, D.: *What Predicts Psychological Resilience After Disaster? The Role of Demographics, Resources and Life Stress.*
Journal of Consulting and Clinical Psychology **75**(5), 671-682, 2007,
http://dx.doi.org/10.1037/0022-006X.75.5.671,
[86] Carver, C.S.; Scheier, M.F. and Segerstrom, S.C.: *Optimism.*
Clinical Psychology Review **30**(7), 879-889, 2010,
http://dx.doi.org/10.1016/j.cpr.2010.01.006,
[87] Fredrickson, B.L.: *The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions.*
American Psychologist **56**(3), 218-26, 2001,
http://dx.doi.org/10.1037/0003-066x.56.3.218,
[88] Sinclair, V.G. and Wallston, K.A.: *The development and psychometric evaluation of the Brief Resilient Coping Scale.*
Assessment **11**(1), 94-101, 2004,
http://dx.doi.org/10.1177/1073191103258144,

[89] Tomás, J.; Sancho, P.; Melendez, J. and Mayordomo-Rodríguez, T.: *Resilience and coping as predictors of general well-being in the elderly: A structural equation modeling approach.* Aging and mental health **16**(3), 317-326, 2012, http://dx.doi.org/10.1080/13607863.2011.615737,

[90] Jabeen, H.; Johnson, C. and Allen, A.: *Built-in resilience: learning from grassroots coping strategies for climate variability.* Environment and Urbanization **22**(2), 415-431, 2010, http://dx.doi.org/10.1177/0956247810379937.

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DIFFERENT TAX PREFERENCES? OLD VS. NEW EUROPE

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ABSTRACT

The aim of the article is to provide a comparative analysis of the factors behind citizens' specific tax burden preferences between New and Old EU Member States. Based on the available data from International Social Survey Programme for years 2006 and 2016, we form two groups of countries: Old Europe – Germany, Denmark, France, Spain, Finland and Sweden – and New Europe – Czech Republic, Slovenia, Latvia, Hungary and Croatia. Initial inspection of the preferences for more progressive taxation shows that in most countries, citizens would prefer the higher redistributive role of the state and there are no clear-cut differences between Old and New Europe. Analysis of factors contributing to individuals' preferences for progressive taxation provided interesting insights: older cohorts in New Europe are not disproportionally inclined to progressive taxation; political orientation and union membership are more important in Old than in New Europe; and there are no significant changes in the patterns resulting from the latest financial crisis.

KEY WORDS

tax burden preferences, European economies, comparative analysis, International Social Survey Programme

CLASSIFICATION

JEL: H20, H31

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INTRODUCTION

The 1990s were marked by the transition of former socialists economies. As European transition economies also declared their intentions to join the European Union, the transformation towards established market mechanisms and the ability to function on the European common market began. The initial assumption was that the role of the government would diminish and the citizens' demand for government interventions would decline. Recent studies suggest that pre-tax inequality was lower in Eastern Europe, but increasing rapidly with the transformation process [1]. Fuchs-Schündeln and Schündeln [1] argue that redistribution through taxes and transfers was lower in Eastern Europe socialist system as a consequence of price and wage restrictions that were the main redistribution mechanisms. The open question remains how the citizens have reacted to the changes and whether there are still commonalities in the perception of the role of government among post-transition economies or they converged to Old Europe.

The public goods from the perspective of citizens entail two sides of a coin: gain and loss. To yield benefits from health, education, security and other government services, citizens have to pay taxes. Extant studies confirm differences in the size of the welfare state, fiscal stance, tax burden as well as tax compliance across European economies. As the countries develop different welfare systems, their citizens develop differentiated preferences. However, along with developing differentiated preferences for the welfare system, citizens develop different preferences towards progressive taxation of incomes. Behind different preferences for taxation, numerous factors are influencing an individual's attitudes, including the socioeconomic and demographic factors as well as preferences for government intervention in different aspects (e.g. education, health and security).

There are three specific research questions that we want to address. The first research question asks if, within a group of countries, different factors predict whether a person will have preferences for more progressive taxation in the period after the 2008 crisis in comparison to the pre-crisis period. The second research question, based on the analysis between two groups of countries, aims to identify whether personal characteristics, important for predicting a certain level of taxation, are similar between Old and New Europe. We explore two different periods – 2006 and 2016. Although the period is relatively short for significant convergence in attitudes to occur, it enables discussion of the 2008 crisis effects on the possible changes in the preferences of New and Old Europe citizens, thus consisting third research question.

We aim to offer the following contributions. First, we provide more recent evidence on the evolution of tax preferences in post-transition countries, thus expanding the findings of Dallinger [2], Redmond, et al. [3] and Suhrcke [4]. Second, while previous research has documented differences between post-transition economies [5], there is a lack of comparison with developed European market economies.

The article adopts the following structure. Next section briefly reviews the literature on the preferences for income redistribution and tax burden. Data and methodology are presented in section 3, while the results of the analysis are presented in section 4. Section 5 contains discussion and implication of the results, while the last section offers conclusions and a roadmap for future research.

LITERATURE REVIEW

World economies are faced with exacerbating economic inequalities which are, for the time being, the lowest in Europe and the highest in the Middle East [6]. Although income inequalities have increased virtually in all countries, the speed of the increase varies. On the

one hand, in the European Union, income inequality has grown moderately [7]. On the other hand, since the 1980s, the largest increase of income inequalities has been recorded in China, India, Russia and North America. The issue of income redistribution has attracted much attention from researchers, policy-makers and global public. Alesina and Rodrik [8] and Persson and Tabellini [9] noted an inverse correlation between inequality and growth. Rodrik [10] additionally argues that economic growth alone may be insufficient to solve the problem of inequality. Hence growth policy should be enhanced with redistributive measures so that the results of economic growth are more evenly distributed [11].

Alesina and Giuliano [12] find that preferences for redistribution are determined by personal characteristics such as age, gender, race and socioeconomic status. However, they are also a product of history, culture, political ideology and a perception of fairness. The authors also find that preferences for redistribution vary substantially across countries and show that these differences could be the result of differences in religion, histories of macroeconomic volatility and more generally defined culture. George [13] finds that individuals' preferences for redistribution are not easily modelled by their perceived impact on their position in the income distribution, while Charite et al. [14] find that individuals display reference-dependent preferences. Lockwood and Weinzierl [15] show how the presence of preference heterogeneity affects the optimal extent of income redistribution.

The shape of the income distribution should be crucial in the determination of policies with redistributive components (such as social security, health care, government transfers and taxation). However, Cruces et al. [16] find evidence of significant biases in individuals' evaluations of their relative position in the distribution. Eventually, misperceptions about the income distribution affect attitudes towards redistribution.

Redistribution refers to both the way the funds (taxes and social contributions) are collected (progressivity of the tax system) and the way they are allocated (social transfers). Hence, redistributive policies are influenced by a complex set of factors that determine public expenditures and revenues, while existing studies suggest that this ratio is not constant across the countries. Preferences for welfare state are not independent of attitudes towards taxation [17]. Ross [18] argues that fiscal preferences are driven by the tax burden relative to the goods and services the government provides. Barnes [19] suggests that preferences over tax levels have a greater effect on progressivity preferences in less progressive tax systems. Although social welfare is larger if the distribution of wealth and income are less concentrated, policy-makers must be aware that redistributive taxes and transfers could discourage incentives to work, save and earn income [20]. Regarding tax policy, Diamond and Saez [20] suggest that high earners should be subject to high and rising marginal tax rates on earnings while the earnings of low-income families should be subsidized. Moreover, the authors argue that capital income should be taxed, challenging arguments given by Atkinson and Stiglitz [21], Chamley [22] and Judd [23].

In the EU countries the overall tax burden, as a percentage of GDP, has been increasing and the European Commission [24] especially points out that the tax burden on labor is relatively high if compared to the other advanced economies. For example, total tax wedge between the labor costs to the employer and the corresponding net take-home pay for single workers without children at average earnings levels in the EU Member States that are also the OECD members was 41,9 % in 2019, while in the rest of the OECD countries tax wedge was 26,7 % [25]. The difference is smaller in our two subsamples – tax wedge in Old Europe was 42,6 %, while in New Europe (excluding Croatia) it was 43,7 % [25].

Taxes on labor income are the largest source of public revenue in the EU. However, the structure of taxation differs between the Member States with consumption taxes having a

markedly higher share in public revenues in new Member States such as Croatia and Bulgaria. The rising tax burden is closely connected to the expansion of public sector commitments to welfare provision [26]. Evolution of public expenditures, especially health expenditures [27]. has a strong impact on redistribution.

European Union today is a mixture of advanced western European countries and countries that until the 1990s had a socialist system, which implies that differences in tax burden preferences might have been significant before and at the beginning of the transition period. Socialist system's characteristic was proclaimed egalitarian, which implies that differences between high and low salaries were lower than in capitalist western European countries. Redmond et al. [3] report that the Gini coefficient in the 1980s was lower in CEE countries than in Western European countries. Further, the socialist system offered a wide range of programs that helped citizens in economic difficulties [28]. Hence, tastes for redistribution in these countries have been shaped by specific country experience and tradition [29]. Indeed, during the 1990s, post-socialist countries were still different from developed Western European countries in the support for income distribution. Dallinger [2], Redmond et al. [3] and Suhrcke [4] use data from 1999 International Social Survey Program (ISSP) and find that in post-socialist countries support for redistribution is significantly higher than in Western European countries which have more conservative political regimes. Lipsmeyer [28] concludes that during mid-1990's post-socialist countries still retained part of welfare preferences and attitudes of the socialist past. Okulicz-Kozaryn [30] suggests that this is related to the lack of upward mobility and relatively generous welfare systems under the previous regime, general path dependencies of public policies, and increased risk aversion due to the series of macroeconomic volatilities these societies experienced.

Still, the transition from a socialist system to market economy included extensive market-oriented reforms, accompanied by the diminishing influence of the state and opening up to foreign trade and investments [31]. Hence, it should not come as a surprise if by now New member states managed to become more similar to Old EU members in tax burden preferences, although post-transition economies are not a homogenous group [5]. The question remains whether factors behind tax burden preferences are similar in New and Old member states. Even though factors of tax burden preferences are well researched [32, 33] the differences between New and Old Europe remain relatively neglected topic in the literature. Hence, the rest of the article is devoted specifically to this issue.

DATA AND METHODOLOGY

We rely on the International Social Survey Programme 2006[1] and 2016 data[2], in which individual-level preferences for different aspects of the role of government were surveyed in 48 countries. Alesina et al. [34] recently remind about stereotypically documented views on differences between Americans and Europeans in preferences for redistribution. Our focus in the present article is on the EU countries, due to the underlying assumption that the EU integration process leads to harmonisation in different areas. This is the reason why we further distinguish between the Old European member states and New European member states. We included all EU countries for which data were available in the ISSP for both years. Among the countries of Old Europe, we include Germany, Denmark, France, Spain, Finland and Sweden. Among the New European countries, we include the Czech Republic, Slovenia, Latvia, Hungary and Croatia.

The preferences for tax burden can be quite different from the actual distribution of the taxes. Some people might find that more progressive distribution is fairer, while others could be against this. The average opinion of the population may not be reflected in the actual distribution of the taxes, depending on the overall importance the tax system has in public debates. To capture the attitudes towards progressiveness of the taxes imposed, we follow the

approach proposed by Barnes [19] based on the ISSP survey question. Specifically, respondents were asked to assess on a 5-point Likert scale (1 – much too low, …, 5 – much too high) the tax burden for the low, median and high-income population. The respondents' assessments of the tax burden were grouped into three categories – low (much too low and low), medium and high (high and much too high). Based on the answers provided for all three income categories, respondents were grouped into those in favor of more progressive taxation and others. The procedure yields 27 different preferences profiles. Each preference profile depicts the respondent's preferences for each of the income group. Respondents were categorized as more in favour of progressive taxation if they belong to one of the following profiles: LHH (high-income households are taxed too low, middle-income households are taxed too high, low-income households are taxed too high), LRH (high-income households are taxed too low, middle-income right, low-income high), RHH (high-income households are taxed right, middle-income households are taxed high, low-income households are taxed high), RRH (high-income households are taxed right, middle-income households are taxed right, low-income households are taxed high), LRR (high-income households are taxed low, middle-income are taxed right, low-income are taxed right), LLH (high-income households are taxed low, middle-income are taxed low, low-income are taxed high) and LLR (high-income households are taxed low, middle-income households are taxed low, low-income households are taxed right).

Figure 1 shows citizens preferences for more progressive taxation in Old and New Europe. It can be noticed that in most countries (except for Denmark and France), respondents are in favor of more progressive taxation. The data clearly shows that there are no standard Old-New Europe differences in patterns. Rather, the assessments are more likely to be under the influence of general taxation policy in each country. The data for 2016 also corroborates such findings: in Old Europe, 7,3 % of respondents consider that taxes are overall too high, while this share in New Europe rises to 14,4 %.

From the data presented in Figure 1, we can also notice that support for more progressive taxation has increased in almost all the countries after the 2008 economic crisis. There are two

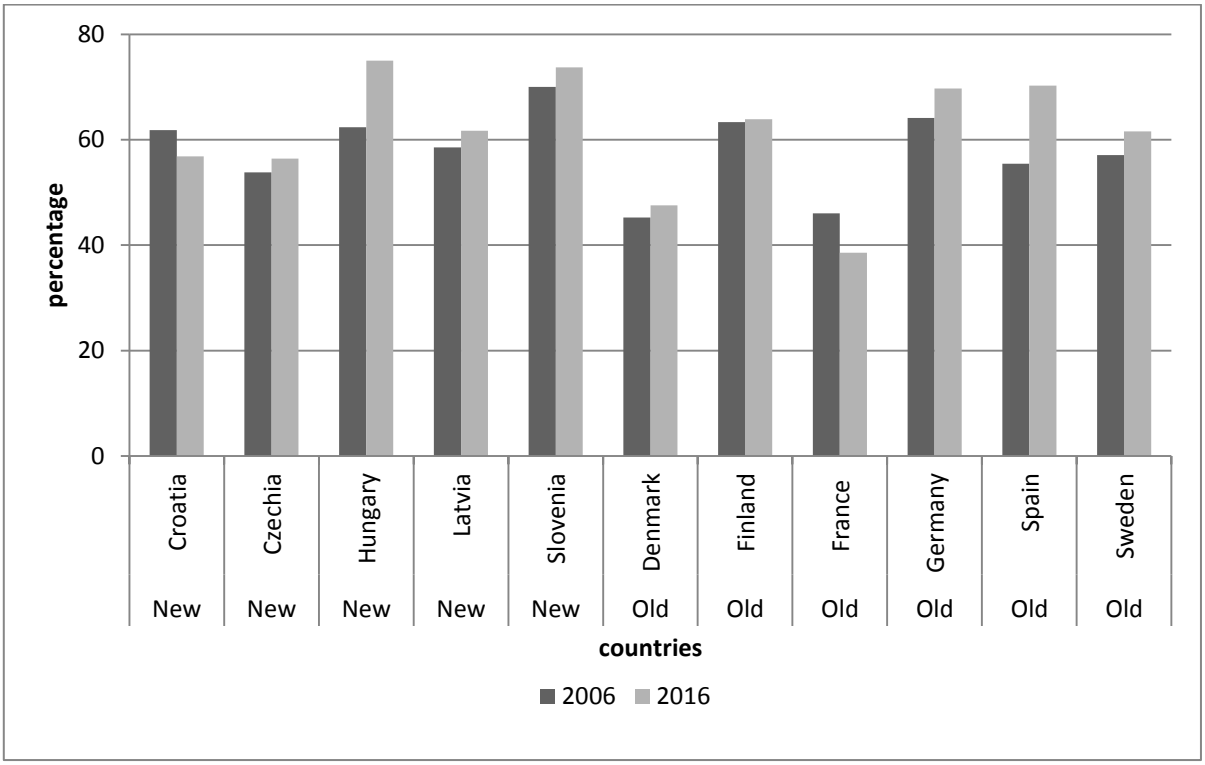

Figure 1. Preferences for more progressive taxation, in percentage of the total number of respondents [35, 36].

exceptions – Croatia and France, where the share of respondents in favor of more progressive taxation has decreased. The initial inspection of the data, thus, does not suggest that post-transition economies are still very different from the European market economies. However, we proceed with the separate empirical analysis into the factors behind the revealed preferences in two groups of countries because of the previous emphasis in the literature that post-transition economies exhibit different patterns than old EU members. The choice of factors considered to be important predictors for the preferences for higher progressive taxation is guided by the literature but limited by the variables available in the questionnaires.

We include a set of demographic variables considered as traditional predictors for the preferences – age, sex, education. Existing research shows that women are more in favor of income redistribution than men [12] so we include a dummy variable that takes value 1 if the respondent is male. Persons with higher education could, in general, have more information about public spending practices and could be more informed about the country's tax system [37]. Further, persons who are more informed about the tax system might be more comfortable with the current distribution of taxes [38, 39]. To capture this, we create a series of dummy variables referring to persons' educational attainment. We distinguish between no formal education, primary, lower secondary, upper secondary (reference value), post-secondary (non-tertiary) and tertiary education.

It is assumed that with age people are more aware of the benefits of government services, through the increased need for the security of their pension funds, availability of adequate health care and in general increased demand for social protection [19]. People who have lived in the pre-transition period might be additionally more inclined to favor a more generous welfare system [40]. We include dummy variables for the persons aged 18-25, 26-35, 36-45 (reference category), 46-55, 56-65 and older than 66.

People are influenced by their self-interest – they position themselves in a certain income group and favor taxes that are more beneficial for this income group [41-43]. In other words, if the respondent believes that she is at the lower end of the social scale, the probability that she is more sensitive to the tax burden of the lower-income population is higher. Similarly, respondents who believe that they belong to the higher income group might consider taxes to be too high for middle and high-income groups. To operationalize this issue, we include a dummy variable for each decile of self-perceived social status. The middle position in the scale is considered as a reference value.

Unemployed persons might be in favor of progressive taxation because they are aware that welfare policies rely on government revenues [44]. We additionally consider employees working in the public sector as more in favor of progressive taxation. The underlying assumption is that persons working in the public sector might be aware that their wages are dependent on government revenues, so they could have different perceptions related to the tax burden. In each case, if a person has responded to be in any of the statuses described above, the value of the variable takes value 1.

Trade unions participate in wage negotiations and frequently need to motivate their members to take some actions. In this process, they could gently persuade their members to slightly modify their original views. This is not to say that unions are in general pro or against certain models of taxation, but it could be the case that taxation policy fits into the current wage negotiations process to some extent. The members could be more informed either about the current state of the taxation system or announced reforms, than persons who are not union members. We included a dummy variable taking value 1 if a person is currently a trade union member.

Previous research has documented that political preferences are directly related to the degree of preferences for the role of government. Left-wing individuals support the stronger role of the government, while right-wing individuals believe that less government involvement is needed [34]. These aspirations are not only relevant on a general level, but political parties

very frequently address specific population subgroups they consider to be their main pool of voters. Thus, political orientation can be an indicator of additional sensitivity towards specific population subgroup and persons can be more or less sensitive towards the tax burden of a specific population subgroup. We include the following dummy variables: far left, left, center (reference value), right and far-right.

Studies have also found that people who in general have higher trust in government are more likely to be in favour of progressive taxation [45] based on the assumption that citizens trust government to perform fair redistribution. Respondents were asked to assess whether people should obey the law without exception (and we include this by incorporating the dummy variable that takes the value 1 if they responded positively to this question). The argument is that if they, in general, believe that the legal system is appropriate, they would be more in favor of progressive taxation because they can see the rationale for the use of funds. On the opposite side, if citizens believe that political corruption is widespread, they are more likely to consider that the funds collected through the taxes are misplaced. To capture political corruption perception, we include a dummy variable taking value 1 if a person believes that quite a lot or almost all politicians are involved in corruption.

Following the literature on decoupling between the desire for more redistribution and the perception of an already high tax burden [17, 19] we include a variable that captures the perceptions on the current state in the country. Tax level variable is the average of assessment (5 points Likert scale from 1 – much too low, to 5 – much too high) of the current tax burden for all income groups (low, middle and high income). Thus, the higher the average, the more a person believes that the current tax level in the country is already high.

Institutional settings differ among the countries. The existing institutional setting affects people's expectations. For example, if the education or pension system is mostly provided by the private sector, citizens will not consider the increased need for funding these systems related to the redistributive role of the government. To capture institutional differences between the countries, we include country dummy variables.

We analyze two groups of countries separately, applying the same methodology. As a first step in the analysis, we perform correlation analysis to check for multicollinearity (Table 2 in the Appendix), with the result that the correlation between independent variables is low. Since our dependent variable is binary (whether a person is in favor of more progressive taxation equals 1, otherwise equals 0), we estimate a probit model. Specifically, we estimate the following equations in two separate periods (2006 and 2016).

The equation for Old European countries is following (indexing omitted for a clearer presentation):

$$
\begin{aligned}
Pr(progressive = 1) \\
&= \Phi(constant + \beta_1 age18-25 + \beta_2 age26-35 + \beta_3 age46-55 \\
&+ \beta_4 age56-65 + \beta_5 male + \beta_6 public-work + \beta_7 unemploy \\
&+ \beta_8 current-union + \beta_9 political-corruption + \beta_{10} obey-law \\
&+ \beta_{11} tax-level + \beta_{12} noeducation + \beta_{13} primary + \beta_{14} lower-sec \\
&+ \beta_{15} post-sec + \beta_{16} tertiary + \beta_{17} far-left + \beta_{18} left + \beta_{19} right \\
&+ \beta_{20} far-right + \beta_{21} spss1 + \beta_{22} spss2 + \beta_{23} spss3 + \beta_{24} spss4 \\
&+ \beta_{25} spss6 + \beta_{26} spss7 + \beta_{27} spss8 + \beta_{28} spss9 + \beta_{29} spss10 + \beta_{30} DK \\
&+ \beta_{31} FI + \beta_{32} ES + \beta_{33} FR + \beta_{34} SE)
\end{aligned}
$$

The equation for New European countries is the following:

$$
\begin{aligned}
Pr(progressive = 1) \\
&= \Phi(constant + \beta_1 age18-25 + \beta_2 age26-35 + \beta_3 age46-55 \\
&+ \beta_4 age56-65 + \beta_5 male + \beta_6 public-work + \beta_7 unemploy \\
&+ \beta_8 current-union + \beta_9 political-corruption + \beta_{10} obey-law \\
&+ \beta_{11} tax-level + \beta_{12} noeducation + \beta_{13} primary + \beta_{14} lower-sec \\
&+ \beta_{15} post-sec + \beta_{16} tertiary + \beta_{17} far-left + \beta_{18} left + \beta_{19} right \\
&+ \beta_{20} far-right + \beta_{21} spss1 + \beta_{22} spss2 + \beta_{23} spss3 + \beta_{24} spss4 \\
&+ \beta_{25} spss6 + \beta_{26} spss7 + \beta_{27} spss8 + \beta_{28} spss9 + \beta_{29} spss10 + \beta_{30} CZ \\
&+ \beta_{31} HR + \beta_{32} LV + \beta_{33} SI
\end{aligned}
$$

For ease of interpretation, the marginal effects are presented in the next section. The full set of estimated coefficients of the probit models and accompanied diagnostics are in Table 3 in the Appendix.

RESULTS

Based on the methodology described above, we present the marginal effects of the estimates in Table 1. Estimated coefficients, robust standard errors and diagnostics of the underlying probit models are in Table 3 in the Appendix.

From the results presented in Table 3 in the Appendix, we can note that the numbers of observations as well as the overall fit of the estimates are higher for Old European countries than for New Europe. This would suggest that in New Europe there are additional variables not included in the present analysis that could offer additional insights on why the citizens are in favor of more progressive taxation.

Table 1. Revealed preferences for progressive taxation, marginal effects (continued on p.336).

VARIABLES		2006		2016	
		New EU	Old EU	New EU	OLD EU
Age	age 18_25	–0,0140	–0,0442*	–0,0324	–0,0609**
		(0,0244)	(0,0237)	(0,0275)	(0,0277)
	age 26_35	–0,00735	–0,0216	0,0149	–0,0477**
		(0,0228)	(0,0188)	(0,0223)	(0,0227)
	age 46_55	0,0400*	0,0364**	0,0799***	0,0658***
		(0,0213)	(0,0174)	(0,0203)	(0,0190)
	age 56_65	0,0724***	0,0836***	0,0706***	0,0955***
		(0,0216)	(0,0176)	(0,0208)	(0,0188)
	age 66	0,0575**	0,112***	0,0733***	0,137***
		(0,0237)	(0,0181)	(0,0224)	(0,0183)
Gender	Male	–0,0104	–0,0243**	–0,0270*	–0,0121
		(0,0138)	(0,0113)	(0,0140)	(0,0124)
Work status	public_worker	0,0424***	0,0314**	0,00374	0,0372***
		(0,0156)	(0,0136)	(0,0161)	(0,0139)
	unemployed	–0,00638	0,0509**	–0,00788	0,0256
		(0,0289)	(0,0257)	(0,0273)	(0,0290)
	current_union_member	0,0216	0,0317**	–0,0228	0,0375**
		(0,0230)	(0,0152)	(0,0262)	(0,0156)
Trust in government	political_corruption	0,0992***	0,0441***	0,0360**	0,0155
		(0,0144)	(0,0133)	(0,0156)	(0,0163)
	obey_law	0,00197	–0,0125	–0,0179	0,0132
		(0,0138)	(0,0122)	(0,0143)	(0,0130)

Table 1. Revealed preferences for progressive taxation, marginal effects (continuation from p.335). Standard errors as well as diagnostics are reported in Table 2 in the Appendix.

Perceptions on the current tax level	tax_level	0,201***	0,124***	0,201***	0,207***
		(0,0156)	(0,0110)	(0,0165)	(0,0143)
Education	No education	–0,0377	0,00884	–0,0985	–0,0800
		(0,0474)	(0,0333)	(0,105)	(0,0517)
	primary	0,00891	0,0657***	–0,0549	0,0738***
		(0,0205)	(0,0194)	(0,0910)	(0,0284)
	lower_sec	0,0493***	0,0805***	0,00736	0,0534**
		(0,0182)	(0,0170)	(0,0170)	(0,0212)
	post_sec	–0,00608	–0,0515***	–0,0324	0,0131
		(0,0289)	(0,0196)	(0,0296)	(0,0232)
	tertiary	–0,0660***	–0,0956***	–0,0186	–0,0635***
		(0,0251)	(0,0203)	(0,0206)	(0,0194)
Political orientation	far_left	0,0355	0,172***	0,147***	0,125***
		(0,0355)	(0,0196)	(0,0383)	(0,0206)
	left	–0,0453**	0,0919***	0,0410**	0,106***
		(0,0217)	(0,0133)	(0,0207)	(0,0154)
	right	–0,0307	–0,128***	0,00231	–0,0962***
		(0,0191)	(0,0161)	(0,0177)	(0,0167)
	far_right	–0,0659	–0,0497	–0,0562	0,0355
		(0,0667)	(0,0376)	(0,0581)	(0,0269)
Self-perceived social status	spss1	0,0612*	0,120***	–0,0219	0,128***
		(0,0350)	(0,0434)	(0,0537)	(0,0415)
	spss2	0,0462	0,105***	0,0215	0,121***
		(0,0295)	(0,0343)	(0,0453)	(0,0396)
	spss3	0,0408*	0,0268	0,0448*	0,0784***
		(0,0217)	(0,0242)	(0,0257)	(0,0274)
	spss4	0,0516***	0,0254	0,0503**	0,0459**
		(0,0190)	(0,0198)	(0,0217)	(0,0226)
	spss6	0,00234	–0,0538***	–0,0152	–0,0227
		(0,0209)	(0,0160)	(0,0209)	(0,0183)
	spss7	–0,00963	–0,137***	–0,0359	–0,0775***
		(0,0268)	(0,0198)	(0,0230)	(0,0201)
	spss8	–0,0371	–0,171***	–0,0801**	–0,145***
		(0,0394)	(0,0253)	(0,0335)	(0,0246)
	spss9	–0,157*	–0,306***	–0,123*	–0,222***
		(0,0947)	(0,0481)	(0,0704)	(0,0481)
	spss10	–0,0623	–0,276***	–0,0451	–0,212***
		(0,133)	(0,0692)	(0,0816)	(0,0720)
Country dummies	Country dummies – New Europe	Yes	No	Yes	No
	Country dummies – Old Europe	No	Yes	No	Yes

*statistically significant at 10 %
**statistically significant at 5 %
***statistically significant at 1 %

AGE AND PREFERENCES FOR MORE PROGRESSIVE TAXATION

Our results confirm predictions that older citizens will be more inclined towards progressive taxation. However, the comparison of estimated marginal effects between Old and New Europe does not suggest that this is more pronounced in post-transition economies. The average results obtained through the estimation conceal the heterogeneous dynamics within the countries. Figure 2 presents cohorts according to their age in the year 1990 and depicts changes in their attitudes towards progressive taxation between 2006 and 2016. Only in the case of Latvia, we can see that the cohorts that have lived longer under the socialist system are through time (as their demand for government services increases) voicing stronger preferences for more progressive taxation. Within Old Europe, France is an interesting case where older cohorts are less likely to be in favor of more progressive taxation and this dislike increases in the period after 2008 crisis.

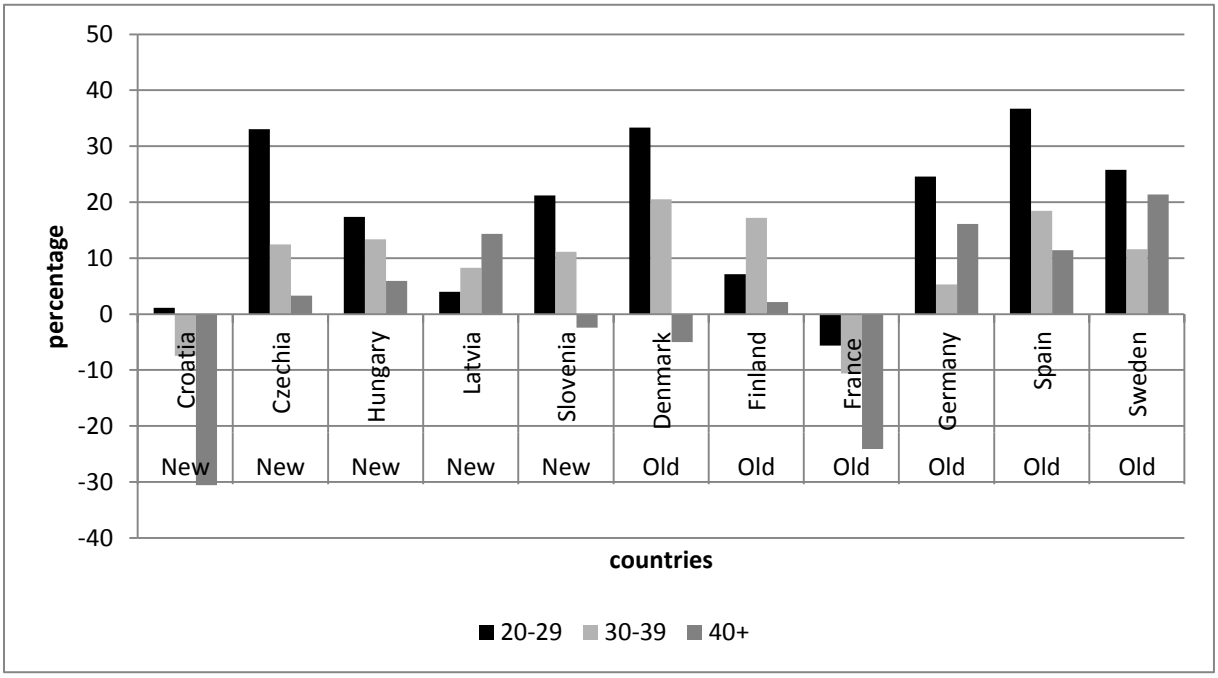

Figure 2. Changes in attitudes towards more progressive taxation between 2006 and 2016, according to the cohorts' age group in 1990 [35, 36].

RELATIONSHIP BETWEEN PERCEPTIONS OF CURRENT TAX LEVEL AND PREFERENCE FOR PROGRESSIVE TAXATION

Another important result that we have found across the country groups and analyzed periods is that those in favor of more progressive taxation are also more likely to consider that the existing tax burden is already high. This apparently illogical result is explained in the literature with the notion that while citizens might be in favor of redistribution, they are less likely to support the same views when confronted with the specific situation [46]. Since demand for government services is often greater than the willingness to pay for them [47] when individuals are confronted to prioritize between different government expenditures, research shows that they express high levels of support for the increase in expenditures on education [48]. In our case, it could be illustrated with the desire to cut government spending. In general, the desire to reduce government spending is higher in the analyzed New European economies than in Old European economies, with the exception of France (Figure 3). However, there is no correlation with the current perceived level of taxation or with the desire for more progressive taxation.

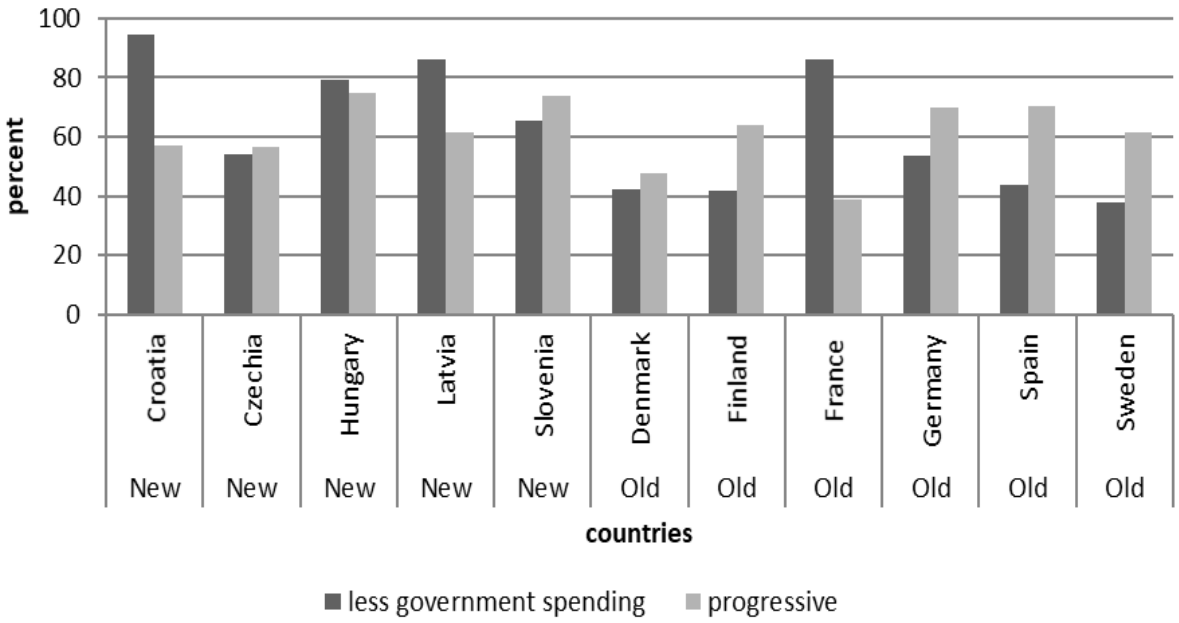

Figure 3. Share of respondents in favor of more progressive taxation and less government spending [35].

TRUST IN GOVERNMENT AND PREFERENCES FOR MORE PROGRESSIVE TAXATION

Another frequently discussed feature of post-transition societies is relatively high (perception of) corruption. In accordance with the assumptions, this factor is more important for people's attitudes towards more progressive taxation in post-transition economies than in Old European countries. Indeed, it becomes non-significant for Old member states in the period after the financial crisis. It is, however, not clear what are the mechanisms that link the perception of corruption to favoring more progressive taxation. It could be the case that due to high influence of the government in the society as well as political corruption, there is an expressed preference for the decrease of these aspects of government. This also puts in doubt the fairness of the existing redistributive system, since the desire for more progressive taxation is the result of both self-interest and fairness motives [49]. If citizens are more in favor of redistribution, but at the same time believe that the current system is not delivering due to corruption, the correlation of two variables might not capture the causation effect properly. Thus, to confirm such assumptions for this complex issue, a more detailed survey focused on the post-transition economies should be performed.

WORK STATUS AND PREFERENCES FOR MORE PROGRESSIVE TAXATION

Surprisingly, inability to earn for a living, as indicated by the respondent's unemployment status, was a significant predictor for more progressive taxation preferences only in the case of Old Member States prior to the 2008 crisis. The fact that it was not found important in other specifications is probably related to the fact that with the rise of unemployment as a consequence of the crisis, a certain proportion of the unemployed lost faith in the redistributive power of the government. Vanishing support of public workers for more progressive taxation in New Members after the crisis could also be attributed to the austerity measures many governments took, typical ones being decreasing (or freezing) the public sector wages and reducing or prohibiting new public sector employment.

EDUCATION AND POLITICAL ORIENTATION IN RELATION TO PREFERENCES FOR MORE PROGRESSIVE TAXATION

While in term of education there seems to be a similarity between Old and New Europe, there are no such similarities when it comes to political parties. The preferences in Old Europe are consistent with the expectations – left-oriented voters are more in favor of progressive taxation, while right-oriented voters oppose such intentions. However, the situation is not that simple in New Europe. Although beyond the scope of this specific article, the result is probably related to the fact that political parties in Eastern Europe have still not been associated with specific economic policies and measures, but the predominate political discussion still revolves around the communist legacy.

SELF-PERCEIVED SOCIAL STATUS AND PREFERENCES FOR PROGRESSIVE TAXATION

Finally, our results suggest that both within Old and within New Europe, those with higher self-perceived social status are usually against more taxation, while those with lower self-perceived social status are in favor of redistribution. Thus, certain social tensions exist in both groups of countries. Perhaps somewhat surprisingly, union membership is significantly associated with an inclination towards more progressive taxation in Old EU, but not in post-transition economies. This could be a direct consequence of the trade unions transformation through the transition process [50] from a virtually monopolistic role to the competition for the union membership.

According to results, it seems that differences between the Old and New Europe are rather small and that there are much more similarities than differences in factors predicting tax burden preferences. At one side, our results confirm the arguments that there is a convergence of tax burden preferences in Old and New Europe [51]. On the other side, our results also suggest that there are still important heterogeneities within Old and within New European member states.

DISCUSSION AND THE IMPLICATIONS OF THE RESULTS

Our research results contribute to the previous literature on tax preferences of European citizens. On the aggregate level, we have confirmed previous findings on the heterogeneity of the citizens' preferences for government redistributive policies [29]. Although some studies suggest that there are important factors leading to the special position of the post-transition countries [2-4], we were not able to detect any unambiguous pattern emerging in the more recent period. This prompted a hypothesis of preferences' convergence. Although there is still a possibility of harmonizing effects stemming from the European Union, we were not able to clearly document the convergence process. We suspect that the period under analysis in the present paper is too short for convergence factors to have a dominant effect on the underlying processes.

We have explored a variety of factors contributing to the personal preferences for the redistributive role of the government. Following previous literature [12], our results confirm that personal characteristics, such as age, are important predictors of tax preferences. However, while studies that rely on earlier datasets [1] suggest that the longer a cohort lived under communism, the more it sees redistribution as an important task of the government, our results do not point in that direction. We believe that since our sample is more recent, the effects of living under a socialist regime have been worn-out.

Another important socioeconomic characteristic is the educational attainment of the respondent. The literature suggests that higher the level of education is, the more person is informed about the current tax system [37] and is more supportive of the existing redistribution

mechanisms [39]. On the other hand, higher education is frequently associated with higher income. Persons in the higher-income group favor taxes beneficial for their income group [43]. Based on these findings, we would expect that persons with the education level less than upper secondary (a reference group in our estimation) are more in favor of progressive taxation, while those with education higher than upper secondary would be more against. Our results are in line with the expectations, in particular in the case of older European Union members where the estimates are consistently significant in the period before and after 2008 crisis. For New member states, the pattern disappears after the crisis. We suspect that the labor market distortions as a consequence of crisis were more severe in New member states.

This latter finding is somewhat supported by our results related to the work status of the respondents. For New member states, we did not find any significance of unemployment or union membership. Even though the literature suggests that unemployed persons might be more in favor of progressive taxation [44] we suggest that in case of post-transition societies the restructuring process created large pools of discouraged workers. In these circumstances, the role of the government becomes illusive, because the effects of redistribution policies are not directly observed. Since unemployed persons are not actually receiving income, they might favor certain policies in general, but do not experience the effects of the policy measures directly.

This is somewhat related to the self-perceived social status, where the literature suggests that the income group a person is self-identified with would be the target group for evaluating government policy actions [41, 42] In this respect, our results are in line with the literature – those with lower income are more in favor of more progressive taxation, while those with higher income are against more progressive taxation because they expect the effect of the redistribution will be at their cost. Although general patterns are the same in both groups of countries, the significance is generally more apparent in Old EU member states. This would imply that this pattern is fully developed in market economies, but in post-transition economies, a different view of the redistributive role of the government might still linger on. Different factors can affect such result – from the specificities of the wage bargaining system to the amount of public services provided by the government sector. This issue deserves deeper inspection on a country level and cannot be assessed jointly for a group of countries.

A similar argument can be expressed for the political orientation of the individuals. Literature generally claims that left-wing oriented individuals are, in general, supporters for the stronger role of the government [34]. Our findings support the literature in the case of Old EU member states. However, in the case of post-transition countries, this pattern cannot be observed. We speculate that this is because the political spectrum, in general, is not focused on the economic issues or the role of government. For example, contrary to expectations, in Croatia, it is the right-wing oriented government that is associated with increased pressure to government budget related to the specific demands from the interest groupings such as war veterans.

Presented results can be associated with several contributions to the literature. First, we have clearly documented that heterogeneities between the countries regarding the redistributive role of the government persist even in the period after the global financial crisis [5]. Second, although post-transition countries differ between themselves, they in many aspects resemble their more market-oriented EU members. Specifically, it seems that taxation policy in each country as well as other aspects of the functioning of the economy and probably government sector, in particular, are more relevant than personal characteristics for the formation of individuals' preferences for more progressive taxation.

In general, we have documented that the factors contributing to the preference for a more redistributive role of the government are similar in post-transition and market economies. It is interesting to note that across all the country groupings and all the periods, we have confirmed

that even though individuals believe that general tax level is high [39, 52] they are still supporting more progressive taxation. We suggest that this is related to the perceived quality of services provided by the government sector. It could be the case that the citizens would not oppose higher taxation, had they been convinced that the government can organize fair redistribution.

Important limitations of the results presented in this article are related to the data source used for the empirical analysis. Although comparative datasets suitable for exploring different aspects of preferences for redistribution systems are scarce, we do believe that ISSP provides a good basis for analyzing this set of research questions. Even though it can be argued that preferences are not easily changed and that factors contributing to preference formation could be more or less stable, we still strongly believe that there are some global incidences capable to cause significant disturbances in preferences for the redistributive role of government. One example has been implicitly covered by our analysis – the global financial crisis. However, even more distortive effect is expected in the aftermath of the global pandemic crisis. Thus, there is a need for a more frequent collection of data to be able to promptly capture the effects.

Another concern is directly related to our results, but also to findings from previous research. Specifically, we have confirmed important heterogeneities between the countries. Still, our analysis does not include all European Union members. In order to explore the possibilities of convergence within the European Union, it would be preferable to obtain a dataset covering all the countries.

Regardless of these constraints, we believe that our results can be associated with some practical implications. First, we believe that this is an important research question in the future discussions on the possibilities of a fiscal union within Europe. However, we acknowledge the low probability that the fiscal union issue will be determined in a nearby future. The issue of disharmonizing preferences for different types of taxations will probably arise sooner in the context of sharing the economic consequences of the global pandemic. It has been seen that such questions have been raised in the context of the issuance of COVID-19 related EU bonds. In order to provide adequate policy measures, government officials must be presented with relevant research results based on the most recent dataset covering all EU countries.

CONCLUSIONS

The aim of the article is to analyze the perceptions of the EU citizens on the existing tax burden and preferences for more progressive taxation. In acknowledgement of the specific role that history, culture, political ideology and a perception of fairness have in determining personal attitudes towards inequalities, we separately analyze New and Old Member States. The specific contribution of the article lies in the documentation of the evolution of preferences for more progressive taxation in post-transition economies. Another contribution is related to the comparative inspection of the factors contributing to preferences in post-transition European economies relative to the established market European economies. The time dimension of the data, furthermore, enables discussion of potential convergence of preferences between Old and New European member states.

Although the period of ten years is relatively short when analyzing the formation of preferences, the specific period analyzed in this article entails a disruptive episode connected to the effects of the global financial crisis. The crisis itself was associated with austerity measures proposed by many governments. Yet, we did not find any systematic differences in the preferences or their factors, in the period before and after the crisis.

Contrary to some previous findings, we do not find the effect of the socialist legacy system in New Europe, in a way that older cohorts experiencing life in a previously presumably more generous and egalitarian system would be disproportionally more in favor of progressive

taxation than the same age cohorts in Old Europe [40]. We also do not find that political orientation in New Europe supports the traditional left-orientation-more government pattern that can be found in the data for Old Europe. We also do not find the important contribution of the trade unions membership for progressive taxation and the higher redistributive role of the government in the New EU. Thus, although the overall patterns of tax preferences are predominately under the influence of a specific country redistributive policies and the scope of services the government provides, the analysis of factors behind aggregate results provided interesting insights into specific features of the post-transition societies. Our findings do corroborate the notion that there is heterogeneity between the countries [5], but there are no specific traits of post-transition societies in that respect.

The issue of rising income inequalities and the appropriate role of the government featured many recent public debates on the global level. For the European Union, the importance of these topics is additionally related to the question of potential future harmonization of fiscal policies. Results presented in this study emphasize the heterogeneity of European citizens when it comes to their preferences for more progressive taxation. It has been clearly documented that almost every country has its specificities. Thus, the path towards the common fiscal policies in a unified Europe is very likely to be a long and winding one.

Limitations of the findings are related to the dataset used. While it is the most recent ISSP study on the role of government, at the time of performing the analysis it has already been relatively outdated. Certainly, preferences for the role of government have been dramatically changed during the COVID-19 crisis in all economies. The full extent of this change is yet to be revealed.

The analysis in this article provides a glimpse into differences for tax preferences of European citizens. Certainly, additional research efforts are required. In order to provide specific policy recommendations on the European level, the comparable survey should be carried in all member states. While the desire to cut government spending is higher in the analyzed New European economies, it remains open how to incorporate the detrimental influence of corruption on the citizens' desire for more progressive taxation. This issue is left for future research endeavors.

APPENDIX

Table 2. Correlation matrix (continued on pp.344-350).

Old European member states, year 2006	Age 18_25	Age 26_35	Age 46_55	Age 56_65	age66	male	public_ work	unemploy	Current _union	political_ corruption	obey_law	tax_level	noeducation	primary	lower_sec
age18_25	1,000	-0,132	-0,152	-0,147	-0,146	-0,014	-0,073	0,024	-0,093	0,019	-0,049	0,018	0,024	-0,096	0,014
age26_35	-0,132	1,000	-0,214	-0,207	-0,205	-0,007	-0,032	0,049	0,000	0,043	-0,009	0,043	-0,073	-0,146	0,001
age46_55	-0,152	-0,214	1,000	-0,238	-0,236	-0,018	0,070	0,020	0,112	-0,004	-0,003	-0,025	-0,062	-0,022	0,044
age56_65	-0,147	-0,207	-0,238	1,000	-0,228	0,000	0,058	-0,012	0,063	-0,036	-0,014	-0,033	-0,005	0,098	-0,024
age66	-0,146	-0,205	-0,236	-0,228	1,000	0,053	-0,044	-0,106	-0,170	-0,018	0,047	-0,008	0,187	0,273	-0,108
male	-0,014	-0,007	-0,018	0,000	0,053	1,000	-0,119	-0,012	-0,021	0,019	-0,031	-0,007	0,023	0,014	-0,001
public_work	-0,073	-0,032	0,070	0,058	-0,044	-0,119	1,000	-0,061	0,260	-0,104	-0,057	-0,052	-0,077	-0,136	-0,060
unemploy	0,024	0,049	0,020	-0,012	-0,106	-0,012	-0,061	1,000	-0,045	0,040	0,002	-0,020	-0,005	0,012	0,075
current_union	-0,093	0,000	0,112	0,063	-0,170	-0,021	0,260	-0,045	1,000	-0,217	-0,022	-0,029	-0,104	-0,127	-0,062
political_corruption	0,019	0,043	-0,004	-0,036	-0,018	0,019	-0,104	0,040	-0,217	1,000	0,022	0,046	0,038	0,042	0,086
obey_law	-0,049	-0,009	-0,003	-0,014	0,047	-0,031	-0,057	0,002	-0,022	0,022	1,000	0,034	0,058	0,033	-0,014
tax_level	0,018	0,043	-0,025	-0,033	-0,008	-0,007	-0,052	-0,020	-0,029	0,046	0,034	1,000	0,046	-0,038	0,009
noeducation	0,024	-0,073	-0,062	-0,005	0,187	0,023	-0,077	-0,005	-0,104	0,038	0,058	0,046	1,000	-0,099	-0,116
primary	-0,096	-0,146	-0,022	0,098	0,273	0,014	-0,136	0,012	-0,127	0,042	0,033	-0,038	-0,099	1,000	-0,292
lower_sec	0,014	0,001	0,044	-0,024	-0,108	-0,001	-0,060	0,075	-0,062	0,086	-0,014	0,009	-0,116	-0,292	1,000
post_sec	-0,024	0,068	0,017	-0,012	-0,095	-0,061	0,132	-0,027	0,169	-0,101	0,000	0,000	-0,085	-0,214	-0,250
tertiary	-0,070	0,104	0,020	-0,022	-0,088	0,013	0,161	-0,041	0,050	-0,065	-0,071	-0,008	-0,089	-0,223	-0,262
far_left	0,007	-0,032	0,062	0,001	-0,028	-0,002	0,066	0,023	0,083	0,003	-0,029	-0,106	-0,028	-0,033	-0,015
left	-0,013	-0,029	0,030	0,022	-0,010	-0,010	0,063	-0,029	0,040	0,004	-0,010	-0,103	-0,016	0,017	0,014
right	-0,033	-0,003	-0,037	0,024	0,042	0,048	-0,029	-0,050	-0,008	-0,094	0,013	0,110	-0,060	-0,042	-0,047
far_right	0,009	-0,022	-0,013	0,002	0,037	0,020	0,008	-0,008	0,035	0,001	0,020	0,047	0,001	-0,006	-0,026
spss1	-0,017	-0,026	0,009	0,029	0,011	0,002	-0,012	0,055	-0,033	0,047	0,007	0,002	0,047	0,039	-0,009
spss2	-0,003	-0,012	0,001	0,016	0,021	-0,009	-0,001	0,070	-0,020	0,045	-0,025	-0,023	0,027	0,097	0,001
spss3	0,003	-0,023	0,006	-0,003	0,028	-0,024	-0,029	0,056	-0,060	0,066	-0,019	-0,012	0,061	0,080	0,039
spss4	-0,017	-0,008	0,004	-0,015	0,025	-0,006	-0,041	0,029	-0,057	0,066	0,006	-0,009	0,078	0,065	0,057
spss6	0,004	0,016	-0,002	-0,009	-0,014	-0,005	0,041	-0,025	0,031	-0,052	0,003	-0,003	-0,069	-0,044	0,015
spss7	-0,002	0,027	-0,004	-0,009	-0,046	0,031	0,055	-0,057	0,080	-0,082	-0,036	0,003	-0,063	-0,098	-0,089
spss8	0,002	-0,006	0,007	0,016	-0,024	0,019	0,050	-0,050	0,096	-0,097	-0,027	0,044	-0,036	-0,090	-0,080
spss9	-0,021	-0,016	0,018	0,003	-0,010	0,026	0,003	-0,003	0,034	-0,028	-0,010	0,041	-0,018	-0,042	-0,042
spss10	0,002	-0,022	0,025	-0,007	-0,007	0,019	0,017	-0,011	0,044	-0,024	0,003	0,035	0,000	0,009	-0,026

Table 2. Correlation matrix (continuation from p.343, continued on pp.345-350).

Old European member states, year 2006	post_sec	tertiary	far_left	left	right	far_right	spss1	spss2	spss3	spss4	spss6	spss7	spss8	spss9	spss10
age18_25	-0,024	-0,070	0,007	-0,013	-0,033	0,009	-0,017	-0,003	0,003	-0,017	0,004	-0,002	0,002	-0,021	0,002
age26_35	0,068	0,104	-0,032	-0,029	-0,003	-0,022	-0,026	-0,012	-0,023	-0,008	0,016	0,027	-0,006	-0,016	-0,022
age46_55	0,017	0,020	0,062	0,030	-0,037	-0,013	0,009	0,001	0,006	0,004	-0,002	-0,004	0,007	0,018	0,025
age56_65	-0,012	-0,022	0,001	0,022	0,024	0,002	0,029	0,016	-0,003	-0,015	-0,009	-0,009	0,016	0,003	-0,007
age66	-0,095	-0,088	-0,028	-0,010	0,042	0,037	0,011	0,021	0,028	0,025	-0,014	-0,046	-0,024	-0,010	-0,007
male	-0,061	0,013	-0,002	-0,010	0,048	0,020	0,002	-0,009	-0,024	-0,006	-0,005	0,031	0,019	0,026	0,019
public_work	0,132	0,161	0,066	0,063	-0,029	0,008	-0,012	-0,001	-0,029	-0,041	0,041	0,055	0,050	0,003	0,017
unemploy	-0,027	-0,041	0,023	-0,029	-0,050	-0,008	0,055	0,070	0,056	0,029	-0,025	-0,057	-0,050	-0,003	-0,011
current_union	0,169	0,050	0,083	0,040	-0,008	0,035	-0,033	-0,020	-0,060	-0,057	0,031	0,080	0,096	0,034	0,044
political_corruption	-0,101	-0,065	0,003	0,004	-0,094	0,001	0,047	0,045	0,066	0,066	-0,052	-0,082	-0,097	-0,028	-0,024
obey_law	0,000	-0,071	-0,029	-0,010	0,013	0,020	0,007	-0,025	-0,019	0,006	0,003	-0,036	-0,027	-0,010	0,003
tax_level	0,000	-0,008	-0,106	-0,103	0,110	0,047	0,002	-0,023	-0,012	-0,009	-0,003	0,003	0,044	0,041	0,035
noeducation	-0,085	-0,089	-0,028	-0,016	-0,060	0,001	0,047	0,027	0,061	0,078	-0,069	-0,063	-0,036	-0,018	0,000
primary	-0,214	-0,223	-0,033	0,017	-0,042	-0,006	0,039	0,097	0,080	0,065	-0,044	-0,098	-0,090	-0,042	0,009
lower_sec	-0,250	-0,262	-0,015	0,014	-0,047	-0,026	-0,009	0,001	0,039	0,057	0,015	-0,089	-0,080	-0,042	-0,026
post_sec	1,000	-0,192	0,043	-0,042	0,067	0,017	-0,020	-0,035	-0,053	-0,037	0,032	0,075	0,068	0,011	-0,009
tertiary	-0,192	1,000	0,014	0,000	0,036	-0,040	-0,031	-0,049	-0,089	-0,099	0,014	0,146	0,166	0,098	0,037
far_left	0,043	0,014	1,000	-0,173	-0,133	-0,043	0,009	0,017	0,017	0,002	-0,016	0,019	-0,010	-0,019	-0,010
left	-0,042	0,000	-0,173	1,000	-0,316	-0,102	0,004	-0,001	0,007	0,044	0,028	-0,040	-0,043	-0,024	-0,018
right	0,067	0,036	-0,133	-0,316	1,000	-0,079	-0,046	-0,055	-0,066	-0,078	0,027	0,098	0,123	0,065	0,025
far_right	0,017	-0,040	-0,043	-0,102	-0,079	1,000	-0,003	0,001	0,020	-0,021	0,010	0,012	-0,018	0,022	0,007
spss1	-0,020	-0,031	0,009	0,004	-0,046	-0,003	1,000	-0,022	-0,036	-0,047	-0,077	-0,053	-0,037	-0,015	-0,010
spss2	-0,035	-0,049	0,017	-0,001	-0,055	0,001	-0,022	1,000	-0,047	-0,061	-0,100	-0,069	-0,048	-0,020	-0,014
spss3	-0,053	-0,089	0,017	0,007	-0,066	0,020	-0,036	-0,047	1,000	-0,099	-0,161	-0,112	-0,077	-0,032	-0,022
spss4	-0,037	-0,099	0,002	0,044	-0,078	-0,021	-0,047	-0,061	-0,099	1,000	-0,212	-0,147	-0,101	-0,042	-0,029
spss6	0,032	0,014	-0,016	0,028	0,027	0,010	-0,077	-0,100	-0,161	-0,212	1,000	-0,240	-0,165	-0,068	-0,047
spss7	0,075	0,146	0,019	-0,040	0,098	0,012	-0,053	-0,069	-0,112	-0,147	-0,240	1,000	-0,115	-0,047	-0,032
spss8	0,068	0,166	-0,010	-0,043	0,123	-0,018	-0,037	-0,048	-0,077	-0,101	-0,165	-0,115	1,000	-0,033	-0,022
spss9	0,011	0,098	-0,019	-0,024	0,065	0,022	-0,015	-0,020	-0,032	-0,042	-0,068	-0,047	-0,033	1,000	-0,009
spss10	-0,009	0,037	-0,010	-0,018	0,025	0,007	-0,010	-0,014	-0,022	-0,029	-0,047	-0,032	-0,022	-0,009	1,000

Table 2. Correlation matrix (continuation from pp.343-344, continued on pp.346-350).

New European member states, year 2006	Age 18_25	Age 26_35	Age 46_55	Age 56_65	Age 66	male	public_ work	unemploy	current_ union	political_ corruption	obey_ law	tax_level	noeducation	primary	lower_sec
age18_25	1,000	-0,182	-0,195	-0,182	-0,189	0,068	-0,265	0,018	-0,097	-0,017	-0,103	0,074	-0,064	-0,028	-0,080
age26_35	-0,182	1,000	-0,208	-0,194	-0,202	0,005	-0,103	0,036	0,009	0,011	-0,080	0,065	-0,066	-0,105	0,012
age46_55	-0,195	-0,208	1,000	-0,208	-0,217	-0,001	-0,014	0,069	0,080	0,011	0,015	-0,013	-0,035	0,004	0,055
age56_65	-0,182	-0,194	-0,208	1,000	-0,202	0,000	0,128	-0,033	-0,015	0,009	0,043	-0,039	0,014	0,031	0,027
age66	-0,189	-0,202	-0,217	-0,202	1,000	-0,063	0,273	-0,117	-0,105	-0,038	0,144	-0,080	0,202	0,184	-0,022
male	0,068	0,005	-0,001	0,000	-0,063	1,000	-0,120	0,008	-0,004	0,049	-0,012	-0,034	-0,032	-0,081	0,122
public_work	-0,265	-0,103	-0,014	0,128	0,273	-0,120	1,000	-0,058	0,217	-0,025	0,095	-0,065	0,043	0,010	-0,067
unemploy	0,018	0,036	0,069	-0,033	-0,117	0,008	-0,058	1,000	-0,071	0,051	-0,041	0,021	0,018	0,065	0,013
current_union	-0,097	0,009	0,080	-0,015	-0,105	-0,004	0,217	-0,071	1,000	0,027	-0,018	-0,006	-0,032	-0,049	-0,030
political_corruption	-0,017	0,011	0,011	0,009	-0,038	0,049	-0,025	0,051	0,027	1,000	-0,041	-0,046	-0,006	0,024	-0,019
obey_law	-0,103	-0,080	0,015	0,043	0,144	-0,012	0,095	-0,041	-0,018	-0,041	1,000	-0,064	0,025	0,060	0,050
tax_level	0,074	0,065	-0,013	-0,039	-0,080	-0,034	-0,065	0,021	-0,006	-0,046	-0,064	1,000	-0,026	-0,014	-0,066
noeducation	-0,064	-0,066	-0,035	0,014	0,202	-0,032	0,043	0,018	-0,032	-0,006	0,025	-0,026	1,000	-0,083	-0,091
primary	-0,028	-0,105	0,004	0,031	0,184	-0,081	0,010	0,065	-0,049	0,024	0,060	-0,014	-0,083	1,000	-0,253
lower_sec	-0,080	0,012	0,055	0,027	-0,022	0,122	-0,067	0,013	-0,030	-0,019	0,050	-0,066	-0,091	-0,253	1,000
post_sec	-0,028	0,043	-0,011	0,003	-0,006	-0,014	0,081	0,000	0,052	0,022	0,015	-0,049	-0,049	-0,136	-0,149
tertiary	-0,091	0,090	0,004	0,001	-0,052	-0,011	0,126	-0,027	0,087	-0,042	-0,020	0,069	-0,060	-0,166	-0,182
far_left	-0,035	-0,034	-0,022	0,054	0,077	0,029	0,062	-0,015	0,006	-0,002	0,040	-0,046	-0,028	-0,019	0,068
left	-0,074	-0,038	0,039	0,053	0,044	0,006	0,085	0,000	0,013	-0,021	0,093	-0,043	-0,027	-0,012	0,036
right	-0,015	0,022	-0,003	-0,020	0,009	0,043	-0,009	0,000	-0,004	0,001	0,011	0,010	0,005	0,018	0,019
far_right	-0,007	-0,002	-0,008	0,003	0,039	0,009	0,021	-0,016	-0,006	-0,021	-0,017	-0,012	0,002	0,033	0,018
spss1	-0,044	-0,035	0,004	0,015	0,061	-0,043	-0,011	0,059	-0,038	0,058	0,001	-0,063	0,022	0,118	-0,009
spss2	-0,044	-0,056	-0,005	0,026	0,072	-0,003	0,009	0,066	-0,060	0,016	0,018	0,014	0,104	0,082	0,011
spss3	-0,058	-0,035	-0,001	0,036	0,087	-0,024	0,028	0,026	-0,021	0,036	0,067	-0,013	0,049	0,078	0,102
spss4	-0,021	-0,044	0,030	0,013	0,045	-0,019	0,023	-0,017	-0,026	-0,005	0,049	-0,034	-0,005	0,016	0,052
spss6	0,029	0,053	0,003	-0,032	-0,087	0,036	0,014	-0,031	0,048	-0,014	-0,023	0,006	-0,056	-0,086	-0,062
spss7	0,085	0,058	-0,015	-0,037	-0,078	0,044	-0,058	-0,032	0,011	-0,007	-0,009	-0,002	-0,045	-0,076	-0,081
spss8	0,100	0,039	-0,022	-0,044	-0,046	0,029	-0,028	-0,020	0,010	-0,026	-0,027	0,047	-0,026	-0,030	-0,036
spss9	0,004	0,007	-0,011	0,000	-0,024	0,014	-0,004	-0,011	0,031	-0,031	-0,037	0,028	-0,014	-0,039	-0,024
spss10	0,009	0,016	-0,017	-0,004	-0,006	0,000	-0,009	0,016	-0,008	0,015	-0,013	0,016	0,013	-0,008	-0,012

Table 2. Correlation matrix (continuation from pp.343-345, continued on pp.347-350).

New European member states, year 2006	post_sec	tertiary	far_left	left	right	far_right	spss1	spss2	spss3	spss4	spss6	spss7	spss8	spss9	spss10
age18_25	-0,028	-0,091	-0,035	-0,074	-0,015	-0,007	-0,044	-0,044	-0,058	-0,021	0,029	0,085	0,100	0,004	0,009
age26_35	0,043	0,090	-0,034	-0,038	0,022	-0,002	-0,035	-0,056	-0,035	-0,044	0,053	0,058	0,039	0,007	0,016
age46_55	-0,011	0,004	-0,022	0,039	-0,003	-0,008	0,004	-0,005	-0,001	0,030	0,003	-0,015	-0,022	-0,011	-0,017
age56_65	0,003	0,001	0,054	0,053	-0,020	0,003	0,015	0,026	0,036	0,013	-0,032	-0,037	-0,044	0,000	-0,004
age66	-0,006	-0,052	0,077	0,044	0,009	0,039	0,061	0,072	0,087	0,045	-0,087	-0,078	-0,046	-0,024	-0,006
male	-0,014	-0,011	0,029	0,006	0,043	0,009	-0,043	-0,003	-0,024	-0,019	0,036	0,044	0,029	0,014	0,000
public_work	0,081	0,126	0,062	0,085	-0,009	0,021	-0,011	0,009	0,028	0,023	0,014	-0,058	-0,028	-0,004	-0,009
unemploy	0,000	-0,027	-0,015	0,000	0,000	-0,016	0,059	0,066	0,026	-0,017	-0,031	-0,032	-0,020	-0,011	0,016
current_union	0,052	0,087	0,006	0,013	-0,004	-0,006	-0,038	-0,060	-0,021	-0,026	0,048	0,011	0,010	0,031	-0,008
political_corruption	0,022	-0,042	-0,002	-0,021	0,001	-0,021	0,058	0,016	0,036	-0,005	-0,014	-0,007	-0,026	-0,031	0,015
obey_law	0,015	-0,020	0,040	0,093	0,011	-0,017	0,001	0,018	0,067	0,049	-0,023	-0,009	-0,027	-0,037	-0,013
tax_level	-0,049	0,069	-0,046	-0,043	0,010	-0,012	-0,063	0,014	-0,013	-0,034	0,006	-0,002	0,047	0,028	0,016
noeducation	-0,049	-0,060	-0,028	-0,027	0,005	0,002	0,022	0,104	0,049	-0,005	-0,056	-0,045	-0,026	-0,014	0,013
primary	-0,136	-0,166	-0,019	-0,012	0,018	0,033	0,118	0,082	0,078	0,016	-0,086	-0,076	-0,030	-0,039	-0,008
lower_sec	-0,149	-0,182	0,068	0,036	0,019	0,018	-0,009	0,011	0,102	0,052	-0,062	-0,081	-0,036	-0,024	-0,012
post_sec	1,000	-0,098	-0,010	0,081	0,013	-0,012	-0,050	-0,044	-0,031	-0,021	0,046	0,039	0,010	0,007	-0,016
tertiary	-0,098	1,000	0,021	0,020	0,003	-0,017	-0,052	-0,071	-0,095	-0,044	0,075	0,131	0,123	0,092	0,029
far_left	-0,010	0,021	1,000	-0,085	-0,095	-0,024	0,021	0,009	0,031	0,018	-0,034	0,005	-0,007	-0,016	0,008
left	0,081	0,020	-0,085	1,000	-0,201	-0,050	-0,027	-0,008	0,031	0,047	0,009	-0,021	-0,021	0,009	-0,003
right	0,013	0,003	-0,095	-0,201	1,000	-0,056	-0,022	0,003	-0,008	-0,012	0,036	0,029	0,018	0,009	-0,007
far_right	-0,012	-0,017	-0,024	-0,050	-0,056	1,000	-0,013	0,014	-0,033	-0,003	-0,017	-0,013	-0,002	0,013	0,026
spss1	-0,050	-0,052	0,021	-0,027	-0,022	-0,013	1,000	-0,045	-0,072	-0,086	-0,079	-0,056	-0,036	-0,016	-0,011
spss2	-0,044	-0,071	0,009	-0,008	0,003	0,014	-0,045	1,000	-0,088	-0,105	-0,096	-0,067	-0,044	-0,019	-0,013
spss3	-0,031	-0,095	0,031	0,031	-0,008	-0,033	-0,072	-0,088	1,000	-0,167	-0,153	-0,108	-0,070	-0,031	-0,021
spss4	-0,021	-0,044	0,018	0,047	-0,012	-0,003	-0,086	-0,105	-0,167	1,000	-0,183	-0,129	-0,084	-0,037	-0,025
spss6	0,046	0,075	-0,034	0,009	0,036	-0,017	-0,079	-0,096	-0,153	-0,183	1,000	-0,118	-0,077	-0,034	-0,023
spss7	0,039	0,131	0,005	-0,021	0,029	-0,013	-0,056	-0,067	-0,108	-0,129	-0,118	1,000	-0,054	-0,024	-0,016
spss8	0,010	0,123	-0,007	-0,021	0,018	-0,002	-0,036	-0,044	-0,070	-0,084	-0,077	-0,054	1,000	-0,015	-0,011
spss9	0,007	0,092	-0,016	0,009	0,009	0,013	-0,016	-0,019	-0,031	-0,037	-0,034	-0,024	-0,015	1,000	-0,005
spss10	-0,016	0,029	0,008	-0,003	-0,007	0,026	-0,011	-0,013	-0,021	-0,025	-0,023	-0,016	-0,011	-0,005	1,000

Table 2. Correlation matrix (continuation from pp.343-346, continued on pp.348-350).

Old European member states, year 2016	Age 18_25	Age 26_35	Age 46_55	Age 56_65	Age 66	male	public_ work	unemploy	current_ union	political_ corruption	obey_law	tax_ level	noeducation	primary	lower_sec
age18_25	1,000	-0,117	-0,145	-0,151	-0,162	0,015	-0,086	0,031	-0,050	-0,009	-0,040	-0,009	-0,041	-0,074	-0,015
age26_35	-0,117	1,000	-0,191	-0,199	-0,214	-0,019	-0,031	0,037	-0,001	0,028	-0,026	0,002	-0,043	-0,089	-0,069
age46_55	-0,145	-0,191	1,000	-0,245	-0,264	0,009	0,015	0,055	0,102	0,008	0,030	-0,009	-0,038	-0,081	0,063
age56_65	-0,151	-0,199	-0,245	1,000	-0,275	-0,011	0,047	-0,007	0,056	-0,038	0,007	0,013	-0,007	0,050	0,027
age66	-0,162	-0,214	-0,264	-0,275	1,000	0,032	0,026	-0,138	-0,158	-0,026	-0,017	0,009	0,147	0,231	-0,004
male	0,015	-0,019	0,009	-0,011	0,032	1,000	-0,140	-0,022	0,010	-0,013	-0,034	-0,006	-0,002	-0,002	0,025
public_work	-0,086	-0,031	0,015	0,047	0,026	-0,140	1,000	-0,078	0,201	-0,151	-0,013	0,018	-0,075	-0,086	-0,063
unemploy	0,031	0,037	0,055	-0,007	-0,138	-0,022	-0,078	1,000	-0,085	0,127	0,053	0,072	0,009	0,008	0,116
current_union	-0,050	-0,001	0,102	0,056	-0,158	0,010	0,201	-0,085	1,000	-0,243	0,008	0,015	-0,087	-0,105	-0,112
political_corruption	-0,009	0,028	0,008	-0,038	-0,026	-0,013	-0,151	0,127	-0,243	1,000	0,077	0,126	0,134	0,145	0,133
obey_law	-0,040	-0,026	0,030	0,007	-0,017	-0,034	-0,013	0,053	0,008	0,077	1,000	-0,016	0,059	0,055	0,020
tax_level	-0,009	0,002	-0,009	0,013	0,009	-0,006	0,018	0,072	0,015	0,126	-0,016	1,000	0,013	0,016	-0,001
noeducation	-0,041	-0,043	-0,038	-0,007	0,147	-0,002	-0,075	0,009	-0,087	0,134	0,059	0,013	1,000	-0,041	-0,068
primary	-0,074	-0,089	-0,081	0,050	0,231	-0,002	-0,086	0,008	-0,105	0,145	0,055	0,016	-0,041	1,000	-0,126
lower_sec	-0,015	-0,069	0,063	0,027	-0,004	0,025	-0,063	0,116	-0,112	0,133	0,020	-0,001	-0,068	-0,126	1,000
post_sec	-0,044	-0,017	0,056	0,027	-0,034	-0,013	-0,051	0,004	0,021	-0,070	0,033	0,023	-0,073	-0,136	-0,224
tertiary	-0,084	0,138	-0,007	-0,050	-0,084	-0,024	0,220	-0,083	0,159	-0,169	-0,053	-0,027	-0,117	-0,218	-0,360
far_left	0,016	0,055	0,000	-0,005	-0,058	0,014	0,051	0,039	0,038	0,086	-0,043	0,156	-0,019	-0,026	0,008
left	-0,081	-0,051	-0,002	0,055	0,068	-0,040	0,094	-0,036	0,042	-0,068	-0,018	0,081	0,014	0,027	0,004
right	-0,055	-0,060	-0,001	0,011	0,095	0,038	-0,049	-0,079	-0,034	-0,074	0,024	-0,140	-0,005	-0,020	-0,039
far_right	-0,007	-0,010	0,017	0,001	0,020	0,055	0,007	-0,015	0,082	-0,034	-0,009	-0,010	0,002	0,000	0,046
spss1	-0,009	-0,006	0,003	0,010	-0,004	-0,004	-0,016	0,078	-0,053	0,062	-0,003	-0,016	0,085	0,037	0,058
spss2	0,007	0,006	0,007	-0,018	-0,009	0,004	-0,016	0,126	-0,033	0,081	0,002	0,019	0,054	0,057	0,039
spss3	-0,004	-0,016	0,028	-0,001	-0,011	-0,012	-0,050	0,076	-0,055	0,086	-0,014	0,033	0,050	0,065	0,068
spss4	-0,003	0,011	0,019	-0,016	-0,017	-0,003	-0,047	0,074	-0,034	0,122	0,003	0,041	0,044	0,062	0,056
spss6	0,000	-0,016	-0,022	0,010	0,014	-0,013	0,012	-0,055	0,045	-0,078	-0,013	0,021	-0,054	-0,055	-0,043
spss7	-0,003	0,026	0,010	-0,001	-0,036	0,011	0,060	-0,078	0,073	-0,113	-0,028	-0,050	-0,061	-0,087	-0,097
spss8	-0,015	0,020	0,000	0,002	-0,001	0,035	0,061	-0,065	0,028	-0,144	0,015	-0,066	-0,045	-0,072	-0,112
spss9	0,019	-0,019	-0,002	0,009	-0,015	0,040	0,029	-0,032	0,032	-0,073	0,003	-0,057	-0,021	-0,031	-0,046
spss10	0,007	-0,008	0,000	-0,003	0,014	0,020	-0,008	-0,017	-0,008	0,008	-0,004	-0,056	-0,014	-0,019	-0,013

Table 2. Correlation matrix (continuation from pp.343-347, continued on pp.349-350).

Old European member states, year 2016	post_sec	tertiary	far_left	left	right	far_right	spss1	spss2	spss3	spss4	spss6	spss7	spss8	spss9	spss10
age18_25	-0,044	-0,084	0,016	-0,081	-0,055	-0,007	-0,009	0,007	-0,004	-0,003	0,000	-0,003	-0,015	0,019	0,007
age26_35	-0,017	0,138	0,055	-0,051	-0,060	-0,010	-0,006	0,006	-0,016	0,011	-0,016	0,026	0,020	-0,019	-0,008
age46_55	0,056	-0,007	0,000	-0,002	-0,001	0,017	0,003	0,007	0,028	0,019	-0,022	0,010	0,000	-0,002	0,000
age56_65	0,027	-0,050	-0,005	0,055	0,011	0,001	0,010	-0,018	-0,001	-0,016	0,010	-0,001	0,002	0,009	-0,003
age66	-0,034	-0,084	-0,058	0,068	0,095	0,020	-0,004	-0,009	-0,011	-0,017	0,014	-0,036	-0,001	-0,015	0,014
male	-0,013	-0,024	0,014	-0,040	0,038	0,055	-0,004	0,004	-0,012	-0,003	-0,013	0,011	0,035	0,040	0,020
public_work	-0,051	0,220	0,051	0,094	-0,049	0,007	-0,016	-0,016	-0,050	-0,047	0,012	0,060	0,061	0,029	-0,008
unemploy	0,004	-0,083	0,039	-0,036	-0,079	-0,015	0,078	0,126	0,076	0,074	-0,055	-0,078	-0,065	-0,032	-0,017
current_union	0,021	0,159	0,038	0,042	-0,034	0,082	-0,053	-0,033	-0,055	-0,034	0,045	0,073	0,028	0,032	-0,008
political_corruption	-0,070	-0,169	0,086	-0,068	-0,074	-0,034	0,062	0,081	0,086	0,122	-0,078	-0,113	-0,144	-0,073	0,008
obey_law	0,033	-0,053	-0,043	-0,018	0,024	-0,009	-0,003	0,002	-0,014	0,003	-0,013	-0,028	0,015	0,003	-0,004
tax_level	0,023	-0,027	0,156	0,081	-0,140	-0,010	-0,016	0,019	0,033	0,041	0,021	-0,050	-0,066	-0,057	-0,056
noeducation	-0,073	-0,117	-0,019	0,014	-0,005	0,002	0,085	0,054	0,050	0,044	-0,054	-0,061	-0,045	-0,021	-0,014
primary	-0,136	-0,218	-0,026	0,027	-0,020	0,000	0,037	0,057	0,065	0,062	-0,055	-0,087	-0,072	-0,031	-0,019
lower_sec	-0,224	-0,360	0,008	0,004	-0,039	0,046	0,058	0,039	0,068	0,056	-0,043	-0,097	-0,112	-0,046	-0,013
post_sec	1,000	-0,387	-0,026	-0,016	0,020	-0,012	-0,022	-0,014	-0,028	-0,022	0,079	0,018	0,028	-0,019	-0,005
tertiary	-0,387	1,000	0,044	0,007	0,037	-0,035	-0,066	-0,078	-0,104	-0,085	0,013	0,155	0,159	0,089	0,032
far_left	-0,026	0,044	1,000	-0,178	-0,171	-0,074	0,004	0,005	0,023	0,034	0,000	-0,034	-0,030	-0,016	-0,013
left	-0,016	0,007	-0,178	1,000	-0,304	-0,131	-0,040	-0,006	-0,004	0,024	0,012	-0,004	-0,008	-0,016	0,015
right	0,020	0,037	-0,171	-0,304	1,000	-0,126	-0,034	-0,042	-0,028	-0,075	0,031	0,067	0,076	0,047	0,003
far_right	-0,012	-0,035	-0,074	-0,131	-0,126	1,000	0,022	0,011	0,025	0,003	-0,011	-0,026	-0,021	-0,009	0,014
spss1	-0,022	-0,066	0,004	-0,040	-0,034	0,022	1,000	-0,019	-0,032	-0,043	-0,068	-0,060	-0,045	-0,018	-0,012
spss2	-0,014	-0,078	0,005	-0,006	-0,042	0,011	-0,019	1,000	-0,037	-0,050	-0,079	-0,070	-0,052	-0,021	-0,014
spss3	-0,028	-0,104	0,023	-0,004	-0,028	0,025	-0,032	-0,037	1,000	-0,083	-0,131	-0,115	-0,086	-0,035	-0,023
spss4	-0,022	-0,085	0,034	0,024	-0,075	0,003	-0,043	-0,050	-0,083	1,000	-0,179	-0,157	-0,117	-0,048	-0,031
spss6	0,079	0,013	0,000	0,012	0,031	-0,011	-0,068	-0,079	-0,131	-0,179	1,000	-0,247	-0,184	-0,076	-0,049
spss7	0,018	0,155	-0,034	-0,004	0,067	-0,026	-0,060	-0,070	-0,115	-0,157	-0,247	1,000	-0,162	-0,066	-0,043
spss8	0,028	0,159	-0,030	-0,008	0,076	-0,021	-0,045	-0,052	-0,086	-0,117	-0,184	-0,162	1,000	-0,050	-0,032
spss9	-0,019	0,089	-0,016	-0,016	0,047	-0,009	-0,018	-0,021	-0,035	-0,048	-0,076	-0,066	-0,050	1,000	-0,013
spss10	-0,005	0,032	-0,013	0,015	0,003	0,014	-0,012	-0,014	-0,023	-0,031	-0,049	-0,043	-0,032	-0,013	1,000

Table 2. Correlation matrix (continuation from pp.343-348, continued on p.350).

	Age 18_25	Age 26_35	Age 46_55	Age 56_65	Age 66	male	Public_ work	unemploy	current_ union	political_ corruption	obey_law	tax_ level	noeducation	primary	lower_sec
age18_25	1	-0,151	-0,167	-0,161	-0,15	0,032	-0,13176	0,1005	-0,07685	0,00463	-0,073	-0,051	-0,00466	-0,02	-0,032
age26_35	-0,151	1	-0,221	-0,213	-0,198	0,001	-0,08192	0,0542	-0,04657	0,01237	-0,051	-0,057	-0,02449	-0,02	-0,086
age46_55	-0,167	-0,221	1	-0,235	-0,219	0,004	-0,00022	0,0401	0,106624	0,01598	-6E-04	0,025	-0,03617	-0,02	-0,019
age56_65	-0,161	-0,213	-0,235	1	-0,211	0,002	0,06585	-0,042	0,021591	-0,02773	0,052	0,044	0,012301	-0,03	0,0648
age66	-0,15	-0,198	-0,219	-0,211	1	-0,02	0,16951	-0,123	-0,05962	0,00466	0,0813	0,066	0,082708	0,116	0,1104
male	0,0322	0,0013	0,004	0,002	-0,018	1	-0,0906	-0,03	0,005187	-0,0095	-0,004	0,044	-0,00277	0,001	0,0679
public_work	-0,132	-0,082	-2E-04	0,066	0,1695	-0,09	1	-0,074	0,202152	0,00713	0,0795	0,053	0,00251	0,025	-0,097
unemploy	0,1005	0,0542	0,04	-0,042	-0,123	-0,03	-0,07364	1	-0,06583	0,06031	-0,019	-0,02	0,002718	0,006	0,0198
current_union	-0,077	-0,047	0,107	0,022	-0,06	0,005	0,20215	-0,066	1	0,00923	0,0204	0,026	-0,00204	-0,02	-0,068
political_corruption	0,0046	0,0124	0,016	-0,028	0,0047	-0,01	0,00713	0,0603	0,009228	1	-0,074	0,133	-0,00885	-0,01	0,0159
obey_law	-0,073	-0,051	-6E-04	0,052	0,0813	-0	0,07949	-0,019	0,020355	-0,07394	1	-0,031	0,01368	0,011	0,0715
tax_level	-0,051	-0,057	0,025	0,044	0,0657	0,044	0,05344	-0,02	0,025805	0,13314	-0,031	1	-0,01452	-0,01	-0,001
noeducation	-0,005	-0,024	-0,036	0,012	0,0827	-0	0,00251	0,0027	-0,00204	-0,00885	0,0137	-0,015	1	-0,01	-0,055
primary	-0,02	-0,024	-0,016	-0,027	0,1164	0,001	0,02531	0,0057	-0,0182	-0,01175	0,0115	-0,006	-0,00628	1	-0,065
lower_sec	-0,032	-0,086	-0,019	0,065	0,1104	0,068	-0,09659	0,0198	-0,06838	0,01586	0,0715	-0,001	-0,05496	-0,06	1
post_sec	-0,045	0,0042	0,007	0,029	-0,026	0,003	0,04245	0,0125	0,020443	-0,01014	-0,031	0,004	-0,02216	-0,03	-0,228
tertiary	-0,055	0,1384	0,002	-0,054	-0,079	-0,06	0,13925	-0,046	0,065523	-0,01123	-0,061	0,012	-0,03671	-0,04	-0,377
far_left	-0,039	-0,049	-0,025	-0,001	0,1364	0,022	0,03057	-0,005	0,02915	-0,01065	0,0182	0,012	0,01066	-0,01	0,0617
left	-0,072	-0,083	-0,005	0,072	0,1094	0,008	0,03911	-0,007	0,007132	-0,00255	0,0389	0,039	-0,00225	0,012	-0,014
right	-0,048	-0,041	0,071	-0,002	-0,027	-0,01	0,02735	-0,017	0,011347	-0,02141	0,0243	-0,021	0,027765	-0,03	0,0133
far_right	-0,02	0,0125	0,018	0,005	-0,039	0,021	-0,02094	0,0046	-0,01	0,02204	-0,014	0,019	-0,01014	-0,01	0,0419
spss1	-0,006	-0,025	-0,01	0,023	0,0231	0,005	-0,00084	0,0699	-0,0118	0,06289	0,0034	0,031	0,011532	0,025	0,0561
spss2	-0,021	0,002	0,006	-0,017	0,0323	-0,01	0,01452	0,0153	-0,02003	0,03154	-0,006	0,02	0,006461	0,065	0,0698
spss3	-0,048	-0,048	0,016	0,038	0,0548	-0,02	0,00728	0,0385	-0,00866	0,03923	0,0037	0,029	0,020377	0,019	0,1454
spss4	-0,018	-0,049	0,008	0,047	0,0262	0,018	-0,02122	0,0274	-0,0104	-0,00255	0,0147	0,02	-0,01014	-0,01	0,0818
spss6	0,0279	0,0352	-0,006	-0,032	-0,033	0,007	-0,02326	-0,04	-0,01064	-0,02292	-0,008	-0,003	-0,01655	-0,02	-0,062
spss7	0,0584	0,0576	-0,019	-0,056	-0,097	0,017	0,00133	-0,018	0,020352	-0,04774	-0,004	-0,058	-0,02871	-0,03	-0,135
spss8	0,0448	0,0224	-0,01	-0,01	-0,03	-0,01	-0,0031	-0,022	-0,01241	-0,06697	-0,026	-0,041	0,008056	0,001	-0,109
spss9	0,029	-8E-04	-0,019	0,004	-2E-04	-0,02	0,01539	-0,016	0,020857	-0,0138	0,0176	0,011	-0,00813	-0,01	-0,025
spss10	0,0225	0,0213	-0,011	-0,015	-0,01	0,009	-0,02894	0,0277	-0,00538	0,02636	-0,024	-0,008	-0,00692	0,02	-0,007

Table 2. Correlation matrix (continuation from pp.343-349).

New European member states, year 2016	post_sec	tertiary	far_left	left	right	far_right	spss1	spss2	spss3	spss4	spss6	spss7	spss8	spss9	spss10
age18_25	-0,045	-0,055	-0,039	-0,07	-0,048	-0,02	-0,01	-0,021	-0,05	-0,02	0,028	0,058	0,045	0,029	0,023
age26_35	0,004	0,138	-0,049	-0,08	-0,041	0,013	-0,02	0,002	-0,05	-0,05	0,035	0,058	0,022	-8E-04	0,021
age46_55	0,007	0,002	-0,025	-0	0,071	0,018	-0,01	0,006	0,016	0,008	-0,006	-0,02	-0,01	-0,019	-0,01
age56_65	0,029	-0,054	-0,001	0,072	-0,002	0,005	0,023	-0,017	0,038	0,047	-0,032	-0,06	-0,01	0,004	-0,01
age66	-0,026	-0,079	0,136	0,109	-0,027	-0,039	0,023	0,032	0,055	0,026	-0,033	-0,1	-0,03	-2E-04	-0,01
male	0,003	-0,055	0,022	0,008	-0,01	0,021	0,005	-0,013	-0,02	0,018	0,007	0,017	-0,01	-0,021	0,009
public_work	0,042	0,139	0,031	0,039	0,027	-0,021	-0	0,015	0,007	-0,02	-0,023	0,001	-0	0,015	-0,03
unemploy	0,013	-0,046	-0,005	-0,01	-0,017	0,005	0,07	0,015	0,039	0,027	-0,04	-0,02	-0,02	-0,016	0,028
current_union	0,02	0,066	0,029	0,007	0,011	-0,01	-0,01	-0,02	-0,01	-0,01	-0,011	0,02	-0,01	0,021	-0,01
political_corruption	-0,01	-0,011	-0,011	-0	-0,021	0,022	0,063	0,032	0,039	-0	-0,023	-0,05	-0,07	-0,014	0,026
obey_law	-0,031	-0,061	0,018	0,039	0,024	-0,014	0,003	-0,006	0,004	0,015	-0,008	-0	-0,03	0,018	-0,02
tax_level	0,004	0,012	0,012	0,039	-0,021	0,019	0,031	0,02	0,029	0,02	-0,003	-0,06	-0,04	0,011	-0,01
noeducation	-0,022	-0,037	0,011	-0	0,028	-0,01	0,012	0,006	0,02	-0,01	-0,017	-0,03	0,008	-0,008	-0,01
primary	-0,026	-0,043	-0,013	0,012	-0,026	-0,012	0,025	0,065	0,019	-0,01	-0,025	-0,03	0,001	-0,01	0,02
lower_sec	-0,228	-0,377	0,062	-0,01	0,013	0,042	0,056	0,07	0,145	0,082	-0,062	-0,13	-0,11	-0,025	-0,01
post_sec	1	-0,152	-0,027	0,004	-0,057	-0,013	-0,01	-0,011	-0,04	-0	0,039	-0,01	-0,02	-0,012	-0
tertiary	-0,152	1	-0,034	-0,01	0,031	-0,013	-0,05	-0,06	-0,1	-0,08	0,04	0,128	0,142	0,06	0,035
far_left	-0,027	-0,034	1	-0,06	-0,077	-0,02	0,057	0,042	0,07	-0,01	-0,028	-0,01	-0,04	-0,016	-0,01
left	0,004	-0,01	-0,058	1	-0,209	-0,055	-0,02	0,001	0,019	0,072	-0,013	-0,05	-0,02	-0,014	-0,02
right	-0,057	0,031	-0,077	-0,21	1	-0,073	-0,05	-0,003	-0	-0,03	0,031	-0,01	0,012	0,029	0,019
far_right	-0,013	-0,013	-0,02	-0,05	-0,073	1	-0,02	0,017	0,043	0,063	-0,036	-0,02	-0,01	-5E-04	-0,01
spss1	-0,009	-0,047	0,057	-0,02	-0,048	-0,02	1	-0,024	-0,04	-0,05	-0,064	-0,06	-0,04	-0,016	-0,01
spss2	-0,011	-0,06	0,042	0,001	-0,003	0,017	-0,02	1	-0,05	-0,06	-0,075	-0,07	-0,04	-0,019	-0,02
spss3	-0,043	-0,097	0,07	0,019	-8E-04	0,043	-0,04	-0,052	1	-0,12	-0,139	-0,12	-0,08	-0,034	-0,03
spss4	-6E-04	-0,079	-0,006	0,072	-0,032	0,063	-0,05	-0,065	-0,12	1	-0,174	-0,15	-0,1	-0,043	-0,04
spss6	0,039	0,04	-0,028	-0,01	0,031	-0,036	-0,06	-0,075	-0,14	-0,17	1	-0,18	-0,11	-0,05	-0,04
spss7	-0,006	0,128	-0,007	-0,05	-0,005	-0,021	-0,06	-0,066	-0,12	-0,15	-0,176	1	-0,1	-0,044	-0,04
spss8	-0,02	0,142	-0,036	-0,02	0,012	-0,006	-0,04	-0,041	-0,08	-0,1	-0,111	-0,1	1	-0,027	-0,02
spss9	-0,012	0,06	-0,016	-0,01	0,029	-5E-04	-0,02	-0,019	-0,03	-0,04	-0,05	-0,04	-0,03	1	-0,01
spss10	-0,003	0,035	-0,014	-0,02	0,019	-0,013	-0,01	-0,016	-0,03	-0,04	-0,042	-0,04	-0,02	-0,011	1

Table 3. Probit estimates, probability to favor progressive taxation (continued on pp.352-353). Robust standard errors in parentheses.

Variables		2006		2016	
		New EU	Old EU	New EU	Old EU
	Constant	–1,250***	-0,234**	-0,846***	-0,724***
		(0,146)	(0,105)	(0,150)	(0,132)
Age	age_18_25	–0,0426	-0,117*	-0,0940	-0,166**
		(0,0734)	(0,0618)	(0,0783)	(0,0737)
	age_26_35	–0,0224	-0,0576	0,0444	-0,131**
		(0,0692)	(0,0498)	(0,0674)	(0,0613)
	age_46_55	0,126*	0,0990**	0,248***	0,191***
		(0,0688)	(0,0479)	(0,0667)	(0,0571)
	age_56_65	0,234***	0,232***	0,218***	0,281***
		(0,0744)	(0,0508)	(0,0677)	(0,0583)
	age_66	0,183**	0,317***	0,228***	0,411***
		(0,0790)	(0,0539)	(0,0734)	(0,0595)
Gender	male	–0,0318	-0,0652**	-0,0800*	-0,0341
		(0,0423)	(0,0304)	(0,0416)	(0,0349)
Work status	public_worker	0,131***	0,0851**	0,0111	0,106***
		(0,0487)	(0,0371)	(0,0477)	(0,0399)
	unemployed	–0,0194	0,141*	-0,0232	0,0731
		(0,0877)	(0,0731)	(0,0800)	(0,0844)
	current_union_member	0,0674	0,0858**	-0,0666	0,107**
		(0,0731)	(0,0413)	(0,0754)	(0,0450)
Trust in government	political_corruption	0,299***	0,120***	0,106**	0,0437
		(0,0428)	(0,0364)	(0,0455)	(0,0463)
	obey_law	0,00603	-0,0335	-0,0528	0,0371
		(0,0424)	(0,0328)	(0,0423)	(0,0367)
Perceptions on the current tax level	tax_level	0,615***	0,332***	0,594***	0,581***
		(0,0487)	(0,0296)	(0,0495)	(0,0407)
Education	noeducation	–0,112	0,0239	–0,273	–0,216
		(0,137)	(0,0903)	(0,275)	(0,135)
	primary	0,0274	0,181***	–0,156	0,219**
		(0,0635)	(0,0548)	(0,250)	(0,0890)
	lower_sec	0,156***	0,222***	0,0218	0,154**
		(0,0591)	(0,0481)	(0,0506)	(0,0630)
	post_sec	–0,0185	–0,136***	–0,0939	0,0371
		(0,0875)	(0,0512)	(0,0841)	(0,0661)
	tertiary	–0,193***	–0,251***	–0,0547	–0,177***
		(0,0709)	(0,0522)	(0,0598)	(0,0538)
Political orientation	far_left	0,113	0,520***	0,520***	0,385***
		(0,117)	(0,0694)	(0,172)	(0,0713)
	left	–0,135**	0,253***	0,125*	0,312***

Table 3. Probit estimates, probability to favor progressive taxation (continuation from p.351, continued on p.353). Robust standard errors in parentheses.

		(0,0630)	(0,0378)	(0,0651)	(0,0477)
	right	–0,0922	–0,334***	0,00685	–0,263***
		(0,0564)	(0,0413)	(0,0527)	(0,0446)
	far_right	–0,191	–0,131	–0,160	0,102
		(0,185)	(0,0973)	(0,159)	(0,0793)
Self- - perceived social status	spss1	0,200	0,350**	–0,0637	0,406***
		(0,123)	(0,140)	(0,154)	(0,153)
	spss2	0,148	0,303***	0,0648	0,378***
		(0,0992)	(0,107)	(0,139)	(0,142)
	spss3	0,129*	0,0729	0,137*	0,233***
		(0,0711)	(0,0667)	(0,0818)	(0,0871)
	spss4	0,164***	0,0691	0,154**	0,133**
		(0,0627)	(0,0544)	(0,0690)	(0,0674)
	spss6	0,00718	–0,143***	–0,0445	–0,0632
		(0,0641)	(0,0421)	(0,0609)	(0,0508)
	spss7	–0,0293	–0,355***	–0,104	–0,212***
		(0,0809)	(0,0503)	(0,0654)	(0,0536)
	spss8	–0,110	–0,440***	–0,225**	–0,385***
		(0,114)	(0,0639)	(0,0902)	(0,0631)
	spss9	–0,434*	–0,788***	–0,336*	–0,575***
		(0,243)	(0,131)	(0,182)	(0,121)
	spss10	–0,181	–0,707***	–0,129	–0,549***
		(0,371)	(0,183)	(0,226)	(0,181)
Country dummies	CZ	–0,364***		–0,387***	
		(0,0670)		(0,0669)	
	HR	0,421***		–0,494***	
		(0,0730)		(0,0699)	
	LV	0,170**		–0,0606	
		(0,0741)		(0,0795)	
	SI	0,297***		0,183**	
		(0,0751)		(0,0744)	
	DK		–0,595***		–0,809***
			(0,0649)		(0,0673)
	FI		–0,111*		–0,237***
			(0,0633)		(0,0675)
	ES		–0,244***		–0,101
			(0,0542)		(0,0751)
	FR		–0,579***		–1,130***
			(0,0545)		(0,0664)
	SE		–0,301***		–0,459***
			(0,0609)		(0,0690)
	Observations	4,577	8,144	4,509	6,781
	LogLikelihood	–2465	–4707	–2499	–3596

Table 3. Probit estimates, probability to favor progressive taxation (continuation from pp.351-352). Robust standard errors in parentheses.

Pseudo R2	0,0926	0,122	0,0924	0,176
Wald chi2	425,6***	1154***	464,1***	1210***
Sensitivity (%)	95,57	86,51	93,7	87,73
Specificity (%)	21,48	42,49	22,93	48,89
Pearson chi2	4634,04***	8032,78***	4509,11***	6953,72***
Hosmer-Lemeshow	39,74***	19,43***	30,92***	35,93***

*statistically significant at 10 %
**statistically significant at 5 %
***statistically significant at 1 %

REMARKS

[1]The dataset used, as well as complete documentation including the questionnaires in national languages, is available here: https://www.gesis.org/issp/modules/issp-modules-by-topic/role-of-government/2006.

[2]The dataset used, as well as complete documentation including the questionnaires in national languages, is available here: https://www.gesis.org/issp/modules/issp-modules-by-topic/role-of-government/2016.

REFERENCES

[1] Fuchs-Schündeln, N. and Schündeln, M.: *The Long-Term Effects of Communism in Eastern Europe.*
Journal of Economic Perspectives **34**(2), 172-191, 2020,
http://dx.doi.org/10.1257/jep.34.2.172,

[2] Dallinger, U.: *Public support for redistribution: what explains cross-national differences?*
Journal of European Social Policy **20**(4), 333-349, 2010,
http://dx.doi.org/10.1177/0958928710374373,

[3] Redmond, G.; Schnepf, S. and Suhrcke, M.: *Attitudes to Inequality after Ten Years of Transition.*
Innocenti Working Papers No. 88, 2002,

[4] Suhrcke, M.: *Preferences for inequality: East vs. West.*
Hamburgisches Welt-Wirtschafts-Archiv (HWWA) Discussion Paper, No. 150, 2001,

[5] Aristei, D. and Perugini, C.: *Inequality aversion in post-communist countries in the years of the crisis.*
Post-Communist Economies **28**(4), 436-448, 2016,
http://dx.doi.org/10.1080/14631377.2016.1224053,

[6] Alvaredo, F.; Chancel, L; Piketty, T; Saez, E. and Zucman, G.: *World Inequality Report 2018.*
Belknap Press of Harvard University Press, Cambridge, 2018,
http://dx.doi.org/10.4159/9780674984769,

[7] European Commission: *Tax policy challenges for economic growth and fiscal sustainability.*
European Commission, Brussels, 2015,

[8] Alesina, A. and Rodrik, D.: *Distributive Policies and Economic Growth.*
Quarterly Journal of Economics **109**(2), 465-490, 1994,
http://dx.doi.org/10.2307/2118470,

[9] Persson, T. and Tabellini, G.: *Is inequality Harmful for Growth?*
American Economic Review **84**(3), 600-621, 1995,

[10] Rodrik, D.: *One economics, many recipes: globalization, institutions, and economic growth.*
Princeton University Press, Princeton, 2008,

[11] Lyubimov, I.: *Income inequality revisited 60 years later: Piketty vs Kuznets*.
Russian Journal of Economics **3**(1), 42-53, 2017,
http://dx.doi.org/10.1016/j.ruje.2017.02.003,

[12] Alesina, A. and Giuliano, P.: *Preferences for redistribution*.
Handbook of Social Economics **1**, 93-131, 2011,

[13] George, M.: *Social Mobility and Support for Redistribution: Separating the American Dream from Policy Preferences.*
University of Oxford, Oxford, 2018,
https://ssrn.com/abstract=2857925, accessed 3rd July 2018,

[14] Charite, J.; Fisman, R. and Kuziemko, I.: *Reference Points and Redistributive Preferences: Experiment Evidence.*
NBER Working Paper, No. 21009, 2016,

[15] Lockwood, B.B. and Weinzierl, M.: *De Gustibus non est Taxandum: Heterogeneity in Preferences and Optimal Redistribution.*
Journal of Public Economics **124**(2015), 74-80, 2015,
http://dx.doi.org/10.1016/j.jpubeco.2015.01.002,

[16] Cruces, G.; Perez-Truglia, R. and Tetaz, M.: *Biased perceptions of income distribution and preferences for redistribution: Evidence from a survey experiment.*
Journal of Public Economics **98**(C), 100-112, 2013,
http://dx.doi.org/10.1016/j.jpubeco.2012.10.009,

[17] Naumann, E.: *Tax Constraints, Social Policy Preferences, and Support for Redistribution.*
Societies **8**(3), 1-11, 2018,
http://dx.doi.org/10.3390/soc8010011,

[18] Ross, M.L.: *Does Taxation Lead to Representation?*
British Journal of Political Science **34**(2), 229-249, 2004,
http://dx.doi.org/10.1017/S0007123404000031,

[19] Barnes, L.: *The size and shape of the government: preferences over redistributive tax policy.*
Socio-Economic Review **13**(1), 55-78, 2015,
http://dx.doi.org/10.1093/ser/mwu007,

[20] Diamond, P. and Saez, E.: *The Case for a Progressive Tax - From Basic Research to Policy.*
Journal of Economic Perspectives **25**(4), 165-190, 2011,
http://dx.doi.org/10.1257/jep.25.4.165,

[21] Atkinson, A.B. and Stiglitz, J.E.: *The Design of Tax Structure: Direct versus Indirect Taxation.*
Journal of Public Economics **6**(1-2), 55-75, 1976,
http://dx.doi.org/10.1016/0047-2727(76)90041-4,

[22] Chamley, C.: *Optimal Taxation of Capital Income in General Equilibrium with Infinite Lives.*
Econometrica **54**(3), 607-622, 1986,
http://dx.doi.org/10.2307/1911310,

[23] Judd, K.L.: *Redistributive Taxation in a Simple Perfect Foresight Model.*
Journal of Public Economics **28**(1), 59-83, 1985,
http://dx.doi.org/10.1016/0047-2727(85)90020-9,

[24] European Commission: *Taxation Trends in the European Union*.
Publications Office of the European Union, Luxembourg, 2017,

[25] OECD: *Taxing Wages 2020*.
https://www.oecd.org/tax/tax-policy/taxing-wages-brochure.pdf,

[26] Joumard, I.: *Tax Systems in European Union Countries*.
OECD Economics Department Working Papers, No. 301, 2001,

[27] Thomson, S., et al.: *Economic crisis, health systems and health in Europe: impact and implications for policy.*
McGraw-Hill Education, New York, 2015,

[28] Lipsmeyer, C.S.: *Welfare and the Discriminating Public: Evaluating Entitlement Attitudes in Post-Communist Europe.*
Policy Studies Journal **31**(4), 545-564, 2003,
http://dx.doi.org/10.1111/1541-0072.00042,

[29] Anderson, J.E. and Shimul, S.N.: *Preferences for Redistribution in Transition Countries.*
https://www.aeaweb.org/conference/2017/preliminary/paper/teK66ZH4,

[30] Okulicz-Kozaryn, A.: *Winners and Losers in Transition: Preferences for Redistribution and Nostalgia for Communism in Eastern Europe.*
Kyklos **67**(3), 447-461, 2014,
http://dx.doi.org/10.1111/kykl.12062,

[31] Perugini, C. and Pompei, F.: *Income Distribution During and After Transition: A Conceptual Framework.*
In: Perugini, C. and Pompei, F., eds.: *Inequalities During and After Transition in Central and Eastern Europe.* Palgrave Macmillan. New York, pp.12-37, 2015,

[32] Ballard-Rosa, C.; Martin, L. and Scheve, K.: *The Structure of American Income Tax Policy Preferences.*
The Journal of Politics **79**(1), 1-16, 2016,
http://dx.doi.org/10.1162/GLEP_a_00337,

[33] Yamamura, E.: *Trust in government and its effect on preferences for income redistribution and perceived tax burden.*
Economics of Governance **15**(1), 71-100, 2014,
http://dx.doi.org/10.1007/s10101-013-0134-1,

[34] Alesina, A.; Stancheva, S. and Teso, E.: *Intergenerational Mobility and Support for Redistribution.*
NBER Working Paper, No. 23027, 2017,

[35] ISSP Research Group, International Social Survey Programme: *Role of Government V - ISSP 2016.*
GESIS Data Archive, ZA6900 Data file Version 1.0.0, 2018,
http://dx.doi.org/10.4232/1.12994,

[36] ISSP Research Group, International Social Survey Programme: *Role of Government IV – ISSP 2006.*
GESIS Data Archive, ZA4700 Data file version 1.0.0., 2008,
http://dx.doi.org/10.4232/1.4700,

[37] West, D.M.: *E-Government and the Transformation of Service Delivery and Citizen Attitudes.*
Public Administration Review **64**(1), 15-27, 2004,
http://dx.doi.org/10.1111/j.1540-6210.2004.00343.x,

[38] Fallan, L.: *Gender, Exposure to Tax Knowledge and Attitudes Toward Taxation: An Experimental Approach.*
Journal of Business Ethics **18**, 173-184, 1999,
http://dx.doi.org/10.1023/A:1005711905297,

[39] Roosma, F.; van Oorschot, W. and Gelissen, J.: *A Just Distribution of Burdens? Attitudes Toward the Social Distribution of Taxes in 26 Welfare States*.
International Journal of Public Opinion Research **28**(3), 376-400, 2015,
http://dx.doi.org/10.1093/ijpor/edv020,

[40] Ekman, J. and Linde, J.: *Communist nostalgia and the consolidation of democracy in Central and Eastern Europe.*
Journal of Communist Studies and Transition Politics **21**(3), 354-374, ,2005,
http://dx.doi.org/10.1080/13523270500183512,

[41] Meltzer, A.H. and Richard, S.F: *A Rational Theory of Size of Government.*
Journal of Political Economy **89**(5), 914-927, 1981,
http://dx.doi.org/10.1086/261013,

[42] Snyder, J.M. and Kramer, G.H.: *Fairness, self-interest, and the politics of the progressive income tax.*
Journal of Public Economics **36**(2), 197-230, 1988,
http://dx.doi.org/10.1016/0047-2727(88)90030-8,

[43] Fernández-Albertos, J. and Kuo, A.: *Income Perception, Information, and Progressive Taxation: Evidence from a Survey Experiment.*
Political Science Research and Methods **6**(1), 83-110, 2015,
http://dx.doi.org/10.1017/psrm.2015.73,

[44] Margalit, Y.: *Explaining Social Policy Preferences: Evidence from the Great Recession.*
American Political Science Review **107**(1), 80-103, 2013,
http://dx.doi.org/10.1017/S0003055412000603,

[45] Alm, J. and Torgler, B.: *Culture Differences and Tax Morale in the United States and in Europe.*
Journal of Economic Psychology **27**(2), 224-246, 2006,
http://dx.doi.org/10.1016/j.joep.2005.09.002,

[46] Gemmell, N.; Morrissey, O. and Pinar, A.: *Tax Perceptions and Preferences over Tax Structure in the United Kingdom.*
The Economic Journal **114**(493), F117-F138, 2004,
http://dx.doi.org/10.1111/j.0013-0133.2004.00190.x,

[47] Winter, S. and Mouritzen, P.E.: *Why people want something for nothing: The role of asymmetrical illusions.*
European Journal of Political Research **39**, 109-143, 2001,
http://dx.doi.org/10.1023/A:1007185029456,

[48] Busemeyer, M.R.; Garritzmann, J.L. and Neimanns, E.: *Investing in education in Europe: Evidence from a new survey of public opinion.*
Journal of European Social Policy **28**(1), 34-54, 2017,
http://dx.doi.org/10.1177/0958928717700562,

[49] Henninghausen, T. and Heinemann, F.: *Dont Tax Me? Determinants of Individual Attitudes Toward Progressive Taxation.*
German Economic Review **16**(3), 255-289, 2015,
http://dx.doi.org/10.1111/geer.12050,

[50] Traub-Merz, R. and Pringle, T.: *Trade Unions in Transition: from Command to Market Economies.*
Fridrich-Ebert Stiftung, Berlin, 2018,

[51] Dion, M.: *When is it rational to redistribute? A cross-national examination of attitudes toward redistribution.*
Congress of the International Political Science Association, Madrid, 2012,

[52] Bartels, L.M.: *Homer Gets a Tax Cut: Inequality and Public Policy in the American Mind.*
Perspectives on Politics **3**(1), 15-31, 2005.

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