

# EMERGING TRENDS IN BUSINESS ECONOMICS: TOWARDS COMPETITIVENESS, DIGITALIZATION AND FINANCIAL INNOVATION

BOOK OF ABSTRACTS

Editors

Isidora Ljumović  
Vladimir Simović  
Darko Marjanović



International scientific conference:  
EMERGING TRENDS IN BUSINESS ECONOMICS:  
TOWARDS COMPETITIVENESS, DIGITALIZATION AND FINANCIAL INNOVATION  
28-29 October, 2020,  
Belgrade, Serbia



INSTITUTE  
OF ECONOMIC  
SCIENCES



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## PREFACE

Dear readers,

As a result of our first virtual Annual International Scientific Conference, it is our pleasure to present this year's Book of Abstract. As we put the safety and health of our participants first, the decision had been made by the Institute of Economic Sciences from Belgrade, Serbia together with the Institute of Economics from Skopje, North Macedonia to organize the Conference event in a virtual format, due to the coronavirus outbreak.

This year's Conference focused on innovations, digitalization and competitiveness and the specific topic of the Conference was "Emerging Trends in Business Economics: Towards Competitiveness, Digitalization and Financial Innovation". Over 100 participants attended the Conference, submitting 57 papers, including authors from 9 countries.

Our intention was to bring together researchers, scholars, doctoral students and policymakers to present their ideas and work to the community at large, to receive feedback and enjoy great networking opportunities, on the following topics:

1. Competitiveness and global growth
2. Trends in the digital economy
3. Financial innovation and Fintech

The concept of economic growth and improving competitiveness has changed in the 21st century. Physical resources, machines and manpower are no longer crucial as capital, technology and human knowledge have taken over the primacy of major development factors. All things considered, it is clear that knowledge, research, innovations and technology, accelerated by the process of digitalization, form the backbone of economic development, dominant way to create surplus value and tackle social challenges. Knowledge-based economies are already forcing the commercialization of innovation and new technologies as ways to achieve faster economic growth and generate new well-paid jobs in fairer and greener societies. As concerns developing countries, there is a need to create a better business environment, develop adequate infrastructure, as well as raising and disseminating knowledge throughout all segments of the economy. Here, in this Book of

*Preface*

Abstracts, contributing authors present their view and possible solutions to the chosen issues.

We are grateful to all the authors who contributed to this Book of Abstracts in fulfilment of our joint goal.

Stay safe and healthy through these unusual times!

EDITORS



## **PART 1.**

# **COMPETITIVENESS AND GLOBAL GROWTH**



## 1.1. HOUSING QUALITY AND HUMAN CAPITAL AVAILABILITY IN DEVELOPING COUNTRIES

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### OBJECTIVES

The objective of this paper is to analyse the relationship between housing quality and human capital formation in developing countries. The analysis attempts to fill a gap in the current literature regarding the lack of empirical studies that address the impact that living conditions can have on human capital formation and, consequently, on economic growth.

### METHODOLOGY

We use cross-sectional data for 52 low and middle-income countries to estimate different regressions considering both a linear and quadratic relationship between human capital in the form of education and housing quality, and include also a set of control variables considered relevant human capital determinants in previous studies. Housing quality is measured as the proportion of the population that lives in sub-standard housing, a variable that aims at capturing housing quality in different countries in a generalized and easily comparable way. The data comes from the UNESCO Institute for Statistics, which is also our main data source for the control variables (real GDP per capita; government expenditure in education; infant mortality rate; access to the internet). Human capital is measured as average years of schooling of the population aged 15 and above from the Barro and Lee education dataset.

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## **RESULTS**

The findings indicate that overall there is no statistically significant relationship between the lack of housing quality and human capital although the sign of the respective estimated coefficient in the linear regression is positive, contrary to predictions. The inverted U relationship is also not confirmed by the data and dividing the sample into low income, lower-middle income and upper-middle income countries also does not improve the results. The most robust results are the positive and statistically influence of the level of development, measured as real GDP per capita, on human capital formation and the fact that higher infant mortality rates hamper educational attainment levels, our measure of human capital formation.

## **IMPLICATIONS**

Our results do not endorse investing in access to better quality housing as a means to improve human capital availability in developing countries and in this way promote economic growth. Higher human capital formation can be achieved through lower infant mortality rates and higher income per capita.

## **ORIGINALITY VALUE**

The originality of this research lies in the pursuit to fill a gap between the human capital and housing literatures through empirical analysis, in which better housing quality can be perceived as a factor that positively influences the wellbeing of individuals and, in turn, enables those individuals to progress to more advanced levels of education, thus raising their level of human capital.

## **CONTRIBUTION**

The main contribution of this analysis is to show the necessity to gather a larger and more precise amount of data regarding housing quality in the context of developing economies. We found that the poor quality and quantity of this data was one of the main reasons for the lack of robustness of the results.

## **KEY WORDS**

Human capital, education, housing quality, developing countries, cross-sectional analysis

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## **1.2. IMPACT OF THE COVID19 OUTBREAK ON MACEDONIAN TRADE FLOWS**

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### **OBJECTIVES**

Reduced demand and the disruptions in value chains, as a result of the coronavirus, are expected to have a significant impact on the external sector, especially in economies such as Macedonian, whose manufacturing sectors are more integrated into global supply chains. Hence, the main purpose of the paper is to see to what extent and in which segments the new conditions have reflected on exports and imports in the Macedonian economy, and to review the measures and activities taken in order to mitigate short-term challenges and facilitate cross-border trade.

### **METHODOLOGY**

The paper analyzes the trend and the changes that occur both on the import and export side, in general, by selected products and by countries. The data generally refer to a period of the last 5 years. For more particular and specific analyzes, they cover the period from January 2019 until May 2020, on a monthly and quarterly basis. The main methods used for research are: method of analysis and synthesis, statistical method, historical method and inductive-deductive method.

### **RESULTS**

The results have shown that the decline in economic activity and demand globally, including in the European Union, and thus in the most important Macedonian export partners, directly affects export sector in the country. Economy also faces serious import problems, especially due to its heavy dependence on materials needed for industrial production processes that are usually imported from the hardest-hit markets in Europe. The trade measures are mainly designed to avoid unnecessary barriers to trade and disruption of global supply chains.

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## **IMPLICATIONS**

The scientific and business community will get a picture of the trade flows in the country in the newly created conditions and based on that they will be able to give their recommendations for overcoming the situation.

The limitations of this paper are seen in the short period of time for analysis, as well as the simplified analysis without more specific correlation with other key variables, which remains a challenge to be achieved in future papers. Another potential for future research is the measurement of the effects of the implemented trade measures in the country.

## **ORIGINALITY VALUE**

Given that foreign trade flows in the conditions of coronavirus are completely new and so far little considered, it gives original value to the paper and points to new results and knowledge of the analyzed issues.

## **CONTRIBUTION**

Although it is still early to fully quantify the negative effects of the coronavirus, this paper provides some of the latest insights into the reflection of pandemic conditions on the country's foreign trade flows, as well as points to the newly introduced measures and activities in the country to mitigate conditions.

## **KEY WORDS**

Covid19 outbreak, export, import, Macedonian economy

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## **1.3. INNOVATION, FOREIGN DIRECT INVESTMENTS AND ECONOMIC GROWTH: CASE OF SELECTED EU AND NON-EU COUNTRIES**

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### **OBJECTIVES**

Innovation, investments in research and development (R&D), as well as investments in technology, are a basis for ensuring the competitiveness and progress of some countries, and thus for sustainable economic growth. The aim of this paper is to examine the interdependence of innovations (measured by R&D expenditure), foreign direct investments (FDI) and economic growth (measured by GDP) in the observed period from 2000 to 2017 for selected EU (Bulgaria, Croatia, Hungary, Romania, Slovakia, Slovenia) and non-EU (North Macedonia, Serbia, Turkey) countries.

### **METHODOLOGY**

The causality analysis between economic growth, innovation and foreign direct investments is based on the panel technique. Granger non-causality test was used to examine causality. Before that, the stationarity of the variables was examined using different unit root tests (Levin, Lin & Chu; Im, Pesaran and Shin; ADF - Fisher Chi-square, and PP - Fisher Chi-square). In order to quantify innovations, we use the so-called Summary Innovation Index, and Research and development expenditure (% of GDP).

### **RESULTS**

Our results reveal that there is a bidirectional relationship between GDP and FDI, GDP and R&D expenditure, and FDI and R&D expenditure (according to Stacked

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Granger causality test). Then, there is a unidirectional relationship between FDI and GDP, between R&D expenditure and GDP, and between FDI and R&D expenditure (according to Dumitrescu Hurlin non-causality test).

## **IMPLICATIONS**

According to the Summary Innovation Index published by the European Commission, in a group of modest innovator countries are Bulgaria, Romania and North Macedonia. In contrast, in a group of moderate innovator are the following countries: Croatia, Hungary, Slovakia, Slovenia, Serbia and Turkey. Thus, countries such as Bulgaria, Romania and North Macedonia should still invest in innovation in order to move from “modest innovator” status to “moderate innovator” status.

## **ORIGINALITY VALUE**

To the best of our knowledge, this is the first paper that presents that there is the relationship between gross domestic product, foreign direct investments and research and development expenditure for an abovementioned group of countries and no previous study has been conducted using the presented methodology.

## **CONTRIBUTION**

It has been shown that for selected EU and non-EU countries in the observed period, investment in research and development is significant and it has a direct impact on attracting foreign direct investments and consequently on economic growth. Therefore, economic policymakers should pay more attention to investing in research and development as well as investing in innovation in both EU and non-EU countries to ensure the economic development of these countries.

## **KEY WORDS**

Innovation, R&D expenditure, foreign direct investments, economic growth, causality

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## **1.4. ESTIMATION OF THE EFFECT OF LABOUR ON OUTPUT FOR DIFFERENT TECHNOLOGY INTENSIVE SECTORS OF THE MANUFACTURING INDUSTRY IN SERBIA**

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### **OBJECTIVES**

This paper estimates the effects of employment on output in the manufacturing industry of Serbia. Special emphasis was placed on the manufacturing industry due to the changes it was exposed to during the first and second waves of privatization. The privatization process has led to changes in the structure of production of the manufacturing industry, the importance of branches and the share of the business entities by branches. This had a significant impact on GDP and overall employment.

### **METHODOLOGY**

For the purposes of the analysis in this paper, twenty three branches of the manufacturing industry are aggregated into four groups according to the level of technological complexity: from high technology intensive to low technology intensive sectors of the manufacturing industry. The dependent variable is the output level of the manufacturing industry and the main independent variable is the number of employees. Variables are given on an annual basis by technology intensity in the period 2001-2017. The dependences are estimated by using dynamic panel data estimators.

### **RESULTS**

The real output of the manufacturing industry, especially in low- and medium-low technology intensive sectors, grew faster than the real output of medium-high and high technology intensive sectors. In contrast, the number of employees in the low-performance manufacturing sectors declined steadily until the end of 2000s, and then increased. On the other hand, sectors of high and medium-high technology intensity significantly reduced the number of employees. Although a number of

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companies have been shut down in some industries with low technological performance, due to the requirements of advanced technologies and market adoption, the skills of employees have been substantially improved. Therefore, the estimated relationship between employment and real output is positive and statistically significant.

### **IMPLICATIONS**

This paper has revealed that a significant gap between high and low technology intensive sectors of the manufacturing industry exists. The low share of high- and medium-high technology intensive sectors in the output of the manufacturing industry is an indicator of slow economic development. In addition, the productivity of medium-high technology intensive sectors lags behind the branches of lower technological complexity. These conclusions could provide significant input to decision makers when adopting manufacturing industry development policies.

### **ORIGINALITY VALUE**

Econometric techniques for dynamic panel data models are used in this paper. The branches of the manufacturing industry are aggregated into four groups depending on the level of technological complexity, in accordance with the methodological recommendations of Eurostat. Most of the studies that dealt with this issue did not use econometric models and determine correlations in the analysis, but were mainly based on descriptive statistical analyzes. This is the first study to use dynamic panel data models in estimating the real output and employment dependencies at this level of sector aggregation.

### **CONTRIBUTION**

This paper presents a contribution to the areas of applied econometric analysis of panel data and sectorial economic analysis. The paper estimates the effects of employment on the real output and ranks their significance depending on the level of technological complexity of the branches of the manufacturing industry.

### **KEY WORDS**

Labor, output, manufacturing, technological change

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## 1.5. THE RELATIONSHIP BETWEEN CO<sub>2</sub> EMISSIONS, ENERGY USE AND ECONOMIC GROWTH IN GERMANY

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### OBJECTIVES

The relationship between increasing environmental degradation and different economic and social activities has been in the focus of scientific research. The degradation of the environment is one of the most significant problems of modern societies where GHG, including CO<sub>2</sub> emissions as the most important, are highly influential factors of environmental degradation. The main objective of this paper is to determine what are the main causes of CO<sub>2</sub> emissions in Germany for the period 1970-2015.

### METHODOLOGY

In this paper, we set up a multivariate linear model that allows for the investigation of trends, outliers, and autocorrelation. We use CO<sub>2</sub> emissions per capita as a dependent variable and various indicators such as GDP per capita, foreign direct investments, or trade openness as explanatory variables. For the analysis of cross-effects and directions of causality, we use the Granger test. The model itself is calibrated using the least squares optimization technique.

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## **RESULTS**

Results show that one can describe Germany's annual CO<sub>2</sub> emissions per capita fairly adequate using a multivariate linear model with six input parameters (GDP per capita, foreign direct investment, trade openness, and energy use, number of urban and rural population). All input parameters are significant, and the overall standard deviation of the error is approximately 1.6% of the average CO<sub>2</sub> emissions. Furthermore, we are able to show which factors have positive and negative effects.

## **IMPLICATIONS**

Germany, as a developed country, acts in accordance with the majority of regional and global policy incentives and measures aimed at decreasing CO<sub>2</sub> emissions. It has developed economic instruments such as emission-trading scheme and environmental taxation, but additional efforts have to be made with regards to decreasing fossil fuel use (government and regional authorities agreed on a plan to terminate coal power stations by 2038) and accepting circular economy postulates.

## **ORIGINALITY VALUE**

As far as we know, there is no other research investigating this phenomenon for Germany for this period. Majority of studies that include Germany, do it in a panel setting – examining these economy-environment interrelations within the context of G7, EU, or OECD.

## **CONTRIBUTION**

This paper contributes to the existing literature in several ways. It provides up to date input on the state of the environment-economy nexus in Germany. Furthermore, it provides policymakers, academia, and all interested parties with a quantitative overview of interconnections between the selected variables and opens additional research questions. We must point out that these results do not explain all underlying factors of relationships presented here.

## **KEYWORDS**

CO<sub>2</sub> emissions, economic growth, environmental quality, Germany

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## **1.6. GROWTH AS A SOURCE OF COMPETITIVENESS: COMPARATIVE STUDY**

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### **OBJECTIVES**

Porter (1998) argues that the only meaningful concept of competitiveness is national productivity. The World Economic Forum (WEF) used Porter's (1998) definition to derive the Global Competitiveness Index (GCI), which is recognized as the measure of international competitiveness. This paper seeks to consider economic growth as a potential source of competitiveness, thus ensuring economic development as a whole. Economic development plays a significant role in these characteristics, since the conditions of competitiveness are different at each level of economic development of the observed methodology. In addition to the analysis of the impact of economic growth on the level of competitiveness, other development indicators such as exports and employment rates will be observed.

### **METHODOLOGY**

Competitiveness as well as economic growth are conditioned by the degree of economic development. For this reason, a sample of 141 countries will be analyzed divided into three subsamples in relation to the degree of development according to the methodology of the World Economic Forum with the formation of another group of countries by the authors: group 1- factor driven economies (to 3000 \$ GDP per capita), group 2 efficiency driven post - transitional economies (up to \$ 17,000 GDP per capita), group 3 efficiency driven other countries (up to \$ 17,000 GDP per

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capita) and group 4 innovation driven economies (from \$ 17,000 GDP per capita). For the purposes of checking the research assumptions, parametric quantitative procedures will be used both for the purpose of determining the differences between the mentioned subsamples and for the purposes of examining the correlation of the observed characteristics.

## **RESULTS**

The results confirm the credibility of previous research in the defined area. Different levels of economic development observed within defined groups of countries show different conditions for economic growth and thus international competitiveness.

## **IMPLICATIONS**

The main implications in this paper are related to the analysis of the observed characteristics, primarily economic growth and competitiveness, at different levels of economic development that is specific to each group of countries in the sample. In this way, one comes to the realization of each feature that has distinct specifics and mutual causal links at different levels of economic development.

## **ORIGINALITY VALUE**

The special contribution of this research work is reflected predominantly in defining the research space which has been changed in relation to the known methodology by separating the group of post - transition countries as a special part of the research space and determining its specifics in relation to the observed features.

## **CONTRIBUTION**

The results of this study can be helpful in government policymaking to stimulate economic activity and performance. In addition, by knowing countries' competitive advantage, businessman can choose and develop their businesses more effectively.

## **KEY WORDS**

Growth, economic development, competitiveness, GCI

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## **1.7. WESTERN BALKAN COUNTRIES AS AN ATTRACTIVE INVESTMENT DESTINATION**

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### **OBJECTIVES**

Foreign direct investments are very important for each country as they could significantly contribute to its economic development. The importance of foreign direct investments reflects in their ability to contribute to development of comparative advantages and competitiveness. The aim of this paper is to analyze characteristics of the inflow of foreign direct investments in the Western Balkans (WB) countries, as well as the impact they might have on their economic growth and development.

### **METHODOLOGY**

In order to determine the amount of foreign direct investments, but also the position, ie. competitiveness of each of the observed countries, there have been used secondary data from official UNCTAD reports. The paper will also present an analysis of the greenfield investments for selected economies, as very important type of foreign investments that probably have the largest positive spillovers. The time period covered by this research was from 2010 to 2019.

### **RESULTS**

In the last 20 years, WB countries have tried to attract as many foreign investors as possible using various policy incentives. Foreign direct investment inflows followed the pace economic transformation and reforms towards a market economy, leading to economic growth. The results of the conducted research indicate that Serbia is the most attractive investment destination, considering that in the observed

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period, more than 60% of the total amount of foreign direct investments that were directed to the countries of the Western Balkans ended up on its territory.

## **IMPLICATIONS**

The results of this research can be important for the economic policy makers, but also to all other stakeholders, whether they participate in creating a business environment for foreign investors or deal with the promotion of the country as an investment destination. Based on the conducted analysis, it will be possible to analyze the competitive position of each of the Western Balkan countries, its comparative advantages and disadvantages, which could be a solid basis for development of the future investment policies.

## **ORIGINALITY VALUE**

Foreign direct investments are still very relevant topic that is often discussed in the literature, especially in terms of their impact on the development of national economies, both in developed countries and developing countries. However, so far there have not been many papers analyzing foreign direct investment focusing particularly on the differences between WB countries.

## **CONTRIBUTION**

This paper contributes to the understanding of the importance of foreign direct investments and their impact on the development of the WB countries. Countries that, through their overall policy, ensure stable business environment will certainly attract larger amount of foreign direct investment of greater quality. Therefore, it is very important to consider all aspects of attracting foreign investments, propose adequate system solutions and create appropriate policies that will attractiveness of the WB economies as investment destinations.

## **KEY WORDS**

Foreign direct investments, Western Balkans, investors, economic development

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## **1.8. AN ANALYSIS OF BILATERAL TRADE BETWEEN SERBIA AND CHINA: MAJOR CHALLENGES AND OPPORTUNITIES**

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### **OBJECTIVES**

Considering the growing presence of China in Serbia and deepening the overall bilateral relations, the main objective of the paper is to analyze the major trends and changes in the bilateral merchandise trade between both countries. The paper also focuses on exploring the main challenges as well as determinants for enhancement of trade relationships in the upcoming period.

### **METHODOLOGY**

The conducted analysis is descriptive and based on secondary data. The period from 2010 to 2019 is observed, although on several occasions references to first half of 2020 are made. Data on merchandise trade by the Standard International Trade Classification (SITC) are collected from the Statistical Office of the Republic of Serbia. Data are in current U.S. dollars.

### **RESULTS**

The total trade between Serbia and China has been steadily growing over the last decade. The value of total trade in 2019 compared to 2010 is increased by almost twice, the value of imported and exported goods grew by 1,5 times and almost 15 times, respectively.

Despite the rapid growth, there are some obstacles in trade relations between Serbia and China. One of the main challenges stems from the fact that China shares its influence in Serbia using investments rather than trade. On the other side, Serbia doesn't have enough capacity to meet Chinese market demand.

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## IMPLICATIONS

The research, based on the conducting of comprehensive analysis of bilateral trade flows, would enable a better understanding of the development of the trade relations between Serbia and China and more appropriate planning of the future steps towards improving the current situation and eliminating main obstacles.

## ORIGINALITY VALUE

The originality of this paper lies in the detailed analysis of the bilateral trade between Serbia and China, including examining main trends and mapping the main changes in the trade structure and the factors which have contributed the changes over the last decade. Besides, the paper also discerns the main obstacles and identifies key strength and enhancement opportunities.

## CONTRIBUTION

Paper brings in focus highly topical and relevant issue – trade relations between Serbia and China in light of China’s growing presence and the deepening mutual economic interdependence. Bearing in mind that there is relatively scarce research on this topic, the paper could contribute to the literature by widening the existing knowledge.

## KEY WORDS

Bilateral trade, exports, imports, Serbia, China

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## **1.9. THE IMPACT OF THE BUDGET AS AN AUTOMATIC STABILIZER ON THE DEVELOPMENT OF THE INTEGRATED ECONOMIES**

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### **OBJECTIVES**

The budget is an important stabilizer of fiscal economic policy as it affects the economic strength of the state and the public sector. The developed public sector increases the stability of the economy, especially, in the conditions of cyclical fluctuations in the economy. The analysis of the sustainability of a budget deficit lies in the assumption that the government's budget deficit can absorb negative shocks without compromising overall stability. The main goal is emphasizing the role of fiscal policies which will have to adapt to country circumstances, balancing need to protect people, stabilize demand and facilitate recovery.

### **METHODOLOGY**

In order to achieve the main objective of the paper it will be used specific the empirical analysis will be carried out for understanding the role of budget as automatic stabilizer of fiscal economic policy and the role of ECB in this process. The analysis will consist in specific indicators and variables (Fiscal Balance and Gross Debt from 2018 to 2020) which will be combined in order to describe a statistical analysis the tendency of the budget deficit in the EU countries from 2007 to 2017. In addition, countercyclical economic policy in the theory and practice will be analyzed, especially from the aspect of budget as an automatic stabilizer.

### **RESULTS**

The results of the research are in the context of the fact that as early as 2007 the global financial crisis showed that only the Central Bank has the necessary capacity to influence financial stability through the use of certain instruments. Therefore, in maintaining the budget deficit, it is important to respect the regulations of the CB

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member states, as well as, the candidate countries for EU accession. In the process of joining the EU, Serbia, in addition to fulfilling numerous international obligations in the segment of financial and monetary policy, also contributes to maintaining financial stability in the long run. The paper will also present the mechanisms used for budget sustainability in the conditions of the Corona virus pandemic. Countries need to reorient revenue and spending to increase productive investment making some provisions of social protection, programs more long-lasting can enhance automatic stabilizers and help tackle rising poverty and inequality.

## **IMPLICATIONS**

Existence of the budget deficit has led to the defining and implementing regulations of the budget deficit. The problem with the rules was on the size of the budget deficit and debts relates to the implementation of rules. A budget deficit is one of a problem in the modern economies regardless of the degree of their development. Maintenance of the budget in the short and medium term should ensure the functioning of the economy. The existence of a budget deficit can be the result of cyclical economic trends or temporarily increased government expenditures. However, a continuous high budget deficit leads to the growth of public debt as a consequence. Modern fiscal policy has accepted the philosophy that the budget is becoming less a means of necessary social functions of the state, and more is becoming a means of development and stabilization policy.

## **ORIGINALITY VALUE**

The main goal of the paper is to contribute to the understanding of logic and experience that are the basis of modern research on the budget deficit and its impact as an automatic stabilizer in the context of countercyclical economic policy. Taking into account previous research in this area, the aim of the research is to present the budget deficit systematically, with possible subsystems and links, especially from the aspect of fiscal policy, to analyze the practice of budget deficit from the aspect of compliance with budget regulations and new mechanisms which are used in the conditions of development of national economies due to the presence of Coronavirus.

## **CONTRIBUTION**

Determination of the rules and procedures regarding the budget deficit and public debt can contribute to the strengthening of financial discipline. The EU seeks to contribute to a stronger financial stability and sustainability in the long run by harmonization of regulations in this field. Therefore, the role of the ECB and the

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EMU, as well as, national regulations and mechanisms for controlling budget spending are particularly important. These rules also usage for EU candidate countries from which are expected to reform fiscal policy and to maintain budget deficits at the projected level. Maintaining the stability of the budget contributes to the sustainability of the economy but with the usage of measures that are appropriate to the observed development problems. The pandemic remains acute and stringent lockdowns continue, fiscal policies should accommodate health care services to save lives.

### KEY WORDS

Budget, stabilizer, sustainable finance, ECB

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## **1.10. DETERMINATION OF ADAPTED KAIZEN MANAGEMENT MODEL AND ITS IMPLEMENTATION IN SERBIAN MACROENVIRONMENTAL CONDITIONS**

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### **OBJECTIVES**

Hyper-connectivity, various innovations and rapid changes are influencing macro environmental conditions of every country, as well as Serbia. Kaizen management is considered as very effective and efficient in diverse business environments. The motivation for this paper arises from the idea to analyze Kaizen management and Japanese business philosophy and adjust it to Serbian macro environmental conditions.

### **METHODOLOGY**

A conducted research used data obtained by a comprehensive review of articles from the leading journals, state-of-art research and groundbreaking researches. Qualitative analysis was applied to the gathered data, and Serbian macro environmental conditions were examined to understand, embrace and incorporate similarities and differences between Japanese and Serbian macro environment and people, and also contemporary situational factors and complexity of Kaizen management.

### **RESULTS**

Analysis of a comprehensive literature review gives a clear insight into Kaizen management theory. Examining the Serbian macro environment shows current macro environmental conditions in Serbia, specificities and differences to Japanese

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macro environment. The intersection of obtained data and information provides the proper methods of adjusting the Kaizen management model to the present Serbian conditions and propose adapted Kaizen management model for Serbian macro environmental conditions.

### **IMPLICATIONS**

Implementation of the research findings can be beneficial for Serbian decision makers and therefore used as a practical tool to assist Serbia to be the leading country in Western Balkan, and Western Balkan to be leading.

### **ORIGINALITY VALUE**

In the contemporary economy, the advantage is increasingly gained through knowledge. The state, companies and their policies and practices of human resources management, but also each person individually are responsible for the successful improvement of knowledge and skills. Conjointly, this contributes to constant growth, which is one of the main features of Kaizen management. The connection with Serbian macro environment and implementation in domestic conditions represent originality value.

### **CONTRIBUTION**

This paper contributes to the management theory by proposing the adapted Kaizen management model that is adjusted for Serbian macro environment. The adapted Kaizen management model is designed as a practical tool to assist Serbian decision makers to be more effective and efficient in developing Serbia and making it the leading country.

### **KEY WORDS**

Kaizen management, adaptation, practical tool, development, Serbian macro environment

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## **1.11. IMPLEMENTATION OF CIRCULARITY INTO TRANSPORT SECTOR THROUGH SUSTAINABLE PROCUREMENT**

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### **OBJECTIVES**

The aim of this paper is to support the transition from a linear to a circular economy. It focuses on the implementation of circularity in the transport sector. Public procurement, which has recently been recognized in most countries as a powerful but underused tool, is being used to promote this transition.

### **METHODOLOGY**

The research presented in this paper is based on analysis of scientific literature in the area of circular economy. Special attention is also devoted to the analysis of the relevant EU legal documentation and recommendations. A comparative method is used to compare different ways to implement circularity into the transport sector through sustainable and green public procurement. Finally, the methodology for calculating operational lifecycle costs of road vehicle, which is implemented in sustainable public procurement procedures when renewing fleets, is presented.

### **RESULTS**

This research identifies key opportunities for the circular economy that could significantly reshape Serbia's transport sector, as well as the difficulties and challenges for its introduction. The results of the conducted research reveal that public procurement plays an important role in transforming the linear into a circular economy, as well as that transport sector has great potential for circular procurement which is, unfortunately, underutilized in Serbia. Finally, this research

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shows to what extent sustainable and green criteria are currently included in tender procedure.

### **IMPLICATIONS**

The results of this research are important both for scientific community and public procurers and policy makers. More precisely, the obtained results make up a good basis for further scientific research in this field. On the other hand, this research reveals good practices and key activities and measures undertaken in the EU and highlighted public procurement opportunities to promote and foster transition towards the circular economy. As such, it can serve as a roadmap for public policy makers as well as for business leaders to introduce circularity and improve the sustainable performance of the transport sector and the Serbian economy in general.

### **ORIGINALITY VALUE**

The originality of this research lies in the attempt to provide, for the first time in the domestic framework, a comprehensive overview of the relevant literature, to promote the use of public procurement as a powerful tool for accelerating the transition towards more sustainable transport and to generate recommendation for further research and policy discussion.

### **CONTRIBUTION**

Recently, significant attention has been paid to the circular economy and the possibilities of its application in Serbia. However, some issues are still poorly researched. To the best of our knowledge, this is the first paper that in such a comprehensive way tries to point out the necessity and possibilities of applying the concept of circular economy in the transport sector and the role of sustainable and green public procurement in this process as well as the EU's efforts to ensure greater integration of circular economy principles in public procurement.

### **KEY WORDS**

Circular economy, transport sector, public procurement

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## **1.12. IMPORTANCE OF IDENTIFYING COST MANAGEMENT IN GREEN BUSINESS**

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### **OBJECTIVES**

Green business can be defined as business committed to the principles of environmental protection within their activities, while striving to use renewable energy sources. Identifying their costs is important because it provides a realistic assessment of the economic and environmental impact of business on the environment. The main purpose of the paper is based on the analysis of the activities of green businesses to identify the main characteristic of their cost management.

### **METHODOLOGY**

The methodology is based on an analysis of the literature on relevant concepts and theories in the field of green businesses and cost management. The descriptive method will be used to describe the data and key terms; the method of induction and deduction to reach concrete conclusions; method of analysis for analyzing the literature and the method of synthesis for connecting information, facts and data into a whole that will be logical and obtained through the methods of deduction and analysis.

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## **RESULTS**

Through an extensive review of the literature on green business and their cost management, this paper identifies that the main cost of green business are related to protection and prevention of environment). Additionally, environmental accounting can define and measure cost in green business i.e. provides clear picture of the cost material, energy, external and internal impact on the environment.

## **IMPLICATIONS**

The paper has theoretical implications since it identifies the main characteristic of cost management in green business and contributes to framework development for further research. Research about identifying green business cost management is very important because it provides a realistic assessment of the economic and environmental impact of business on the environment.

## **ORIGINALITY VALUE**

The intention of this paper is to fill the existing gap and provide some preliminary findings in identifying of cost management of green business.

## **CONTRIBUTION**

Identifying the costs of green businesses helps to take advantage of sustainable income opportunities, while protecting the value of business against increasing energy costs, the costs of meeting regulatory requirements, changes in the way customers perceive brands and products, and the volatile price of resources.

## **KEY WORDS**

Cost management, green business, environmental accounting

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## **1.13. ECO-TOURISM AS A STIMULATION FOR TOURISM COMPETITIVENESS OF THE REPUBLIC OF NORTH MACEDONIA**

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### **OBJECTIVES**

The theoretical objective of this research is focused on studying the concept of eco-tourism as an alternative form of tourism development and its specific supply and demand features.

From a practical point of view, we assessed the problem from the aspect of the development of the eco-tourism in order to confirm the hypothesis that the representation of small and medium enterprises in the eco-tourism sector is a developmental concept that enables achieving sustainable economic development.

### **METHODOLOGY**

A survey questionnaire consisting of 15 questions was conducted in 70 small enterprises that carried out certain tourist activities in the period from 1.1.2020 until 18.2.2020.

In order to determine if the small enterprises are capable of and are willing to provide the necessary service, activities and financing in the field of eco-tourism

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while implementing the training programs for employees and also protecting the environment and local culture, we conducted a survey.

### **RESULTS**

The majority of the enterprises that we obtained in the survey are willing to invest in the eco-tourism sector. Unfortunately, they feel that they do not have the needed information and knowledge for this kind of opportunities, nor institutional support.

It is considered among the small enterprises that they are not familiar with the investment capacities in the eco-tourism sector, even though considered as the carriers of the eco-tourism development.

### **IMPLICATIONS**

Eco-tourism has the potential for rapid, sustainable economic development.

The results obtained during the practical research allows us to draw a conclusion and a guideline that can imply particular behavior and activities contributing to the development of eco-tourism and using opportunities for achieving sustainable economic development. The entrepreneurs need conditions in which the technological, economic, political, social or demographic changes can bring to the creation of something new.

### **ORIGINALITY VALUE**

The original value of this study is confirmed through the obtained results. Confirmed the fact that eco-tourism as an alternative form for tourism development and concept for achieving sustainable development contributes to achieving significant economic benefits, strengthening the economy at the local level (maintenance of biodiversity, benefits for the local population, a high level of responsibility of tourism enterprises, encouraging the development of green economy, green jobs and environmental protection).

### **CONTRIBUTION**

The scientific contribution of this research paper is perceived with the need of emphasizing eco-tourism as a type of tourism in the Republic of Northern Macedonia, the eco-tourism introduction and problems in it, in order to achieve sustainable development.

The results of the research can be used both theoretically and practically. The main focus of this paper has not been researched in the Republic of Macedonia. That makes this paper a pioneering paper in this field in our country.

## KEY WORDS

Eco-tourism, small and medium enterprises, nature, sustainable economic development, tourist's needs

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## **1.14. MARKETING RESEARCH IN THE FUNCTION OF MARKET-PLACE COMPETITIVENESS**

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### **OBJECTIVES**

The aim of this work paper is to define development and competitiveness strategy of market places using innovations and service provision, on the bases of theoretical attitudes analysis and research results.

### **METHODOLOGY**

Performed researches are based on implementation of special methods of cognition and marketing research. Special methods used in this work paper are analysis and synthesis, logical deduction and statistics methods. Examination method i.e. field investigation is used to gather and analyse qualitative information and data.

### **RESULTS**

Research results show that market places are very efficient instrument of achieving economic and communications aims on the market. By treating supply of products as investment through influence on consumers' interest, it is possible to influence on purchase to certain level. It is established that sales men on market places by conducting concrete and precise strategies of marketing communications, may achieve their aims in relations to competition and in purpose of costumers' satisfaction.

### **IMPLICATIONS**

Presented researches make solid foundation for investments by market places through innovations in business, and that increase competitiveness of market places. It is necessary to confirm certain researches in some scientific and empirical researches this research is considered a good start in that direction.

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## **ORIGINALITY VALUE**

Theoretical and practical value of research enables wide spectrum of implementation not only on presented market - place but on the other market—places too, in order to improve competitiveness and satisfaction of consumers.

## **CONTRIBUTION**

Contribution of this work paper on theoretical aspect is perception of role and significance of market places from historical and global market instrument with special aspect of innovation implementation. The conclusion is that informatics achievements development and technology implementation create possibility to control volume of scales and increase compliance of market places based on respect of customers' attitudes.

## **KEY WORDS**

Marketing research, innovations, investments, competitiveness, market-places

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## **1.15. QUALITY OF SERVICES AS A DETERMINANT OF VOLUNTARY PENSION FUNDS COMPETITIVENESS**

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### **OBJECTIVES**

The successful operation of voluntary pension funds is closely related to the quality of services they provide to their members. Considering the growing importance of services and their large share in national economies, the quality of services is set as a priority for organizations that want to differentiate their services in a highly competitive environment. The aim of this paper is to define indicators as starting points for developing instruments for measuring the attitudes of voluntary pension funds members on their satisfaction with the quality of services provided, which, consequently, improves the market competitiveness of these funds.

### **METHODOLOGY**

A structured questionnaire was used to examine the attitudes of clients about their satisfaction with the quality of the services provided by the voluntary pension fund, while the basic sample in the research consisted of 150 members of the „Dunav dobrovoljni penzijski fond“ (Danube Voluntary Pension Fund) company. The matrix was processed by the principal components method, using the Kaiser-Guttman criterion.

### **RESULTS**

The results of the conducted empirical research indicate that it is possible to establish indicators as a starting point for identifying the factors of satisfaction of voluntary pension funds members with the quality of services provided. It is also possible to predict the defined factors based on the assumed social characteristics of clients.

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## **IMPLICATIONS**

Through the research itself, a large number of empirical data were obtained, which in a hierarchical sense have different significance for concluding on the quality of services provided as determinants of satisfaction of members of voluntary pension funds. In order to explain some other aspects it is desirable to consider the predictive values and other characteristics of members of voluntary pension funds - demographic and social origin, migration characteristics, marital status, type of education, etc.

## **ORIGINALITY VALUE**

The need to research the quality of services of voluntary pension funds is very pronounced, since there is a deficit of pension financing in Serbia. Having in mind the importance of the quality of pension insurance services, there are valid reasons to focus scientific research attention on the voluntary pension funds quality of business. The originality of the work is reflected in the application of a new empirical research procedure in studying the quality of services provided to members of voluntary pension funds, which aim to ensure customer satisfaction, and consequently improve the competitiveness of the funds themselves.

## **CONTRIBUTION**

The contribution of the work is reflected in the improvement of customer relationship management in voluntary pension funds, in order to meet the needs and desires of their clients, while achieving profitable operations of the funds. It would be very useful, primarily for practical reasons, to define an evaluation model based on the results of this empirical research as a starting premise, which would improve and facilitate the evaluation of the quality of services provided as one of the essential prerequisites for successful operation of voluntary pension funds.

## **KEY WORDS**

Voluntary pension funds, competitiveness, quality management, measuring attitudes, customer satisfaction

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## 1.16. A COMPARISON OF COMPETITIVENESS OF CEECS

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### OBJECTIVES

In the Diamond Model, Porter point out that four main parameter effects on competitiveness of a countries' industries. In this study we investigate the competitive advantage conditions of Central and Eastern European Countries (CEECs) in the respect of Porter's Diamond Model. We compare the competitive advantages of CEECs by using cluster analyze for the years of 2008 and 2019.

### METHODOLOGY

In the clustering process firstly each statistical object is taking into consideration as an individual cluster, after then objects are grouped to upper clusters which are again grouped in the respect of the distance between them. Objects are grouped together which have smallest distance. After the superior level of clustering, objects are joined into one cluster. Euclidian distance is used to measure the distance between the objects.

### RESULTS

According to the analysis results in 2008, Central European countries are mostly in the first cluster, and the Eastern European countries are in the second cluster. Results for the 2019, it is seen that all CEECs countries except Macedonia, Bosnia and Herzegovina and Albania take in the first cluster. It can be said that in the period from 2008 to 2019, Eastern European countries brought their competitiveness level to the level of Central European countries by improving it.

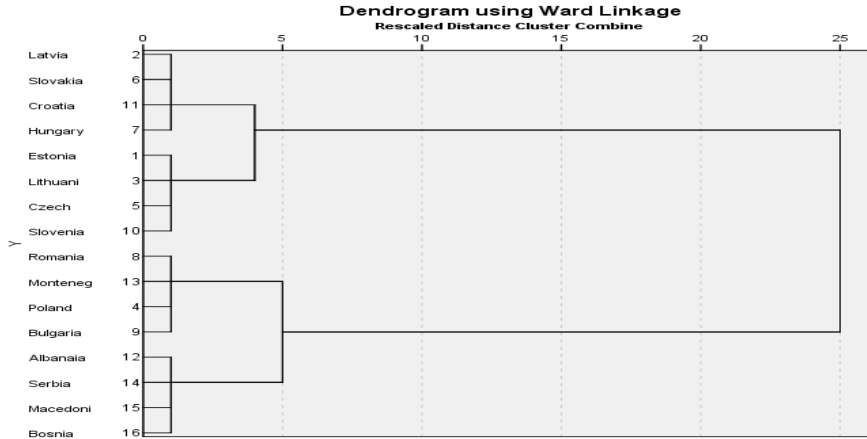
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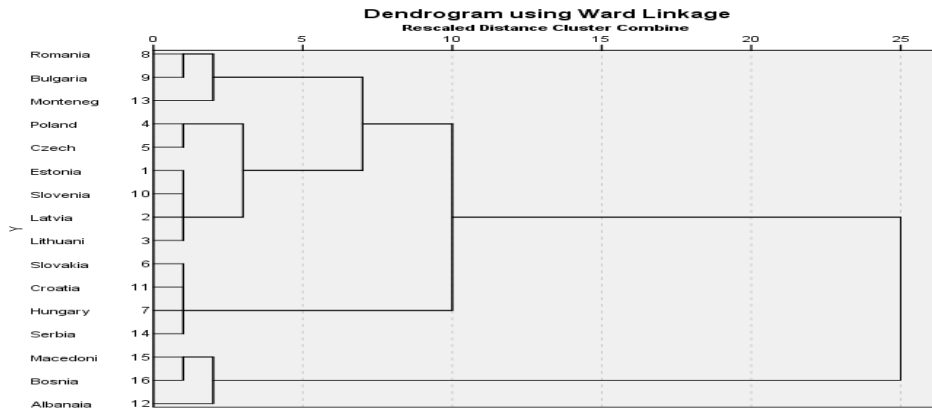
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**IMPLICATIONS**

**Graphic 1: Competitiveness Advantages of CEECs in 2008**



**Graphic 2: Competitiveness Advantages of CEECs in 2019**



**ORIGINALITY VALUE**

Most of the competitiveness studies in the literature reveal the competitiveness levels of countries by using competitiveness indexes such as Balassa and Vollrath. However, studies on the similarities of countries' competitiveness are very limited in the literature. With this study, the competitiveness of CEECs countries will be approached from a different perspective through the use of cluster analysis.

## **CONTRIBUTION**

In the literature, cluster analysis studies in European countries mainly examined the similarities of countries across variables such as innovation, human capital, socio-economic. This study, which deals with the competitiveness of CEECs countries through similarities, is expected to contribute to the literature.

## **KEY WORDS**

Competitiveness, CEECs, cluster analyze, diamond model

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## **1.17. AGRIBUSINESS COMPETITIVENESS – THE CASE OF FRUIT PROCESSING INDUSTRY IN SERBIA**

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### **OBJECTIVES**

The application of the marketing concept contributes to business competitiveness and success of a company. Companies that apply marketing concept are more efficient than the competition in creating and delivering added value to consumers (Kotler & Keller, 2012). In this paper, competitiveness is examined through the prism of market orientation of companies, which, in addition to competitor orientation, also includes customer orientation and interfunctional coordination. The aim of this paper is to examine the extent to which fruit juice producers are competitor oriented, and to evaluate if market orientation of these companies contributes to strengthening their competitive position in the domestic market.

### **METHODOLOGY**

The research included 13 companies, or 21% of registered capacities of the production of fruit and vegetable juices (according to the data from the Serbian Business Registers Agency from 2015) in the Republic of Serbia<sup>2</sup>. The research was conducted in early 2016. A modified MKTOR scale (Narver & Slater, 1990) was used to measure the market orientation. The competitive position of company is measured by the intensity of competition, the market share of the company and its ability to conquer new markets and consumers. The correlation between the market orientation of the company and competitive position was examined by applying the Pearson correlation coefficient.

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<sup>2</sup> The research was conducted for the purpose of preparing a doctoral dissertation at the Faculty of Economics, University of Niš.

## RESULTS

The market orientation of the fruit juice producers was evaluated with an average score of 4.06 on a five-point scale, where a score 5 was the highest. Competitor orientation was rated with an average score of 3.84, which is lower than the average score for consumer orientation (3.95) and interfunctional coordination (4.44). This indicates that competitor orientation is the weakest of the three “pillars” of market orientation. There is a strong positive correlation between the market orientation and the derived indicator of the competitive position of the company  $r(13) = .74, p = .004$ . This implies that the strong market orientation is connected with a strong competitive position in the domestic market.

## IMPLICATIONS

Practical implications of this paper are related to the possibility of improving the business practice of companies included in research, which would lead to better market position of these companies and enable them to provide higher values to their consumers. Theoretical implications arise from the implementation of MKTOR scale in evaluation of market orientation of companies in agribusiness in Serbia.

## ORIGINALITY VALUE

The paper presents the research results on the application of the market orientation of companies engaged in the production of fruit and vegetable juices. Special attention is paid to the competitor orientation of these companies and their competitive position in domestic market. Furthermore, paper shows that although juice producers collect information about their competitors, they react slowly to their activities, and that there is no practice of connecting and building networks with other stakeholders.

## CONTRIBUTION

Empirical research on the market orientation of companies in Serbia in the post-transition period is modest and sporadic. This is even more pronounced when it comes to the agribusiness sector. Previous research has shown that the agrarian sector has revealed comparative advantages (RCA) in the global market, but also that fruit and vegetable juices are characterized by lower values of RCA (Božić and Nikolić, 2017). There is a strong link between national and competitiveness of companies (Porter, 1998; Bankova, 2015), which would imply that there is a link between the competitive position of fruit juice processors and agribusiness sector as a whole.

## KEY WORDS

Fruit-juice producers, competitiveness, marketing orientation, Serbia

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## **1.18. FDI CONTRIBUTION TO TECHNICAL EFFICIENCY IN THE SERBIAN MANUFACTURING SECTOR**

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### **OBJECTIVES**

The contribution of foreign direct investment (FDI) to the developing economies has been examined by a large body of theoretical and empirical studies. The key objective of this paper was to match the quantification of technical inefficiency with the high inflow of FDI that has been characteristic of Serbia in recent years and determine how FDI affects a firm's technical efficiency improvement as well as its technical progress in a stochastic frontier (SF) model.

### **METHODOLOGY**

The methodology is based on SF analysis - within that, 'true' random effects model - TRE (Greene, 2005). Empirical analysis utilizes the balanced panel data on a sample of 92 Groups of Section C 'Manufacturing', spread over 10 years period 2010-2019. The data source is the Business Register of Statistical Office of the Republic of Serbia. The SF model estimates a firm's production frontier given a set of production inputs. The deviation of a firm's actual output level from its maximum level of output is defined as technical inefficiency. The variable FDI (share of foreign ownership) was used as a covariate.

### **RESULTS**

Regarding the effect of foreign ownership variable (FDI), the value of the z ratio varies from -5,98 to -5,71, depending on the model specifications and are smaller than z table at the 1% significance level. This means that the presence of FDI affects the level of manufacturing technical efficiency. The existence of a negative coefficient (-0.03) indicates that foreign ownership reduces technical inefficiency or in other words a positive effect on the industrial technical efficiency in Serbia.

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## IMPLICATIONS

Over the last decade, many measures have been adopted by Serbian policy-makers to attract FDI spurred on by the belief that this inflow will stimulate export-led growth, increase employment, enhance productivity, and accelerate growth. The above results shows that presence of foreign firms in Serbia has a positive impact on improving the technical efficiency of the domestic industry, in general. But we have to be careful, since the effects of FDI can be different across industries a “one-size-fits-all” investment promotion policy is not recommended.

## ORIGINALITY VALUE

The relationship between FDI and productivity/efficiency has been much debated in a literature. Many endogenous growth models supported the idea that FDI enhances TFP and consequently stimulates economic growth. However, to the knowledge of the author of this paper, up to 2020 there was no papers that analyze the FDI effect on technical efficiency of manufacturing sector in Serbia. From that aspect, this paper can certainly be considered original.

## CONTRIBUTION

The paper contributes to the understanding of potential effects on foreign invested enterprises on domestic economy in general and local enterprises performance in particular. Thus it importantly assists policy making by the government of developing countries, where FDI is believed to create technical spillovers on domestic industry.

## KEY WORDS

Technical efficiency, foreign direct investment, stochastic frontier model, Serbian manufacturing

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## **1.19. THE IMPACT OF REGIONAL INSTITUTIONS ON FOREIGN DIRECT INVESTMENT FLOWS IN SERBIA 2007-2018**

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### **OBJECTIVES**

The subject of the paper is to examine the impact of the existence of regional institutions on the regional distribution of greenfield foreign direct investment (FDI) in Serbia during the period 2007-2018. Namely, there is an asymmetric regionalization in Serbia, in the sense that in the area of the two northern NUTS 2 regions (Belgrade and Vojvodina) there are appropriate regional institutions, while in the remaining two southern regions (Sumadija and Western Serbia and Southern and Eastern Serbia) such institutions do not exist.

### **METHODOLOGY**

An appropriate database in the form of a panel (four-year continuous averages) was formed for the following variables: absolute value of FDI (dependent variable), and four explanatory variables - GVA per capita, existence of regional institutions, passage of Corridor X through the NUTS 3 district, amount of financial subsidies. The observation unit is the district level (NUTS 3) during the period 2007-2018. The parameters were estimated using panel methods with corrected standard errors due to confirmed presence of heteroskedasticity and cross-sectional dependence in the model.

### **RESULTS**

We examined whether NUTS 3 level districts belonging to regions with regional institutions (Serbia-North) had more success in attracting greenfield FDI than those districts located in the area (Serbia-South). Preliminary results indicate that the value of greenfield FDI projects was higher in those districts (NUTS 3) that were less developed (had a lower level of GVA per capita), where the financial incentive to

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attract FDI was higher, then in those districts belonging to NUTS 2 regions where regional institutions exist, while the passage of road Corridor X has not been shown to have a positive impact on FDI levels.

## **IMPLICATIONS**

The findings of the research suggest that in the observed time interval, the territorial distribution of Greenfield FDI projects was primarily influenced by the level of development of the area, the amount of subsidies and the existence of regional institutions. The results showed that the creators of economic policy in Serbia with financial incentives during 2007-2018 favoured less developed areas in the distribution of FDI, but also that the presence of regional institutions had a positive impact on the level of FDI.

## **ORIGINALITY VALUE**

It was determined that subsidies granted by the state to foreign investors significantly affected the territorial distribution of FDI in the period 2007-2018. In addition, FDI was higher in those sub-regions belonging to NUTS 2 regions where there are regional institutions (bodies, secretariats, etc.) that aim to define and implement appropriate development strategies in the NUTS 2 region. Belgrade and Vojvodina have little more success in attracting new greenfield FDI projects than the regions of Sumadija and Western Serbia and Southern and Eastern Serbia.

## **CONTRIBUTION**

The conducted analysis confirmed the initial hypothesis that the value of greenfield FDI is higher in those areas where appropriate regional institutions are present. Namely, we have proved econometrically that the existence of regional institutions and bodies has a statistically significant and positive effect on the amount of FDI, most likely because they have a positive effect on the functioning of regional administration, building a favourable business environment, adopting and implementing regional development strategy, etc.

## **KEY WORDS**

Regional distribution of FDI, regional institutions, subsidies, infrastructure, NUTS 3

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## **1.20. CIRCULAR ECONOMY MEASUREMENT METRICS' INDICATORS (LITERATURE REVIEW)**

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### **OBJECTIVES**

The circular economy (CE) has seen a significant increase in interest over the past few years. For this reason, implementers of CE are in a need for tools to support practitioners, decision-makers & policy-makers to drive circular economy, as well as to measure the effects of CE adoption. Authors proposes a brief overview of CE definition and goals as a concept, and elaborate selection of indicators that can be used for evaluation of CE implementation.

### **METHODOLOGY**

This paper consists of literature review of peer-reviewed journals articles, conferences papers and on grey literature. A screening of the literature using key words (indicators, circular economy, micro, meso and macro) has been performed during the research by reading the abstracts and discarding the documents where circular economy metrics has not been the main topic. Basic research showed ~ 23,300 articles. Top 100 articles sorted by relevance are comprehensively checked in relation to the three levels of CE implementation.

### **RESULTS**

Brief analysis showed that most used indicators in various methodologies and frameworks are macro level indicators that focus on the flows between economies. Another important conclusion that can be drawn is that the key obstacles between indicators all three levels (macro, meso and micro) are lacking data (from macro to micro) and time and effort constraints (from micro to macro).

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## **IMPLICATIONS**

In order to be able to empirically assess the effects of a circular economy in terms of profitability, job creation, and environmental impacts, using these Circularity metrics is essential. Many researchers question the measurement of circularity, such as: how to measure the progress of the transition towards a CE?; Right selection of indicators for circularity metrics is the key for successful implementation of the CE.

## **ORIGINAL VALUE**

Sustainability indicators are many and varied. The perennial search for appropriate metrics for the circular economy indicates that measurements currently used to assess resource productivity and resource efficiency are not fully satisfactory in the CE context. Approach used in this paper is not novel in the research area, however it is for the first time applied on the level of the Republic of North Macedonia and it is correlated to the availability of data and information for the country

## **CONTRIBUTION**

This paper contributes in the field of research of mapping the indicators used to evaluate the implementation of Circular Economy. These indicators are key to find universal way of measuring the successful implementation of CE as well as its contributions. In depth literature research lead to identification of vast number of indicators, however, the key issue is to have right data and information on right time in order to act timely and to use indicator on right manner.

## **KEY WORDS**

Circular economy (CE), metrics, CE level of implementation, CE indicators

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## **PART 2.**

# **TRENDS IN DIGITAL ECONOMY**



## **2.1. RISK-SHARING AS A FUNCTION OF FINANCIAL SUPPORT OF INNOVATION-BASED ECONOMY**

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### **OBJECTIVES**

The goal of this paper is to examine the role of the state support of innovative companies throughout their life cycle. The question being raised is which is the most efficient way for the state to intervene and in which way it should secure the financing of innovative companies. In the early stages of innovation development in transition countries, the state is often the only source of external financing due to the lack of private investments.

### **METHODOLOGY**

This paper is based on a quantitative analysis of companies that have participated in programs of the Serbian Innovation Fund. Throughout three programs, 192 supported companies have been observed, with a focus on companies in the early development stage (120 start-ups). The companies were examined through the following indicators: revenue, the number of employees, profit, commercialization of innovative product(s) created through the supported program and the survival rate of the company.

### **RESULTS**

The Innovation Fund supports the development of innovation through programs that target companies of a certain size, age and cooperation with scientific research organizations. Research shows that existing mechanisms are designed to meet the needs of the stakeholders. Taking on the risk with an investment of EUR 26 million, representing 69% of the innovation development value, has resulted in increased revenues and number of employees of the supported companies, with a survival rate of 33%.

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## **IMPLICATIONS**

The role of the state is of significance in the development of the innovation-based economy, especially by offering mechanisms for providing the funds and by building an environment with access to the various financing sources. As the nature of innovation financing involves risk-taking, the role of the state is to share this risk in order to encourage the development of innovation, but through a carefully created mechanisms, which must respond to the expressed needs of the innovation ecosystem.

## **ORIGINALITY VALUE**

This paper is based on the analysis of the state's role in the innovation ecosystem interpreted through the prism of a country in transition, whose past is characterized by an exceptional fruitful scientific sector and a low level of private entrepreneurship. The development of the innovation ecosystem in Serbia, as it is known in developed countries, comes with the strengthening of the SME sector and with the realization that growth requires investment in R&D, which entailed state support.

## **CONTRIBUTION**

The contribution of this paper is reflected in confirming the justification for the state's interventions in the sector of innovation financing, as well as in concluding that it is necessary to secure larger investments and design new financing instruments. Research shows that further development of the innovation ecosystem in Serbia requires larger public investments, which at the same time requires obtaining additional sources for financing public investments (such as the European Union).

## **KEY WORDS**

Start-up, innovation ecosystem, risk management, public grants, R&D

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## 2.2. USE OF INFORMATION TECHNOLOGIES IN EDUCATIONAL PURPOSES – CASE FROM SERBIA

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### **OBJECTIVES**

Secondary education in developing countries is largely based on obsolete teaching methods and technologies. The aim of this paper is to analyze the use and preferences of mobile technologies for the needs of education among the high school population, with special emphasis on social media. Given that teaching activities based on “chalkboards” cannot provide students with enough new knowledge they need for further education and professional work, the possibility of improving the teaching process by applying modern technologies is being considered.

### **METHODOLOGY**

The research presented in this paper is based on the analysis of questionnaires, on the practice and preferences of using mobile technologies and social media for educational purposes. The research was conducted among the high school population in certain School of Economics in Belgrade. The first research was conducted in the period February-March 2016. In order to get the updated data and to overcome the time distance of four years, the research with the students of the same school was repeated in the period February-March 2020. In both periods, the sample was structured in an identical manner to ensure complete comparability of the results obtained. The research was attended by 120 students of the third and fourth grade of the high school of economics.

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## **RESULTS**

The obtained results show that the advantages of mobile learning in high school practice are still not sufficiently utilized, since students rarely use the Internet on mobile phones or tablets to acquire new knowledge or information in the educational process. It is noticeable that the trends in the use of information technology in domestic high schools are at approximately the same level as in similar research conducted in other EU countries, as well as that there is room for improving the application of modern information technology in education.

## **IMPLICATIONS**

The results of the research confirm the assumption that there is room for improving the learning process in secondary education by using modern information technologies in the domestic education system. Also, students would be much more interested and motivated for this type of pedagogical-educational innovation if teachers would to a greater extent encourage the use of mobile devices, the Internet and social media for teaching and educational purposes. The authors are aware of the limitations in the presented research because it was conducted in one high school and with a limited number of students in the sample. The intentions of the authors are to include a larger number of schools and students in future research.

## **ORIGINALITY VALUE**

The results of the research are important for the organization and implementation of teaching studies of different educational profiles. This research was done on a sample of high school students, and the possibilities of applying this method of work, i.e. mobile learning in high schools of different educational profiles (gymnasiums, vocational schools, etc.) turn out to be logical. Mobile learning is close to the high school population in Serbia. Also application of modern technologies in education and distance learning models can provide high quality and continuity of learning in specific, irregular circumstances and should be developed in such a way that decision makers in the field of education policy accept best performing distance learning models as solutions to ensure continuity of teaching in circumstances that require it.

## **CONTRIBUTION**

A new approach to teaching in secondary schools, based on the application of modern information technologies (smartphones, tablets and *IoT* services) to



acquire new knowledge or information for educational purposes, can contribute to better vertical integration of the entire educational process, which along with elementary, secondary and higher education, includes the labor market.

### KEY WORDS

Information technology, digital media, e-learning, mobile learning, high school education

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## **2.3. COVID-19 CORONAVIRUS AS A TRIGGER: TRANSITION TO DIGITAL ECONOMY IN NORTH MACEDONIA**

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### **OBJECTIVES**

The number of organizations attempting to adopt digital technologies and transform themselves has grown rapidly over the past few years. Digital transformation of organizations is becoming one of the critical sources of competitive advantage and competitiveness, but the Covid-19 crisis has highlighted the importance of going digital even for the existence of businesses, organizations and jobs. The objective of this paper is to highlight the necessity of digitization in all segments of the economy of North Macedonia.

### **METHODOLOGY**

The methodology used in this paper is based on desk research, qualitative interviews, secondary statistics and media analysis. An empirical research (online survey) was conducted from 20 March to 20 May 2020 during the Covid-19 pandemic first wave in Macedonia. The focus was on three sectors: education, retail, and ICT, and data was collected on the effects caused by the pandemic on business models, business results and digital transformation of the organizations.

### **RESULTS**

The results of the research indicate that Covid-19 has a strong impact on the economy of North Macedonia in almost every sector, especially on retail and education. The companies and organizations from these two sectors recognize that their digital transformation should become their ultimate goal for competitive advantage (for 74% of the respondents from retail, and for 68% of the respondents

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from education), but because of the Covid-19 crisis, for them it becomes one of the crucial factor for their business existence (for 93% of the respondents from retail, and for 82% of the respondents from education). ICT sector is less affected by the pandemic (only 23% of the respondents stated that the pandemic affected their business processes, but almost 74% stated that their businesses suffer because of the crisis of Macedonian economy caused by the pandemic), and businesses from this sector see this health crisis as a driver of digitalization of the business environment in North Macedonia (69% of all respondents from ICT sector) and a strong potential for the ICT sector growth (77% of all respondents from the ICT sector).

### **IMPLICATIONS**

The research findings are important for policy, practice (especially top managers of businesses and organizations), and subsequent research.

Organizations and business in North Macedonia see the Covid-19 crisis as a trigger to their digital transformation. Ultimately, they need support to implement, manage and optimize the opportunities of new digital technologies which will add incredible value to their performances. This will contribute to the development of digital economy of the country as a whole.

### **ORIGINALITY VALUE**

There is not so much research on digital transformation in North Macedonia, especially in the context of Covid-19 pandemic, and considering the health crisis as a potential trigger for development of digital economy of the country. This research put an emphasis on the pandemic as an opportunity for the Macedonian economy and pointed out the necessity of acceleration of digital transformation and acceptance of new business models based on digital technology.

### **CONTRIBUTION**

This research is among the first that investigate if and how the Covid-19 crisis could be treated as an opportunity for the economy of North Macedonia, and not just as a threat. The online survey of respondents from three important sectors of the economy gives an insight into the issues that businesses, organizations and relevant state agencies should focus on in order to improve their position to better navigate the new reality of a post-Covid world.

## KEY WORDS

Digital economy, digital transformation, Covid-19 pandemic, health crisis, economy of North Macedonia

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## 2.4. EMPLOYEE PERCEPTION ON ENFORCED TELEWORK IN FINANCIAL INDUSTRY: EVIDENCE FROM SERBIA

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### OBJECTIVES

The ongoing pandemic has instantaneously changed the way people work – or work at all (Gálvez, Tirado & Alcaraz, 2020). Accordingly, the phenomenon of teleworking has received an immense attention from both scholars and practitioners in last few months (Brynjolfsson et al., 2020). However, concurrent body of knowledge has not been industry specific. The aim of this paper is addressing the issues of teleworking among financial professionals in Serbia.

### METHODOLOGY

The online survey was distributed internally to the employees of a Serbian financial company. The survey is prepared using Google forms and sent via e-mail by a local HR manager. The respondents were asked to fill the questionnaire with the aim to provide their feedback regarding work from home from different aspects: quantity of work, productivity, working hours, challenges and employees' aspirations regarding telework in the future. The survey design is inspired by the research of Rubin et al. (2020).

### RESULTS

The results are based on 55 responses with response rate of 73%. The findings regarding productivity are that 33% of respondents feel more productive while 47% believe that they do the same quantity of work. The survey revealed that the main

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challenge is to find satisfactory work life balance. In addition, lack of human interaction is the main disadvantage of telework. Employees welcome the possibility to work from home and they are willing to accept mobile workplace when come to office.

### **IMPLICATIONS**

The context of this research is created by sudden measures that were expected to play a critical role in preventing the spread of COVID-19. It means that employees were faced not only with new working environment but also with worries regarding their ability to preserve job and to stay healthy during pandemic. The research results should be taken as starting point to create sustainable balance between work from home and conventional office taking into account benefits of teleworking and intrinsic value of commuting.

### **ORIGINALITY VALUE**

Teleworking has been a phenomenon vividly discussed in both academia and practice for more than three decades. Nevertheless, an important contribution of this study is the momentum of exploring the attitudes and perceptions of employees in the financial sector. Second important strength of the paper is the focus on financial industry and financial professionals. Hitherto, only a paucity of studies has been industry-specific. Third important strength of the paper is the geographical context.

### **CONTRIBUTION**

This paper contributes to the better understanding of perceptions of financial professionals in Serbia towards teleworking. Perceptions of financial professionals has not been the adequately exploited topic (i.e. Milosavljevic, Joksimovic & Milanovic, 2019). On the other side, employees in Serbia often see high-performing human resource practices as a burden rather than a driver of positive change (see Radonic & Milosavljevic, 2019).

### **KEY WORDS**

Teleworking, financial industry, Serbia, employee perception



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## **2.5. THE FACTORS AFFECTING THE LEVEL OF DIGITAL ENTREPRENEURIAL COMPETENCES OF UNIVERSITY STUDENTS**

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### **OBJECTIVES**

Digital entrepreneurial competences (DEC) are a specific variation of general digital and entrepreneurial competences. They have become very important with the advance of information technology and the rising number of technology-based enterprises and IT business models. The main objective of this paper is to identify the factors affecting the level of DEC the students acquire during the course of their formal education.

### **METHODOLOGY**

A group of 50 university students from various universities in Serbia covering DEC in their curriculums will participate in this research which will be based on the use of self-assessment questionnaire and real life scenarios in order to provide a realistic assessment of their DEC. The students will be selected using convenience sampling method. The overall intention is to include the students from at least 10 out of 20 universities in Serbia. The collected data will be processed using both qualitative and quantitative methods in order to identify the factors behind various levels of DEC for different students.

### **RESULTS**

The results of the research will provide two sets of useful information for different stakeholders involved in university education in Serbia. The first set of information will refer to the measurement of the actual level of DEC the students acquire during their formal education on universities. The second set of information will provide useful insights in different factors affecting the level of students DEC.

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## **IMPLICATIONS**

The results of this paper may have significant impact on various stakeholders. The scientific community may benefit from the fact that no similar measurement of students DEC hasn't been conducted in the past. The educational system will benefit from the fact that it will receive the feedback on its efficiency in regards to DEC. The policy recommendations which may result from this research will benefit the policy makers in terms of empirical data driven educational policies.

## **ORIGINALITY VALUE**

Despite the growing popularity of digital entrepreneurship in global terms and the growing number of academic programs focused on digital entrepreneurship, the academic literature in this field still lacks with the extensive, empirical research on this subject. There is no evidence on research focused on measuring the level of DEC of university students and the factors affecting those levels.

## **CONTRIBUTION**

Considering the fact that this research will be the first of its kind in regards to DEC, it will contribute to the development of completely new scientific area devoted to the measurement of DEC of university students and to the better understanding of the factors affecting the levels of DEC for university students. Its contribution is also evident in providing empirical data which will help universities to better adjust their curriculums with the actual needs of the contemporary market.

## **KEY WORDS**

Digital entrepreneurship, digital entrepreneurial competences, DEC assessment

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## 2.6. MANAGEMENT EDUCATION USING SOCIAL MEDIA: BRIDGING THE GAP BETWEEN THEORY AND PRACTICE

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### OBJECTIVES

Based on the growing interest for social media introduction to management courses and the need to better understand student motivation for employing social media (hereafter SM) for studying purposes, the objectives of this study were to provide answers to the following research questions:

- 1) Do Management course students find SM to be a valuable tool for studying?
- 2) Is duration of SM presence an indicator of students' propensity towards the use of SM for educational purposes?
- 3) Are there significant differences regarding students' use of SM for educational purposes based on their gender?

### METHODOLOGY

For the purposes of this study, 641 undergraduate students of Management at the Faculty of Organizational Sciences, University of Belgrade were invited to participate in research. Students' experiences and attitudes on the use of SM for educative purposes were collected through an online questionnaire. It consisted of demographic questions and characteristics of SM use (presence expressed in years, amount of social media usage in terms of frequency of login, time spent per login and frequency of posting content). The survey also included 18 Likert-scale questions using five-point agreement level from 1 (strongly disagree) to 5 (strongly agree).

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## **RESULTS**

Significant findings were revealed. It was found that students perceived SM as a valuable mean of education, where blogs, tutorials, Facebook and LinkedIn were proved to be important sources of educational content. Five-year or longer presence on SM was a strong predictor of students' intention to employ SM for educational purposes, as students who used them for more than five years were more interested in employing them to learn something new. It was found that female students were more prone to search for educational content and additional information on SM than their male peers.

## **IMPLICATIONS**

The scientific contribution of this research was to emphasize benefits of SM implementation in educational practices. Student-aged population uses SM to collect personally relevant information, acquire knowledge that others are not familiar with and achieve self-actualization. On the other hand, most educational practices in Serbia still rely on traditional lecture methods. Therefore, there is a need for bridging the gap between acquiring theoretical knowledge and developing practical skills. Student technological preferences should be taken into consideration when creating course curriculums and educational policies.

## **ORIGINALITY VALUE**

Based on the review of relevant literature, the need for conducting this kind of research was noted. Similar researches were conducted on the use of SM in the pre-enrollment phase. This study represents a continuation of such researches as it observes students' willingness to use SM during the course of higher education activities.

## **CONTRIBUTION**

This study has investigated the possibilities of implementing SM into learning practices of university students in Management courses. It adds to the existing body of knowledge within the field. This study calls for further investigation of this topic. Moreover, it emphasizes the need to implement SM into educational practices to boost practical skills development among students. The results of the research presented in this study are intended for policy makers and lecturers as well, as they emphasize the need for greater involvement of SM in educational practices.

## KEY WORDS

Management education, social media, educative application, theoretical knowledge, practical skills

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## 2.7. GAMIFICATION IN EDUCATION – CASE STUDY IN NORTH MACEDONIAN HEIS

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### OBJECTIVES

The paper focuses on ICT-enabled education and advanced Learning Management Systems (LMS) through introducing the concept of gamification on improving the learning processes of students in Higher Educational Institutions (HEIs) in the Republic of North Macedonia. The main goal of the research is to examine the practical implications of gamified systems on improving student motivation and engagement in distant learning processes.

### METHODOLOGY

To research the main topic in detail, a combination of secondary and primary research methods is utilized. Literature review represents the main method for obtaining theoretical and background data through books, scientific papers and articles on connected topics. Primary research is done through implementing a case study method on two North Macedonian HEIs with students from all study years, enforced through quantitative and qualitative data from questionnaires.

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## **RESULTS**

Results are analyzed focusing on several key points regarding improvement of learning processes and educational systems. The baseline is provided by analyzing the current state of the levels of engagement and motivations in students (low to moderate), followed by assessing the improvements by introducing a gamified application. Preliminary data show moderate to significant improvements in productivity, motivation, learning habits and engagement with HEI activities in a distant learning process.

## **IMPLICATIONS**

The research indicates that HEIs can benefit by implementing gamification in their higher educational processes, especially prevalent when LMS are involved. Student motivation is core in improving the student learning experience, which is difficult to monitor and managed remotely in an LMS. By introducing gamified systems and processes, students are engaged in an automated system that constantly guides them in their activities regardless of their location.

## **ORIGINALITY VALUE**

The research is a continuation on a series of papers focusing on various aspects of gamification and its implementation in different fields by the authors. In line with other research on the field, this paper brings new data and conclusions applicable for the country of interest, as well as the more expanded Balkan region.

## **CONTRIBUTION**

As the research focuses on primary data through case study and questionnaires, it moves forward the discussion on implementing gamification systems in the learning processes for students at any educational level, with extended focus on HEIs. Data and analysis from the research will enable new evidence and conclusions in the role of gamification in modern LMS.

## **KEY WORDS**

Gamification, learning management systems, distance learning, motivation, learning habits

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## 2.8. DIGITAL PERSPECTIVES OF SOCIAL ENTREPRENEURSHIP IN WESTERN BALKAN COUNTRIES

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### OBJECTIVES

The main focus of this paper is to increase the awareness of the concept of the Digital Social Entrepreneurship (DSE), as a combination of the social and digital aspects of entrepreneurship. Therefore, the possibilities and obstacles of these process in the Western Balkans countries (WBC) is considered.

The main objectives are to show the growth potential possibilities of both the market and the social impact of the social enterprises, considering the digitalization<sup>4</sup> of the same.

### METHODOLOGY

Methodology consists of the comprehensive analysis of strategic national documents in the field of economics and gathering information to assess opportunities in development of social enterprises. Also, publications by academic institutions and private sector, as well as international organizations are considered.

Therefore, in this paper a several case studies of such business will be presented giving an overview of how social enterprises could get digital dimension.

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<sup>4</sup>A shared Definition of Digitalisation in Social Services In a general sense, digitalisation can be defined as the massive adoption of digital technologies to generate, process and share information and implement specific tasks via digital devices.

## **RESULTS**

The analysis results in WBC in the field of social enterprises gives overview of the current situation, which is underdeveloped. SEs in the WBC need to bridge the challenges they are facing in the everyday functioning and the digitalization process. Theory and modern practices show that digitalization in these services offer many possibilities and positive effects, including new opportunities for entrepreneurs, new companies/business, new and more productive jobs which leads to sustainable growth.

## **IMPLICATIONS**

DSE will change the business environment and the way of thinking about the importance of social economy and innovation, by strengthening the market competition, encouraging the public-private cooperation and social dialog. It will create new jobs, businesses, better access to social services and economic growth. The main impact will be the new design and delivery of social services. In addition, positive impact with the public expenditures in all WBC is expected.

DSE is the only way for fulfillment the European Pillar of Social Rights obligations.

## **ORIGINALITY VALUE**

The issue of digitalization is crucial for social economy enterprises, because the changes offer both challenges and opportunities. Indeed, new digital technologies enable quicker exchanges of best practices and offer tools to support the values of the social economy through new collaborative, short-circuit and circular economic models, on which social economy actors could have a defining influence if they rise up to the task.

This research recognized common issues when it comes to the challenges that countries are facing, and creates recommendations that might benefit social enterprise in their digitalization.

## **CONTRIBUTION**

This paper set out preliminary understanding of digital social entrepreneurship and its potential impact on the social challenges and how can may contribute to smart, sustainable and inclusive growth in the economy. Recommendation and proposing policies address the establishing of the new digital social enterprises, as well as digital transformation of the existing one in the WBC. According to the common

business environment especially important is the possibility of social enterprises networking and strategic approach to future development of the DSE in the region.

## **KEY WORDS**

Digitalization, social enterprises, social economy, social impact, case studies

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## **2.9. INNOVATION IN GOVERNANCE MECHANISM: CURRENT STATUS OF THE GENDER ASPECT IN THE FINANCIAL SECTOR OF SERBIA**

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### **OBJECTIVES**

The participation of women on company boards has been widely promoted as a gender equality issue, but also as a measure to improve governance. The influence of women on boards of directors has been widely discussed in the dimensions of decisions relating to capital structure, profitability, ethics, earnings quality, risks and disclosure. The aim of this paper is to analyze the EU legal framework, in addition to the gender situation in decision-making bodies of EU central banks, European financial institutions and large EU companies and gender situation in these bodies in Serbia.

### **METHODOLOGY**

The EU legal framework on gender issues was analyzed using the description method and the conceptual analysis method, while the women participation in the financial institutions, central bank bodies and large EU companies as well as those Serbian institutions was analyzed using the descriptive statistics on the basis of data provided by Eurostat data.

### **RESULTS**

The elements of the EU gender equality acquis' are shown, and particularly the Commission proposal on the issue of gender balance in company boards. The arguments in favor to the adoption the Directive proposal commonly known as the

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'Women on Boards' proposal, as well as the criticism for which that directive proposal has not been adopted are elaborated. We show that in comparison with membership in decision-making bodies of EU central banks, European financial institutions and large EU companies, the gender situation in these bodies in Serbia is still not at the EU level.

### **IMPLICATIONS**

The results could be useful for policy makers as well as for shareholders in order to better understand the process of adoption of the 'Women on Boards' proposal, as well as to comprehend the actions of the different members of the EU on this topic. Bearing in mind that the 'Women on Boards' proposal is relevant again, the analysis of the current situation in Serbia is a first step towards understanding the necessary steps that must be taken if the proposed directive is adopted.

### **ORIGINALITY VALUE**

The originality of the research consists of showing the current situation of gender issues on companies' boards from the perspective of decision-making bodies of Serbian central bank, financial institutions, and large companies compared to the EU entities.

### **CONTRIBUTION**

We have faced arguments for and against the adoption of the 'Women on Boards' proposal and show the discrepancy of women membership in decision-making bodies of the central bank of Serbia, financial institutions, and large companies compared to the EU entities.

### **KEY WORDS**

Corporate governance, gender, board of director, EU regulation

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## **2.10. DIGITAL LITERACY IN THE GENERATIONS X, Y AND Z IN THE REPUBLIC OF SERBIA**

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### **OBJECTIVES**

The main objective of this paper is to explain the importance of digital literacy between different generations – X, Y, Z. The aim of this research is to indicate the significance of the possessing of digital skills in different generations.

### **METHODOLOGY**

The author will use the data of the Statistical Office of the Republic of Serbia – The usage of ICT in the Republic of Serbia. Data will be processed in SPSS software, to determine the level of digital literacy of different generations – X, Y, Z.

### **RESULTS**

Results should present clear differences and levels of digital skills and digital competencies of people born in different periods, the 1960s to late 1970s for generation X, from the 1980s to the 1990s for generation Y, and from 1995 for generation Z.

### **IMPLICATIONS**

Finding in this paper may be helpful for better understanding the importance of possessing digital skills among citizens of different ages.

### **ORIGINALITY VALUE**

Digital literacy is one of the most important phenomena in the XXI century. There is not that much research with a similar topic in the Republic of Serbia, so this research may help in some further research on digital literacy in different generations.

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## CONTRIBUTION

This research can contribute to the understanding of different levels of digital literacy in different generations in the Republic of Serbia. This topic is important so the policymakers and institutions can correct potential gaps that exist.

## KEY WORDS

Digital literacy, digital competencies, generation X, generation Y, generation Z

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## 2.11. A LONG-RUN RELATION BETWEEN TOURISM AND INTERNATIONAL TRADE: EVIDENCES FROM WESTERN BALKAN

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### OBJECTIVES

The main objective of the study is to empirically assess whether a long run relationship exists between receipts from international tourism and export/import in the Western Balkan region. The research is motivated by the concerns about detrimental impact that ongoing downfall in international touristic arrivals (due to COVID-19 pandemic) will have on other macroeconomic variables.

### METHODOLOGY

Applied methodology is based on the panel version of standard procedure for co-integration testing in multivariate time-series analysis. It consists of the following steps:

- panel unit root testing - the IPS W-stat (Im, Pesaran and Shin, 2003), the Fisher-ADF Chi-square test (Maddala and Wu, 1999) and the Fisher-PP Chi-square test (Choi, 2001).
- panel co-integration testing - Johansen test (Johansen, 1988), and;
- estimation of the panel Vector-Error Correction model.

### RESULTS

Empirical results support existence of the co-integrating relations both between receipts and import and receipts and export. Also, in both cases the existence of a bidirectional long run causal relationship is evidenced, in line with certain theoretical expectations and predictions. On the other hand, short run Granger causality is indicated only from import to receipts and receipts to export.

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## IMPLICATIONS

Proper assessment of the relations and causality directions between gains from international tourism and components of international trade contributes to the improved macroeconomic planning. To this end, results of this research that can be further utilized by the policy makers in Western Balkan countries in forward-looking analysis of the possible consequence that collapse in touristic activities will have on flows of international trade.

## ORIGINALITY VALUE

The originality of the paper is stemming from the methodological approach to analysis of the relationship between tourism receipts and international trade and the scope of countries in the sample. To our best knowledge, a study with same or similar subject and analytical approach has not been previously conducted for the selected group of countries.

## CONTRIBUTION

This paper contributes to the literature that empirically examines the issues of the long run relationship between receipts from international tourism and components of the international trade, especially in the emerging economies. In addition to existing work, it underscores the econometric issues of panel data co-integration analysis and VECM modeling.

## KEY WORDS

International tourism receipts, trade, co-integration, VECM, Western Balkan

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## 2.12. ASSESSMENT OF INNOVATIVE CAPACITY OF BUSINESS ENTITIES IN THE REPUBLIC OF SERBIA

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### OBJECTIVES

The research aims to assess the innovative capacity of business entities in the Republic of Serbia (RS). The subject of the research is the innovative capacity of large and small and medium-sized enterprises and entrepreneurs (SMEE).

### METHODOLOGY

Methodology used in the research contains desk (Đuričin et al., 2016) and field (Đuričin & Beraha, 2018) research. Desk research includes analysis of relevant literature, statistical data, and information on various actors of the innovation system of RS. The results of the desk research were used to define the sample of respondents and the content of the questionnaire. Field research was realized by carrying out surveys on the sample of 10 large enterprises and 30 enterprises from the SMEE sector (Beraha & Đuričin, 2020a; Beraha & Đuričin, 2020b). To collect data on innovative capacity, the structured questionnaire containing closed-ended questions was sent to E-mail addresses of selected enterprises.

### RESULTS

All large enterprises and 67.74% of SMEEs have innovation goals defined in their strategic documents and/or business plans. When performing business activities, 33% of large enterprises and 58.1% of SMEEs cooperate with scientific research institutions. Innovation is independently developed by 66.7% and 63% of large and SMEEs respectively.

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All forms of innovation are represented in the surveyed enterprises, while process innovation is predominantly represented in 43% of large enterprises and 45% of SMEEs.

### **IMPLICATIONS**

The research output could have an economic and wider social influence. The obtained results represent the starting point for improving the technological structure of business entities. The research enabled the identification of business entities that have the capacity to produce higher value effects, improve competitiveness and export. Investing in the development of innovative capacity provides an opportunity to solve problems in the fields of environmental protection, employment of vulnerable groups, digitalization, energy efficiency, etc.

### **ORIGINALITY VALUE**

The research has its special significance in the unique database on the innovative capacity of economic entities in the RS. The results presented in this paper are only part of the research conducted within the Perform project funded by the Swiss Agency for Development and Cooperation (SDC) and implemented by HELVETAS Swiss Intercooperation.

### **CONTRIBUTION**

The innovative performance of individual actors of the national innovation system largely depends on their mutual relationship and cooperation. Determining the innovative capacity of business entities contributes to the assessment of their role and position in relation to other actors of the innovation system of RS.

### **KEY WORDS**

Innovative capacity, large enterprises, SMEE, Republic of Serbia

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## 2.13. THE EXPANSION OF FREELANCE WORK IN MONTENEGRO

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### OBJECTIVES

The global expansion of freelance jobs is creating a new opportunity for less developed countries to catch up with high performing economies, thus this research aimed to determine the impact of freelance work in Montenegro and the workforce interest in joining the worldwide community of freelancers. Furthermore, the research showcases the demographics of freelancers in Montenegro, including their education level, gender, age, and profession. By using the results of this research, policy creators can make new legislations to support this kind of employment and secure the future for freelance workers.

### METHODOLOGY

A group of 150 people from professional social networks as LinkedIn<sup>3</sup> and Carmela Montenegro<sup>4</sup> participated in the email and web questionnaire, with the requirement of working on a freelance platform that directly connects job seekers with employers. The data collected was analyzed using descriptive statistics and Grounded theory to explain the types of jobs completed, skills required for completion, and gender.

### RESULTS

The results of the research provided better insights into the advantages and disadvantages of this type of work for freelancers in Montenegro. Most of the respondents have a university degree (22.15%) or have finished high school

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(18.2%), with minor involvement of postgraduates or workers with elementary school. When categorized by job type, the biggest number of freelancers work in the research and education industry (44%), software development (21%), and translation services (20%). Furthermore, almost 80% of the participants responded that they would continue working this way with the majority accepting it as a single source of income (56%) and an additional source of income (24%).

To conclude the questionnaire, most of the respondents replied that there are no negative aspects of this kind of work (66.22%).

### **IMPLICATIONS**

The results of this paper may have a significant impact on policymakers and various stakeholders. The freelance community may see the showcased data as a baseline to further developing working conditions this type of employment, worker's legal protections, and social benefits for the employed. Furthermore, the high percentage of people wanting to work as a freelancer is a clear sign of the needed reform within our societies to accept this kind of employment as one of the standards and ensure equal rights and benefits for the employed.

We would like to stress that research does not have a representative sample, but it could be useful for future studies on this topic

### **ORIGINALITY VALUE**

Despite previous research conducted on similar topics, this paper brings value by focusing on the employee demographics, needs and opinions in a small developing country that tries to reach digital maturity of more developed countries in the EU.

### **CONTRIBUTION**

The main contribution of this paper is creating a baseline for further research in this area and help policymakers understand the needs and requirements of the new types of employment that are emerging in Montenegro.

### **KEY WORDS**

Freelance employment, digital entrepreneurship, platform economy

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## **2.14. DIGITALIZATION AND THE USE OF DIGITAL MARKETING TOOLS IN THE OLD-SCHOOL TRADITIONAL ANTIQUES AND COLLECTIBLES INDUSTRY: A CASE STUDY**

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### **OBJECTIVES**

The objective of this paper is to elaborate on the usefulness of digitalization and digital marketing tools in any industry (including the old-school conventional physical-based industries). Other objectives are to analyze the utilized digital platforms and tools such as website analytics, organic and paid social media, Search Engine Optimization (SEO) and Search Engine Marketing (SEM), e-mail marketing, content creation and copywriting and to give insights on how each one affects the business online visibility, brand awareness and differentiation.

### **METHODOLOGY**

The methodology used in this paper is case study analysis, i.e. first-hand insights and information regarding a company from Croatia that has been operating for more than 3 years in this industry as well as an interview with the owner and a conducted survey from a small sample of 100 of the company's current and potential customers (the newsletter list). This is an original study that gives a complete overview and insights of the operations of the company, its marketing tools, stats, data and branding strategies.

### **RESULTS**

Our findings suggest that digitalization, online presence and the use of digital marketing tools have transformed the company's operations, market research procedure, brand recognition, positioning and market reach. Results have shown that the targeted and consistent relevant free content creation in the antiques and collectibles industry in Croatia has created an online community of current and

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potential customers and this gives the company a clear perspective and direct feedback from the target market.

## **IMPLICATIONS**

Digitalization and digital marketing can indeed boost a business online visibility and create an online community of existing and potential customers. The use of digital marketing can enhance a company's knowledge regarding their customers and can be successfully applied in any business and any industry. Although this study provides new insights, the study was not without limitations. The study only analyses one trade and dealer company from Croatia. This could not represent the whole industry neither in the region nor the Republic of Croatia. We expect this paper to be a solid ground for further research on this subject and this industry.

## **ORIGINALITY VALUE**

Very little studies have focused on the digitalization and the use of digital marketing tools of the antiques and collectibles industry. There is a gap in the academic research of this rather untypical and very specific industry. The study fills this gap with an overview of how digitalization in general and digital marketing specifically transforms the antiques and collectibles industry, and how SME companies could benefit from online visibility and higher online brand awareness.

## **CONTRIBUTION**

The contribution of this paper is in recognition of the marketing efforts (with a special accent of digital marketing efforts) in such conventional and traditional industries and its effects on company's online visibility and branding. This study is one response to the need to address these issues and to attract more researchers in this field of study. The contribution could be also recognized through advocacy for even further digitalization of this industry in general, as it points out the benefits and possible results from digitalization and digital marketing tools.

## **KEY WORDS**

Digital marketing, digitalization, antiques industry, collectibles

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## 2.15. IMPACT OF DIGITALIZATION ON THE LABOUR MARKET: THE CASE OF NORTH MACEDONIA

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### **OBJECTIVES**

The impact of digitalization on the labor market is very complex and is manifested in different conditions for job creation and job protection, changed needs for occupations and skills, coping with skill mismatch and labour shortage etc. The aim of the research is to determine the possible implications of digitalization on the labour market in North Macedonia, by analyzing relevant labor market indicators and the results of employees' survey (in public and private sector), based on several hypotheses related to jobs and work.

### **METHODOLOGY**

The methodological approach of the study involves application of desktop research and analysis of quantitative and qualitative data. The labour market indicators for North Macedonia are based on official data sources. For the purpose of the research, a questionnaire related to the impact of digitalization on the jobs and work was created, and the survey was conducted in June-July 2020. The analysis of its results includes answers to individual questions and their intersections with respondent's socio-demographic features.

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## **RESULTS**

The analysis of the labor market indicators shows that despite the positive changes, the situation on the Macedonian labor market remains unfavorable (low employment rates, growing skills mismatch and labor shortage in conditions of still high unemployment). The survey results indicate that the digitalization may not cause serious job losses, but it can lead to significant shifts in the employment structure (regarding industries, occupations, skills, nature of jobs, pressure on the lower skill levels etc.). The influence of digitalization on the labour demand will depend on the employment sector and job profile as well as on the investments in technology and relevant experience to use it. Also, digitalization will reduce the labour shortages caused by demographic aging.

## **IMPLICATIONS**

The findings of this research are meaningful for policy makers, state institutions, employers, trade unions and other stakeholders. The digitalization implies need for coherent approach of all involved parties. It will impose the need for reforms in all levels and forms of education, changes in management style, organizational culture, work processes and union organization, as well as application of new business models. So, the role of the state is very important, since creating policies and undertaking appropriate measures is necessary to support the public and private sector in their process of digitalization.

## **ORIGINALITY VALUE**

The added value of this research derives from linking the analysis related to labor market implications of digitalization in North Macedonia and survey results on the employees' opinions about its impact on jobs and work. Without the pretense of comprehensiveness, the paper provides grounds to debate on different impacts of digitalization on the labour market in the country. With this research, initial knowledge was gained for various aspects, but their complexity implies further in-depth research for some of them.

## **CONTRIBUTION**

The study provides an insight of digitalization's impact on the labour market in North Macedonia, and the findings may help in creation of related policies. The research confirms the complexity of this issue and offer additional knowledge on the ways in which digitalization influence different areas such as labor supply and demand, productivity, labor force aging, job transformation, management style,

organizational culture etc. These findings can be used as guide in determining the necessary to make the digitalization process more efficient.

## KEY WORDS

Digitalization, implications, labour market, jobs, work, North Macedonia

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## **2.16. ICT SKILLS AND EMPLOYABILITY OF OLDER WORKERS IN EUROPE: AN ANALYSIS BASED ON SURVEY FOR HEALTH, AGEING AND RETIREMENT**

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### **OBJECTIVES**

ICT skills are becoming increasingly important for the old-aged Europeans. A digital gap in ICT skills remain within the elderly population, among different European countries. This study aims to investigate the computer literacy and internet use behaviors as deterrents of employability among elderly Europeans, thus providing supporting policy implications for an inclusive society in the ageing Europe, based on the Survey of Health, Ageing and Retirement in Europe (SHARE) Wave 7 of the year 2017.

### **METHODOLOGY**

Our analyses are based on the seventh wave of SHARE. Data were collected in 2017 and provide standardized information on respondents aged 50+ in 12 European countries, including Austria, Belgium, the Czech Republic, Denmark, France, Germany, Greece, Italy, Poland, Spain, Switzerland, and Sweden. The dataset contains information on a wide range of topics, such as demographic information, income, health status, education, occupation, healthy behavior, social support, and physical activities.

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## **RESULTS**

Results highlights that gaps among PC skills and Internet use exist widely among older Europeans across different European countries, influenced by individual factors, as well as country-level factors such as level ICT infrastructure. We find that gender in the younger age group (50–65 years) maybe a predictor of PC skills in some countries, and social salience matters for Internet access. We are also able to demonstrate that Computer Skill is correlated by factors on labor market outcomes.

## **IMPLICATIONS**

This analysis suggests that population-wide interventions such as infrastructural ICT-environment, might be helpful to promote the employability and extending working-life among the old Europeans, through promoting PC skills and Internet use among them. Together with sustainability concerns, promoting PC skills and Internet Use and discouraging early exit from the labor market reduces the risk of enduring consequences on individual and household well-being later in life.

## **ORIGINALITY VALUE**

Understanding the determinants of employability and working-life extension of old-aged adults has been a long-standing focus of policy makers, given the ageing society in Europe. Population ageing is challenging the sustainability of the social security system and health care system in Europe; the original results of tis analysis, therefore, may promote the labor market participation of older workers via increasing PC skills and Internet Use, which are at the priority of the policy agenda.

## **CONTRIBUTION**

It is expected that results from this analysis will have a high impact on the scientific community devoted to the sustainability of European Welfare States through effective ICT policies, and the project results will contribute to the policy debate on working life extension of European residents and solving the challenges from demographic change. Cost-effective ICT policies could be designed to reduce the health inequalities and promote the solidarity in Europe.

## **KEY WORDS**

PC literacy, Internet use, elderly people, Europe, working life extension



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## 2.17. MODERN ORGANIZATIONAL IDENTITY THROUGH DIGITAL MANAGEMENT

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### OBJECTIVES

The organization, which understood its audience well, showed good results in an emergency caused by the virus pandemic with COVID 19. In fact many organizations immediately failed to reorganize, make significant decisions in creating a new organizational identity, and successfully present its new digital organizational identity in front of the audience. The most innovative, technologically ready-to-digit ones have momentarily demonstrated the power of risk management using the latest digital innovation in order to respond appropriately to the new global situation. In that newly created global reality, it was not enough to rely solely on the already established favorable image of the not-so-distant past, but it was necessary to find a new way of managing organizations as a whole. Managers had to physically turn organizations into viral, transferring every physical contact necessary for the functioning of organizations to digital. Human resources and the organization's overall resources have instantly become digital images, voices, numbers.

The research conducted for the purposes of this paper envisages an analysis of the situation in terms of creating a new organizational identity, a new organizational image and the willingness of organizations to respond qualitatively to the challenge of the new digital way of managing organizations. The positive and negative sides of the digitalization of organizations will also be considered. To what extent are human resources ready to accept that way of working and whether they would apply it in the future if they are allowed to make a choice between the classic way of working with physical presence and the new online operating?

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## **METHODOLOGY**

The research that will be done for the purposes of this paper is based on the study of already existing literary works, issues and research. In that direction, the methods and models of analysis and synthesis of the collected information will be used in order to determine the importance of digitalization of organizations in building a new organizational identity appropriate to the needs of the new global online reality.

The use of the comparative method will allow us to get acquainted with the difference between traditional management practices and the modern online way of managing organizations in this paper is assumed to be a strategic and key factor for quality entry and long-term survival of companies domestically and internationally. market.

In order to conduct the research and prove the hypotheses in this paper, an interview will be conducted with company managers in the countries of the Western Balkans. The questionnaire will be based on a scale of views.

## **RESULTS**

Expected research results:

- To prove the relationship between the degree of digitalization of the organization and the building of a modern organizational identity appropriate to the new global online reality
- To prove the relationship between the modern way of management, emphasizing the online management with the level of efficiency of managers and employees within the organizations in which it is applied during a crisis (crisis management),
- To show the extent to which companies in the Western Balkans monitor and implement their current online business trends, to build new identity organizations and how much they play a strategic role in their approach to both domestic and international markets.
- To show and initiate the need to create quality management staff through integrated processes in the education system following the example of developed modern economies in order to overcome the lack of quality management staff to work in crisis situations.

## **IMPLICATIONS**

The paper will contribute to determining the effects of the implementation of digital management on organizations in correlation with its success in the new online global environment. The results of the research would contribute to improving the quality of online management of the organization, in order to build a new organizational climate that will provide the creation of a new organizational identity and create a new image and image in the audience. All this will present an improvement in the success of the company.

## **ORIGINALITY VALUE**

The originality of the work is seen in the fact that this research will present a new way of managing orgasms, in a specific so-called a period of crisis that no one but epidemiologists could have imagined would be created, a period of quarantine and social distance. It is this new situation that poses the challenge of managing companies in a very different way than the classic one. In such a situation, managers need to monitor the situation with great concentration and create an organizational climate that will respond positively to the new reality. Creating a new identity for online reality creates a new online image in the audience that has proven to be the most effective in this period.

## **CONTRIBUTION**

The benefits of raising awareness of the need for modern digitalization of organizations and creating a new organizational reality and thus creating a new organizational identity are directly related to the success of organizations and its image. All this leads to significant financial effects on the company's operations. And all this leads to a change in traditional attitudes with the new modern management where the satisfaction of online work of employees on the one hand and online cooperation with consumers, on the other hand, is seen as an investment, not an expense. Therefore, the digitalization of organizations realistically increases the value of the organization itself.

## **KEY WORDS**

Organizational identity, organizational image, online operations, crisis management, new global reality

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## **2.18. CONSUMER'S BEHAVIOR IN THE PERIOD OF PANDEMIC OF COVID-19 AS A POSSIBILITY FOR FOSTERING DIGITAL ENTREPRENEURSHIP IN REPUBLIC OF NORTH MACEDONIA**

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### **OBJECTIVES**

Demand is depended on the consumer's behavior, which undoubtedly underwent changes caused with Covid-19 pandemic. Consumers are responding to the crisis in different ways; some feel anxious and worried, buying in panic only necessary and basic products; some remain indifferent, despite government and health professionals' recommendations. Objective of this paper is to analyze Macedonian consumer's behavior during the pandemic as a possibility for fostering digital entrepreneurship.

### **METHODOLOGY**

Soon after announcement of the pandemic in North Macedonia, in April 2020, a survey about consumer behavior was conducted, with questionnaire composed of 11 questions, divided in two groups. First group of questions was about the demographic profile and employment status of the respondents, and the second group was questions that provided data about the consumer behavior. The questionnaire was distributed online through Google forms platform, thereby reaching 427 respondents (random sample).

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## **RESULTS**

In regards of the influence of crises in their lives, 78% of the respondents are aware of their changing consumer habits. For 56% of the respondents consumer behavior is changed in manner that they are buying stocks of products that otherwise they would have not buy in such quantities and 16% of them started buying on-line and/or order by phone, but not in-store.

## **IMPLICATIONS**

Cross tabulation of survey data on employee status of respondents and their concern about Covid-19 was also implemented. It shows that more than half of the respondents who are managers and entrepreneurs (business owners) are seriously worried about keeping their business running against all odds in a time of pandemic crisis. This implies that business will tend to digitalize their existing or newly formed business leading to new and improved initiatives for digital entrepreneurship.

## **ORIGINALITY VALUE**

Findings from the survey and evident change in Macedonian consumers' behavior, suggests that Government could take immediate actions to mitigate short-term challenges and enable sustainable solutions for structural constraints. The solutions are about stepping-up the efforts on digital transformation, encouraging the uptake of e-commerce and promotion of the effective and widespread transition of many activities into digital platforms as step forward in developing the digital entrepreneurship.

## **CONTRIBUTION**

This paper could be used as a base for further researches or forecast on consumer behavior, which is important and useful for the companies affected by the pandemic. It identified that in addition to consumption, changes have occurred in the greater application of e-commerce and communication services. Business and companies will need to understand how their own consumers are reacting and seriously consider acquiring ability to leverage digital tools in order to survive the ongoing crisis.

## **KEY WORDS**

Consumer's behavior, digital entrepreneurship, Covid-19 pandemic, Republic of North Macedonia

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## **2.19. HOW TO GUIDE MSMES THROUGH CHALLENGING TIMES: A SURVEY ON CONSUMER BEHAVIOR HABITS IN COVID-19 CRISIS**

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### **OBJECTIVES**

Digital revolution and globalization have opened space for new ways of thinking about ensuring sustainable operations of companies. The influence of COVID-19 pandemic on MSME sector has been significant. The objective of this paper is to analyze the potential options for new development strategies according to the customers' needs and provide recommendations to improve e-commerce in Serbia based on the research insights.

### **METHODOLOGY**

To get a better insight into the consumer behavior during the COVID-19 crisis, and future buying intentions, the consumer survey was conducted in Serbia from the 23<sup>rd</sup> to the 29<sup>th</sup> of April 2020. The survey sample included 510 respondents and it was harmonized with an online sample population of Serbia. Quantitative statistical methods were used for analysis: descriptive and comparative statistics ( $\chi^2$  test, t-test, regression, correlation). The survey data are comparable with the results of the survey by McKinsey & Company conducted in 22 countries across the world.

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## **RESULTS**

The results indicate that consumer buying habits have changed in terms of consumption structure and purchasing methods. According to the quarter of respondents in Serbia, the crisis has had a big impact on income, and indirectly on consumption and household savings. Respondents believe that, within the next four weeks from the moment of filling in the questionnaire, there will be increase in purchase of food and non-alcoholic beverages, household chemicals, products for personal hygiene and facial care; and reduction in purchase of clothing and footwear, fuels, personal care services, technical devices and accessories for technical devices, fast food. As many as 75% of respondents in Serbia believe that the acquired habits will remain after the crisis, and 30% believe that the share of e-commerce/online ordering of products will increase after the pandemic. Comparing our research findings with the similar study conducted by McKinsey, we have concluded that consumers in Serbia, just like those in the USA, Italy, India, South Korea and Japan tend to purchase online more often unlike consumers in some European and Latin America countries who are less likely to buy online.

## **IMPLICATIONS**

The condition for the organization to survive and experience a long life cycle is the speed of adaptation to new normal. As many consumer goods retailers have faced challenges during the pandemic, the need to develop new sustainable business models has arisen. As these findings arose in the specific conditions of the pandemic, it is important to raise awareness of the importance of further development of e-commerce among MSMEs. One of the strategies of MSMEs could be a reorientation towards the production of products for which there is a greater demand.

## **ORIGINALITY VALUE**

Businesses during pandemic accelerate different and innovative approaches to customers' needs which are presented and explained in the paper. We have researched customers' buying behaviors during COVID-19 and future e-buying intentions in Serbia, which present a guideline for a possible area of production to which MSMEs in Serbia can be redirected, while accelerating introduction of innovation and digital transformation.

## CONTRIBUTION

MSMEs with the strategic marketing orientation, aware of the customers' needs in turbulent environment, are more capable to be innovative and have more chances to be competitive. Doing business in the time of pandemic has opened new opportunities for business renovation via e-commerce, as shown by the findings. The contribution is a set of recommendations for MSMEs on how to gain competitiveness and visibility in the digital market. The research results confirm that the adoption of new technologies by consumers has accelerated, and that the processes of innovation and digital transformation have significantly accelerated in general, so they represent an opportunity and condition for the operation of Serbian MSMEs in the future new normal.

## KEY WORDS

MSMEs, COVID-19, crisis, innovation, e-commerce, consumers

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## PART 2. Trends in Digital Economy

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## 2.20. USING RECURRENT NEURAL NETWORK TO IMPROVE ONLINE LEARNING

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### OBJECTIVES

The main objective of the paper is the application of the recurrent neural network to improve online learning. Accordingly, the application of the recurrent neural network should enable solving problems of short-term prediction in order to obtain a more rational system of online learning. Also, the objective is to increase the quality of short-term prediction using the proposed Jordan-Elman recurrent neural network model regarding online learning.

### METHODOLOGY

Increased use of artificial neural networks (ANN) represents an adequate alternative approach to solving logical problems. A recurrent neural network (RNN) represents one of the classes of the ANN. Unlike multilayer neural networks, recurrent neural networks have closed feedback loops. Proposed methodology in this paper is based on the use of Jordan-Elman recurrent neural network model for improving online learning.

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## **RESULTS**

Obtained results indicate that the application of the artificial neural network model, in our case, Jordan-Elman recurrent neural network model can support and improve online learning. The proposed type and model of RNN have successfully predicted potential problems and in that way to avoid certain expenses and processes that are time-consuming.

## **IMPLICATIONS**

The quality of the model based on artificial neural networks mainly depends on the adequate choice of the architecture of the artificial neural network, i.e. learning algorithms, transfer functions, scope and data distribution. Accordingly, a model based on the application of a recurrent neural network was chosen for the application in the paper.

## **ORIGINALITY VALUE**

Originality of this model is reflected to the use of Jordan-Elman (JEN) recurrent neural network model for improving online learning. The proposed JEN model allows to context units to save results while is doing the processing of operation on different entities.

## **CONTRIBUTION**

By applying recurrent neural networks, the existing problem can be solved during online learning, and it is also possible to detect and predict possible future problems that may arise. The application of recurrent neural networks can achieve greater efficiency of models that are not as efficient or cannot perceive and solve problems. Consequently, application of the recurrent neural network could lead to savings of financial resources, time and infrastructure preservation.

## **KEY WORDS**

Recurrent neural networks, artificial neural networks, Jordan-Elman RNN, online learning

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**PART 3.**  
**FUTURE OF ACCESS TO FINANCE  
AND FINTECH**



### **3.1. DEVIATIONS FROM MARKET EFFICIENCY WITHIN THE MAIN STOCK MARKET INDEXES, DURING CRISES**

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#### **OBJECTIVES**

The main goal of this paper is to analyze the evolution of market efficiency during crisis times, such as the current crisis, generated by the Covid-19 pandemic. An efficiency indicator is constructed and furtherly used in order to study the existence of any correlation between certain structural breaks within the market efficiency and certain events in the returns series evolution, for the period of time between 01.01.2020 and 29.07.2020.

#### **METHODOLOGY**

A recent approach on measuring capital market efficiency is the one proposed by Kristoufek and Vosvrda (2013) that takes into account the long-term memory and information dimension. Similar to their method, based on the combination between a Hurst Exponent and two different fractal dimension estimates, we construct an efficiency indicator, that will be computed for several major stock market indexes (S&P 500, DAX PERFORMANCE-INDEX, FTSE and Nikkei 225). Furtherly, we analyze the structural breaks of the constructed efficiency indicator.

#### **RESULTS**

By using the described methodology, we obtain a dynamic efficiency indicator, revealing large deviations from efficiency in 2020. The structural breakpoints of this indicator seem to be associated, in most of the cases, with certain peaks in the returns time series. Moreover, the structural breakpoints seem to appear prior to a certain extreme return value.

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## **IMPLICATIONS**

The results obtained might suggest that most major efficiency shifts correspond to certain shifts in prices, consequently deriving in extreme returns. These facts could lead to the conclusion that there are moments when the lack of efficiency is exploitable and when certain market participants could intentionally influence the efficiency level in order to obtain profits. Thus, additional regulations regarding the maintenance of atomicity within the market might be required.

## **ORIGINALITY VALUE**

Our analysis aims to emphasize the behavior of market efficiency during turbulent times and to analyze if certain major changes in efficiency can be associated with any notable evolution of the returns series. On the other hand, we conduct a dynamic efficiency analysis, as we use a moving window to compute the efficiency indicator and we search for those moments when the evolution of the proposed indicator changes dramatically, by determining its structural breaks.

## **CONTRIBUTION**

The analysis starts from the one proposed by Kristoufek and Vosvrda, which is a static analysis. Our paper studies the evolution of efficiency in a dynamic manner, on a moving window, focusing on the 2020 crisis period. Also, the analysis takes into account short term as well as long term memory when measuring efficiency.

## **KEY WORDS**

Market efficiency, Hurst exponent, fractal dimension, structural breaks

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## 3.2. EXPANDING FINANCIAL INCLUSION FOR YOUTH: DOES DIGITALIZATION MATTER?

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### OBJECTIVES

The development of IT, mobile solution and digitalization had high impact in the world of finance. All things considered, it revolutionized the distribution and lowered the costs of providing services contributing to the increased access to finance. The use of mobile technologies is widespread among youth making it possible to catalyse financial inclusion for them. The aim of this paper is to analyse does the digitalization of financial services contributes to the expansion of financial inclusion for youth.

### METHODOLOGY

The level of financial inclusion varies across different categories among companies and population. Some categories such as start-ups, youth, disabled find it difficult to approach formal financial system and use services. In order to determine whether the differences in financial inclusion exist among general population and youth we used data from Global Findex database. Since the economic development influences the level of financial inclusion, we have put the emphasis on the analysis of the countries of the Western Balkan (WB) region.

### RESULTS

The results show differences among age group, where underbanked are disproportionately young between 15 and 24 years old in all six WB countries. Young people are less likely to own account, debit and credit card or have savings at formal financial institution. They are also less likely to borrow to start business from financial institution, but much more likely to borrow from family or friends.

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On the other they tend to use internet based financial technologies more often than the general population.

## **IMPLICATIONS**

Although scientific research is the primarily intention of this paper, we want to encourage the discussion among policy makers in order to influence the reach of financial services to those unbanked in order to remove the barriers in the financial sector to help drive development and improve living conditions equally for the individuals and companies.

## **ORIGINALITY VALUE**

This research extends the scope of analysis related to access to finance for specific group, young people. The results are expected to raise awareness among youth decision-makers and their financial access in the Western Balkans. Also, the analysis of the problem will be important for the future course of research.

## **CONTRIBUTION**

This paper analysis data related to young people that represent specific category and compares the level of their financial inclusion in relation to the general population. On the other hand, the analysis is conducted on a set of countries with similar economic and historical heritage, where economic development is one of the major factors affecting the financial inclusion. Also, the paper sets a solid analysis that can help decision makers in creating data-driven policies to increase the financial inclusion of young people.

## **KEY WORDS**

Financial inclusion, young people, WB region

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### **3.3. ANALYSIS OF EMPLOYEE PERFORMANCE IN BANKING AND PUBLIC SECTOR**

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#### **OBJECTIVES**

In order to gain and maintain a competitive position in the market, organizations must regularly monitor the performance of their employees. The objective of the paper is the analysis of employees' performance in banking and public sector in terms of their interrelationships and teamwork. By examining parameters of employees' organizational performance the authors have analyzed the employees' attitudes of based on their skills, synergies, innovation and quality.

#### **METHODOLOGY**

The research in this study was conducted by means of an anonymous survey that included a sample of four public companies and banking institutions in the Republic of Serbia. The respondents were asked to rate 32 claims on their interrelationships and teamwork performance on a five-point Likert scale. The final sample consisted of public employees 508 public sector and 478 bank employees. The data were analyzed by applying correlation, factor analysis in the statistical software package SPSS 19.0.

#### **RESULTS**

The findings on public sector employees' have shown that the interrelationships and teamwork performance are based on synergy, while in the sample of the bank employees the highest score was assigned to quality. Correlation was statistically significant in both samples. By means of factor analysis the authors explained variability among observed variables in terms of a reduced number of factors and

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their interrelationships. The findings show that the two samples studied had different factorial structures.

### **IMPLICATIONS**

Human resource managers are recommended to evaluate individual parameters through more frequent employee surveys, so that in accordance with the defined goals, they can redefine their human resource strategies. The employees' performance could be enhanced by workplace learning opportunities and promoting the culture of quality interrelationships and successful teams that promote innovation. Additional training can improve employees' competencies and overall job performance.

### **ORIGINALITY VALUE**

The findings are expected to lead towards a deeper understanding of interrelationships and teamwork performance of public sector and bank employees and constitute useful guidelines for human resource managers. Achieving organizational goals is predetermined by the quality of employees' interrelationships and the efficiency of teamwork. In that way, the top managers could create greater employee loyalty and a sense of belonging to the organization which would decrease the intention to turnover.

### **CONTRIBUTION**

These findings can create an opportunity for future research to consider performing a broader research as related studies could be conducted for other kinds of enterprises. As there are a few previous studies on employees' interrelationships and teamwork in the Republic of Serbia, these findings may be of special interest to various stakeholders. The empirical testing is a significant contribution to fill the much-needed gap in the literature towards performing similar studies in the future.

### **KEY WORDS**

Public sector employees, bank employees, performance, interrelationships, teamwork

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### **3.4. FINANCIAL STRUCTURE OF INNOVATIVE ORGANIZATIONS IN SERBIA**

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#### **OBJECTIVES**

This paper aims to analyze the financial structure of organizations engaged in innovation activities in Serbia that are included in the Register of Innovation Organizations. The paper's specific objective refers to the assessment of sustainable financing of innovative organizations classified as development and production centres, research and development centres and innovation centres.

#### **METHODOLOGY**

The research methodology includes contents analysis and the financial analysis that is appropriate to the research goal. The paper provides a review of domestic and foreign literature related to innovation organizations' business and their financing. The research is based on the financial structure analysis of 68 innovation organizations in Serbia included in the Register of Innovation Organizations. The financial analysis basis is the publicly available financial reports in the Business Registers Agency for the period 2015-2018.

#### **RESULTS**

The analysis results based on aggregate data show that innovation organizations are predominantly financed by their own financing sources (75.4% in 2015; 79.3% in 2018), but approximately half of the individual organizations notice a higher share of liabilities in the total financing sources. The short-term liabilities are dominant in liabilities structure, with a tendency their decrease. Financing of registered innovation organizations by the Innovation fund of Republic of Serbia,

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the other state funds, and international financial organizations' funds to stimulate innovation is treated as short-term liabilities until the defined criteria are realized.

### **IMPLICATIONS**

The authors contribute to the both, innovation organizations' literature and financial structure literature. The paper should be of interest to readers in academic areas, but also to all those engaged in innovation activities. The research results can be useful to various stakeholders - innovation organizations' management, policymakers, financial analysts, and researchers.

### **ORIGINALITY VALUE**

The originality of this paper refers to assessing the financial structure quality of organizations in Serbia engaged in research, innovation, development, and marketing of products, services, and technologies. According to our knowledge, similar analysis was not realized in Serbia. The research is relevant because it provides information on funding sources for innovation organizations and the assessment of sustainable funding.

### **CONTRIBUTION**

The paper presents a systematic research of the financial structure quality of organizations included in the national Register of Innovation Organizations. The presented results contribute to the consideration of different possibilities of financing development and production centres, research and development centres and innovation centres. The paper's special contribution is that the analysis is focused on the possibilities of financing innovation organizations from various sources to support innovation.

### **KEY WORDS**

Innovation organizations, financial structure, funds, financial statements, Serbia

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## 3.5. INTELLIGENT DATA ANALYSIS OF COMMERCIAL BANK CUSTOMERS

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### OBJECTIVES

Bank data scientists are facing two large challenges: how to capture the huge amount of increasing data and how to extract information for the bank concerning its customers which can help it to create an efficient strategy. The main objective of this paper is to investigate the characteristics of clients' data available to banks, as well as to what extent the artificial intelligence methods, such as machine learning and deep learning are being used in Serbian banks.

### METHODOLOGY

The research uses the method of content analysis of relevant theoretical papers and empirical studies which are dedicated to the examination of different aspects of using artificial intelligence and machine learning methods and techniques for the analysis of big data available to banks thanks to the quick development of on-line banking, m-banking, and credit card payment systems. The empirical part of the research uses the face-to-face method of personal interview with 16 respondents (IT and marketing managers) coming from 8 out of 26 commercial banks in Serbia.

### RESULTS

The results of the research indicate the following conclusions: the data available to banks are characterized by great quantity, great generating speed and rising complexity; besides the numerical data generated through banking transactions, banks also have at their disposal the soft, unstructured data based on which it is

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possible to discover special patterns of client behavior and to create the efficient marketing strategies; the results of the interviews with IT and marketing managers reveal that the banks in Serbia do not use sufficiently the methods of artificial intelligence i.e. machine learning for extracting valuable information from big databases from the residential client sector.

### **IMPLICATIONS**

Compared with traditional banking customer behavior analytics, big data-based banking customer analytics methods represent a superior analytical-predictive tool for modeling bank customer behavior, revealing the new profile, the degree of loyalty, the profit potential, customer classification into homogeneous groups and creating the platform for developing efficient marketing strategies. The superiority of the new analytical models derives from their capacity to use, process and analyze the soft data on bank customers.

### **ORIGINALITY VALUE**

Besides the original approach in creating the research plan, this paper contains the original data obtained by the authors by interviewing IT and marketing managers from 8 out of 26 banks from the Serbian commercial bank sector. The personal interview has enabled the authors of this paper to carry out a deep interview and to obtain the information regarding how much the usage of the technique of intelligent data analysis, based on the techniques of artificial intelligence and machine learning is present in the practice of Serbian commercial banks.

### **CONTRIBUTION**

The paper findings indicate the differences between the traditional and contemporary approach in data analysis which are available in commercial banks. There is a special insight into the importance of soft, unstructured data, their sources, the methods of their safe-keeping, processing and analysis. Also, additional information has been pointed out which can be extracted from these data and used for finding client profiles, their identity, the pattern of their behavior, for the classification of clients into homogeneous groups and creating efficient strategies of targeting specific client groups.

### **KEY WORDS**

Data analysis, artificial intelligence, machine learning, big data

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### **3.6. PREFERENCES FOR USING PAYMENT CARDS DURING COVID 19 PANDEMIC: THE CASE OF NORTH MACEDONIA**

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#### **OBJECTIVES**

Over the past few months, the coronavirus pandemic has changed the spending habits and way of payment or the use of payment instruments. Hence, the intention of this paper is to perform an analysis of the clients' adaptability and adoptability towards payment habits in these conditions of living. Since the Macedonian commercial banks have well developed infrastructure for conducting financial activities with payment cards, the aim of this paper is to examine the preferences for using payment cards, as well as the readiness and level of acceptance of this payment instrument by the clients' during the Covid-19 pandemic.

#### **METHODOLOGY**

The research was conducted with an anonymous survey questionnaire of 25 structured closed-ended questions that generally reflect the perception of respondents regarding their habits, safety and acceptance of payment cards before and during the pandemic. The collection of primary data was carried out electronically in the period from April 29, 2020 to May 21, 2020, the link to the survey was sent to more than 6000 citizens, and a total of 920 respondents responded voluntarily to the survey.

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## RESULTS

The results show that citizens generally changed their preferences regarding payment methods and the use of payment cards during the pandemic. This situation is due to the fact that most of the banks encouraged their clients to use various bank services without physical presence and some are result of the social distancing recommendations. However, the results indicate that there is still great scope for action by the banks in this regard.

## IMPLICATIONS

The research can be a solid basis for further research on this issue, considering that our country and the whole world are facing with this situation for the first time. This will lead to an appropriate way of adjustment of the banking services on the onehandand protection of the citizens' health and respect of state recommendations on the other hand.

## ORIGINALITY VALUE

In general, the paper is an authentic study with the original conclusions and recommendations presented through descriptive statistical analyses obtained from the answers in the survey questionnaire, as well as the results of statistical conclusion and the testing of statistical hypotheses for dependence between different indicators.

## CONTRIBUTION

The research has great application value, while the recommendations and conclusions, despite being drawn from a case study, can be generalized. Therefore, the main recommendations are that banks should find an appropriate communication channel in order to properly inform their customers about the benefits they offer and also, they should identify the reasons for preferences in different categories of citizens and to offer appropriate educational campaigns.

## KEY WORDS

Payment cards, preferences, banks, pandemic

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### 3.7. ADOPTION OF MOBILE BANKING IN THE REPUBLIC OF SERBIA

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#### **OBJECTIVES**

Worldwide, the use of mobile technologies is rapidly increasing among people, spreading these technologies to the banking sector. The aim of this paper is to indicate which factors based on the technology acceptance model (TAM) have the highest impact on the adoption of the mobile banking application. Factors which were analyzed in this paper include information on m-banking, perceived usefulness, technological proficiency and conditions, perceived security, and perceived ease of use.

#### **METHODOLOGY**

In this research, we used the survey explicitly designed to capture factors influencing the adoption of new technologies in the banking sector. The population included young and middle-aged adults who currently use the mobile banking application. The survey was conducted in the period of June—July 2020. Factor analysis with the principal component method and varimax rotation was used to group defined questions into the five-factor structure. In order to predict the factors that influence the most on the adoption of mobile banking services, we used a binary logistic regression model. The dependent variable was the intention to use the mobile banking application in the future coded from Likert scale into binary classes: 0 - not sure about using in the future, and 1- sure about future use, while we used defined factors as independent variables.

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## **RESULTS**

Factor analysis identified five factors which are in line with the previous research (Lukić et al., 2019). The binary logistic model satisfied all assumptions. The goodness of fit was measured by R Square (33.2%). The statistically significant factors were “information on m-banking” ( $p=0.046$ ), “perceived usefulness” ( $p=0.000$ ) and “perceived security” ( $p=0.008$ ). The research, however, found no statistical significance for the factors “perceived ease of use” and “technological proficiency and conditions” (with  $p > 0.05$ ).

## **IMPLICATIONS**

The potential for using mobile banking services in Serbia is high. Data from the Statistical Office of the Republic of Serbia show that 79.8% of population access the Internet by mobile phone. This percent emphasize the importance of the use of new mobile technologies in the banking sector. The significance of the mobile banking services is also supported by the data provided from the National Bank of Serbia that show that the number of mobile payments in Serbia is increased for more than 3.5 times in the period of 2016-2020.

## **ORIGINALITY VALUE**

Having in mind the pace of technological revolution, the subject of this research is in line with modern science related to the adoption of mobile technologies. The researchers are making efforts to determine the factors that can predict intentions to use mobile banking services. However, in Serbia, only sporadic researches have been done. This research extends the scope of the previous research since this analysis included young adults as well as the middle-aged group.

## **CONTRIBUTION**

Scientific literature covering the subject of the adoption of mobile services is sporadic, even in countries with developed financial system. This research should contribute to unveil factor that can predict intentions to use mobile banking services in the context of support to decision-makers from the banking sector to improve their services or to create new services that can meet customers' needs.

## **KEY WORDS**

The banking sector, mobile banking application, adoption, TAM model, Serbia

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### **3.8. CROWDFUNDING: GLOBAL PERSPECTIVE AND ITS IMPLEMENTATION IN SEE REGION**

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#### **OBJECTIVES**

The importance of crowdfunding in today's business practice is tremendous taking into account that it represents very potent alternative to the traditional sources of financing. Crowdfunding represents one of the fastest growing industry all over the world due to its potential for both investors (or individuals) and businesses looking for funding. The purpose of this paper is to identify and describe the adequate investment model of crowdfunding in SEE region with special emphasis on Serbia.

#### **METHODOLOGY**

According to the purpose of this paper, standard desk research method and the analysis and comparison of the secondary data have been conducted in order to adequately describe the global and regional crowdfunding landscape as well as to identify main success factors, problems and challenges related to corporate governance, investor relations, reporting and risks and legal and regulatory hurdles of crowdfunding implementation.

#### **RESULTS**

One of the main findings is that fundraising success strongly depends on the attributes of the product or service, followed by selected aspects of the founders' motivation and commitment. Since 2017 there has been several attempts to establish crowdfunding practice in Serbia. The main constraint that has been identified refers to the deficiency of legal framework for crowdfunding establishment, followed by the lack of recognition of payments related to

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fundraising by domestic banks and deficiency of legislative regulation of tax status of the received funds.

## **IMPLICATIONS**

The results of the research conducted in this paper are primarily intended for the policy makers in Serbia, but also for the businesses in search for the new opportunities for fundraising. Paper also discusses the implications for investors and entrepreneurs as well as platform organizers and policy makers in SEE region.

## **ORIGINALITY VALUE**

Taking into account the raising popularity and the importance of crowdfunding worldwide, the paper puts an emphasis and provides a detailed description of the current landscape of crowdfunding in SEE region. Original value of this paper is found in analysis of constraints related to crowdfunding implementation in Serbia and provided recommendations for policy makers.

## **CONTRIBUTION**

This paper provides extensive survey of the global crowdfunding environment based on the analysis of existing literature with special emphasis on SEE region and Serbia. Taking into account the scarcity of literature in this area especially related to domestic practice, the main contributions of the paper can be found in its actualization as well as policy recommendations.

## **KEY WORDS**

Crowdfunding, entrepreneurial finance, startups, SEE region, Serbia

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## 3.9. CONSUMER PROTECTION IN THE AGE OF INSURTECH

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### OBJECTIVES

Insurtech still does not enjoy a universally accepted labelling and content. In the same time it is bringing profound changes not only to the insurance value chain per se but to the whole insurance business model bringing certain concepts to obsolescence and creating plethora of new challenges.

The purpose of this article is to provide overview of the recent trends in insurance supervisory approaches on how innovations work and how they apply supervisory actions to safeguard the fair treatment of customers in advanced markets and lessons to be learn for proper and adequate response by the supervisory authorities in the region of the South Eastern Europe (SEE countries).

### METHODOLOGY

The research is based on analysis of international scientific literature in the area of digitalization of the insurance industry and comparative analysis of the measures, undertaken by international and global insurance standard setting bodies. In order to investigate the attitudes of the supervisory authorities from the SEE and their views on necessary supervisory actions that should be taken for encouragement of the insurtech landscape, an interview and questionnaire will be used. Finally, the method of concretization will be used in order to strike a balance between

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enhancing insurance innovation and ensuring a well-functioning consumer protection framework and financial stability.

## RESULTS

The results of the research conducted within this paper suggest that the insurance supervisory authorities from CEE region has recognized the importance of insurtech development, that is in early stage of presence but in the same time acknowledge the urgent need for advance in preparatory work for supervisory and regulatory actions. The importance of this research and its results lies in the fact that the proper balance between consumer protection and insurance digitalization can move in parallel by adequate regulatory and supervisory actions.

## IMPLICATIONS

The results of this research are especially important for public policy makers since they encompass the measures and the effects of those measures undertaken in advanced countries thus representing a specific roadmap for decision makers at the insurance supervisory authorities among the CEE. This paper and its results are also important to map the insurtech ecosystem in the region, looking for key success factors as specific guidelines for their future endeavors.

## CONTRIBUTION

The main contribution of this research lies in the fact that, to our knowledge, there is no available data on similar researches which are identifying and analyzing the key success factors in building favorable insurance regulatory framework and supervisory actions on insurtech development. To adjust to the digital age and foster innovation, supervisors need to balance the risks of new innovations against the benefits for policyholders and the insurance sector as a whole.

## KEY WORDS

Insurtech, consumer protection, regulation, supervision, insurance industry

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## **3.10. IDENTIFICATION OF THE SUCCESS FACTORS FROM INNOVATIVE FINTECH INITIATIVES TO THE BUSINESS MODELS**

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### **OBJECTIVES**

Financial technologies (FinTech), as benchmark of innovation and digitalization in financial services, leads fundamental changes in that sector enabling customers to access in faster and customer-friendly manner (Arner et. al, 2019). FinTech companies (FTCs) are the trigger for new era of fast-growing digital financial products & services (DFP&Ss) and operate usually as new startups offering own innovative products in payment, lending or crowdfunding. Identification the factors of FTCs' business model (BM) (Gomber et al, 2017) with highest impact on the venture success is focus of the paper.

### **METHODOLOGY**

Research methodology has applied in two phases: analysis of literature for BM concepts (Chesbrough, 2017) taking into consideration their interconnection with information technologies (IT) applied in business processes, where identified four fundamental components are: value identification, value architecture, value network and value finance. In synthesis phase, the focus was digital innovative BM, specific for FTCs, with identified key components: customer value proposition, technologies of production and revenue mechanisms.

### **RESULTS**

In the context of FinTech, BMs are developed around implementation of novel IT technology for producing customer centric DFP&Ss with different mechanisms for revenue generation. The scientific literature has not yet agreed on a universal

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success factors (SFs) for FinTech BMs. Based on analyzed FinTech BM components: dominant used technology, delivery channel, revenue stream, customer value proposition and P&S offering, this research have suggested six SFs: customer centricity, low profit margin, agility, scalable, innovative and compliance easy BMs.

## **IMPLICATIONS**

FinTech startups have innovative BMs, eliminate intermediaries in financial system with agile organizations and reduce costs with digital technologies such as blockchain, cloud infrastructure, big data and complex algorithms. Financial industry has interest to invest in FTCs and finding SFs that can contribute in evaluation process of BMs relating FinTech venture success is more than useful tool for investors.

## **ORIGINAL VALUE**

Theoretical analysis of key components for FinTech BMs and contribution in research of SFs, as open question in literature, are in line with scientific research gap for new high-tech venture. Numerous papers (Drover & Busenitz, L., 2017) have identified that product specific factors represent crucial determinants of venture success that rely on innovation to generate competitive advantages, as it is also the case for FinTech companies.

## **CONTRIBUTION**

This paper contributes in the field of research of digital innovation and their implementation as FinTech products in financial sector. Given that FinTech products are mainly results of FinTech startup companies, finding SFs for evaluation of FinTech BM in order to determine potential success of a FinTech venture, can be contributed through venture lifecycle.

## **KEY WORDS**

Financial technologies (FinTech), digital innovation, success factor, business model

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### **3.11. ARTIFICIAL INTELLIGENCE BASED MODEL IN THE PROVISION OF FINANCIAL SERVICES**

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#### **OBJECTIVES**

The application of Artificial Intelligence (AI) technology is changing the way of provision of financial services. As one of the FinTech innovations the AI technology has been disrupting the financial industry. The paper identifies the AI tools enabling the financial institutions to automate the processes and boost analytical capacities. The main aim of the paper is to create a model that will make visible the influence of AI technology in the provision of financial services.

#### **METHODOLOGY**

AI technology has been transforming and revolutionizing the process of providing financial services. The financial services represent a range of banking and insurance services, capital trading and investment management decisions. The paper analyzes the employment of a variety of AI technologies in the provision of financial services. The main focus of research is directed to modeling the process of making the investment decision based on the AI systems of creation the knowledge.

#### **RESULTS**

The main result of the paper is the creation of a data-knowledge-decision model employing AI technology in the process of making an investment decision. The AI has transferred the process of making the investment decision into a data-driven process. The model embraces all sources and forms of data from the micro and

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macro-economic environment. On the base of data is created AI-based knowledge resulting in an investment decision.

### **IMPLICATIONS**

The capacity of AI tools to perform cognitive tasks and functions are highly applicable in the financial sector. The proposed model in the paper suggests AI technology as an engine of getting insight into the available historic and real-time data of the micro and macro-economic environment. It will help the financial institutions and investors to enhance the understanding and prediction about the stewardship of the company in the highly dynamic internal and external business environment.

### **ORIGINALITY VALUE**

Cognitive technologies like the AI, add new value in the process of provision of financial services. The Data-knowledge-decision model presented in the paper makes visible the AI-based transformation process of making an investment decision.

### **CONTRIBUTION**

The advanced technologies like AI empower the users and providers of financial services with valuable data and knowledge. The contribution of the paper is twofold. Firstly, it considers and analyzes the application of AI tools to a range of financial services. The most dynamic environment is overloaded with large amounts of data making it difficult for the investment decision process. The suggested model emphasizes the importance of AI tools in the process of gathering data, processing the information, and creation of knowledge about the potential investment decision.

### **KEYWORDS**

Financial services, AI technology, Investment decision, model, data

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