



REDETE

RESEARCHING ECONOMIC DEVELOPMENT
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University of Banja Luka &
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10th REDETE Conference 2023

**RESEARCHING ECONOMIC DEVELOPMENT
AND ENTREPRENEURSHIP IN TRANSITION
ECONOMIES**

CONFERENCE PROCEEDINGS

October 26-27, 2023

Trebinje, Republika Srpska, BiH



УНИВЕРЗИТЕТ У БАЊОЈ ЛУЦИ
UNIVERSITY OF BANJA LUKA

ЕКОНОМСКИ ФАКУЛТЕТ
FACULTY OF ECONOMICS



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www.redete.org

Publisher:

Faculty of Economics, University of Banja Luka
Majke Jugovića 4, 78 000 Banja Luka
Republika Srpska, Bosnia and Herzegovina
Phone: + 387 51 430 012. Fax: + 387 51 430 053

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Milenko Krajišnik, Dean

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Jovo Ateljević, Donato Iacobucci and Vladana Ritan

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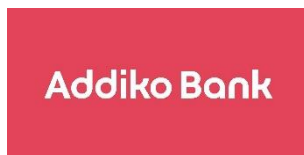


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VANJSKOTRGOVINSKA KOMORA BOSNE I HERCEGOVINE
СПОЉНОТРГОВИНСКА КОМОРА БОСНЕ И ХЕРЦЕГОВИНЕ
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BUSINESS AND FINANCIAL FORECASTING IN THE FUNCTION OF STRATEGIC MANAGEMENT OF MANUFACTURING COMPANIES

Denis Šulić¹

Nemanja Berber²

Nenad Marković³

Vesna Novaković⁴

Dragan Milovanović⁵

Abstract

Contemporary trends and the challenging environment in which domestic companies operate require constant supervision and monitoring. The consequences of the coronavirus and geopolitical changes have fundamentally changed the economic world. What will a new economic tomorrow look like? Business predictions serve to answer that question. The paper analyzes the change in business and financial forecasting as a function of making strategic decisions. Also, the goal of the paper is to point out the importance of strategic management and strategic thinking, especially in crisis situations. In our work, we will try to promote the concept and role of business and financial forecasts in the function of making strategic decisions. The research focus is directed towards the production companies of the Republic of Srpska. The research model is based on business and financial forecasts, in the period five years ago, and a comparison of the results of business forecasts with the results of the company's operations today. Until now, a large number of models have been developed for predicting the business performance of companies, the vast majority of which are based exclusively on economic criteria. The methodological concept of the research is based precisely on the platform of the influence of business predictions on making strategic decisions in the company.

Keywords: Business, financial, forecasts, strategic management, strategy;

Introduction

Business forecasting plays a key role in strategic management as it enables organizations to make informed decisions, identify trends and plan for the future. Business and financial forecasts help in budget planning for the next period. Based on performance forecasts and trends, organizations can set budgets for different sectors or projects. Forecasts about the market, demand, competition and other factors allow organizations to develop strategies for growth, product/service development or entry into new markets. Predictions allow organizations to identify potential risks and prepare for them. By analyzing possible scenarios, risk management strategies can be developed. Business and financial forecasts provide a

1 Minister of Trade and Tourism of the Republic of Srpska

2 Faculty of Economics, University of Novi Sad

3 Faculty of Economics, University of East Sarajevo

4 Faculty of Economics, Pan-European University APEIRON

5 University of Banja Luka, Faculty of Economics, Banja Luka

framework for evaluating actual results against expectations. This helps identify deviations and adjust strategies if necessary. Forecasting industry trends and changes in demand allows organizations to adapt and innovate to stay competitive. The subject belongs to the field of business and financial forecasts and strategic decision-making. The research problem is the question of the impact of business predictions on the strategic management of manufacturing companies in the Republic of Srpska. The goal of the research is to look at the focus of business predictions and their importance for the strategic management of manufacturing companies in the Republic of Srpska.

The development of predictions into a scientific category influenced the definition of basic scientific axioms, i.e. basic scientific truths about predictions that influenced the development of numerous methods of scientific predictions. Professor of economics Michael K. Evans from the University of Pennsylvania opened a new stage in the development of the concept of business forecasts with his epoch-making part "Practical Business Forecasting". In his part, Professor Evans points out the great benefit of forecasting through a reward in the future in the form of improving the company's business performance. We are of the opinion that agriculture as an economic activity deserves much more attention and represents a significant potential for Republika Srpska. Business and financial forecasts play a key role in strategic decision-making by providing information and perspectives that help decision makers to see future scenarios and plan adequately. Business and financial forecasts allow organizations to plan long-term goals and strategies. These forecasts provide insight into future trends, market conditions and other factors important for planning. Based on the forecasts, organizations can develop strategies to compete, innovate or adapt to changes in the market. This includes developing marketing, operational or financial strategies. Forecasts not only identify opportunities but also risks. This enables organizations to prepare for possible challenges and develop risk management strategies. Research hypothesis H0: "Business and financial predictions of companies from the processing industry of fruit and vegetable juice production have positive and healthy parameters".

Predictions can reveal weaknesses in a company's business model or strategy. If the forecasts indicate potential problems in the future (eg sales decline, change in market demand), this can be an incentive to review and restructure the business. Predictions about future trends or changes in the market can identify new opportunities for growth or development. This can encourage the organization to restructure its resources and focus on new market segments.

1. Review of literature through previous research

Business and financial forecasting is crucial for manufacturing companies as it allows them to plan, forecast demand, manage inventory, optimize production and reduce costs. Demand forecasts help manufacturers plan production and manage inventory. Using data analysis of historical demand, seasonal variations and market trends helps create better production plans (Armstrong, 2001; Chatfield, 2019). Predictions allow businesses to properly scale their capacity. This includes optimizing the number of workers, the capacity of production lines and the use of resources to effectively respond to expected demand (Chatfield, Yar, 2019; Fildes, 1992). Accurate forecasting helps in inventory management of raw materials and finished goods. This reduces storage costs, reduces the risk of excess inventory or shortages and optimizes the efficiency of production processes (Fildes, Hastings, 1994; Fildes, Makridakis, 1995). Monitoring market trends and changes in consumer preferences helps companies to adapt, develop new products or improve existing ones to remain competitive (Gardner Jr, 1985). Forecasting enables manufacturers to identify more efficient ways to produce, reduce waste, improve quality and optimize production time.

Business and financial forecasts play a key role in the strategic management of manufacturing companies because they enable better planning, resource management and adaptation to changing market conditions (Gardner Jr, 2006). Forecasts allow businesses to anticipate future demand for products. Based on these predictions, managers can plan production capacity, optimize the use of labor and raw materials, and allocate resources more efficiently. Accurate forecasting helps in inventory management of raw materials and finished goods. Manufacturing companies can avoid unnecessary stockpiling or product shortages in the market, thereby reducing storage costs and losses due to product shortages (Gilliland, Tashchian, Zenner, 2010). Forecasting analysis enables the recognition of patterns in demand and production. Based on this information, management can adjust production processes to improve efficiency, reduce production costs and optimize product quality. Business and financial forecasting helps businesses identify market trends and customer needs. Based on these predictions, companies can plan new products or improvements to existing ones, allowing them to remain competitive (Gilliland, Tashchian, Zenner, 2011).

Forecasting allows manufacturing companies to adapt to changes in the market or changes in demand. They can react more quickly to unexpected events or changes in demand, minimizing losses and maximizing opportunities. Overall, business forecasts provide a basis for informed strategic decisions in manufacturing companies. They enable companies to better understand the market, optimize production processes, adapt to changes and achieve a competitive advantage in the market (Goodwin, Wright, 1994). Business and financial forecasts are critical to strategy creation because they provide information about future events, allowing companies to better plan, identify opportunities, and recognize potential threats. Business forecasts provide the basis for informed strategic decisions. Forecasting analysis helps management understand trends, demand, and competition, allowing them to make decisions based on facts rather than assumptions (Hanke, Wichern, 2009).

Forecasting helps companies understand customer needs and preferences, as well as market trends. This allows the strategy to be adjusted to better respond to market demands (Hyndman, Athanasopoulos, 2018; Hyndman, Athanasopoulos, 2018). Business and financial forecasting helps identify potential opportunities for growth and development. Companies can identify areas where increased demand is expected or where new opportunities may open (Hyndman, Athanasopoulos, 2018). Predictive analysis helps identify potential risks and threats that could affect the business. This enables companies to develop strategies for managing risks and minimizing negative consequences (Keating, Wilson, 2013; Makridakis, Hibon, 2000). Through a better understanding of future trends, companies can shape strategies that will help them position themselves in the market, differentiate themselves from the competition and achieve competitive advantages. In short, business forecasting is a key factor in creating effective and adaptive strategies. They enable companies to be proactive, to adapt to changes in the environment and to achieve success in the market. Altman's Z-score model is a financial tool used to assess a company's financial health and predict the possibility of its bankruptcy (Altman, 1968). Although the Z-score model is not usually used directly for business and financial forecasting, the information it provides can be useful for analyzing the risk and financial stability of a company in the future (Makridakis, Wheelwright, 2008). Through this analysis, the Z-score model can provide insight into the financial stability of the company, which can be useful when making business and financial forecasts.

2. Research methodology

The representativeness of the selected sample is reflected in the significant structure that the observed companies occupy in the overall market, viewed at the levels of narrower activities,

as given in the database from which the data was used. The research covers companies that belong to activity C.10.32. production of fruit and vegetable juices, namely Spektar drink, d.o.o. Bijeljina, which accounts for over 80% of the market share in the Republic of Srpska. Altman's Z-score model is a quantitative methodology used to assess a company's financial health and predict the possibility of bankruptcy. Developed by Professor Edward I. Altman, this model uses statistical techniques to combine multiple financial parameters to generate a single score that indicates bankruptcy risk. Parameters are often standardized and adjusted to eliminate possible variability between companies of different sizes or in different industries. The parameters are combined into a specific formula to produce a Z-score result. This formula is based on weighting each parameter, where their effects on the risk of bankruptcy are evaluated and combined (Altman, 1983). Altman's Z-score model has become popular as a tool for assessing the risk of bankruptcy and financial stability of companies, although it is applied with certain limitations and is recommended as one of the factors in the assessment, and not as the only determinant of risk (Altman, 2000).

The efficiency of working capital management, especially in manufacturing where inventories of raw materials and finished goods are important, can be a key factor for financial performance (Ohlson, 1980). Generating profit from operating activities, taking into account production costs, can be a significant indicator for assessing the future financial durability of the company.

The basic Altman model is reduced to the following function (Altman 1968)::

$$Z = 1,2X_1 + 1,4X_2 + 3,3X_3 + 0,6X_4 + 1,0X_5$$

Where applicable:

X1 – the ratio of working capital to total assets

X2 – ratio of retained earnings to total assets

X3 – the ratio of earnings before interest and taxes (EBIT) to total assets

X4 – ratio of market value of capital and total liabilities

X5 - ratio of business income to total assets

The obtained value of the discrimination function is interpreted in such a way that if it is greater than 3, the companies are considered successful and financially sound, if the value is in the interval from 1.81 to 2.99, the companies operate in the gray zone, are subject to bankruptcy and are characterized as financially vulnerable, but with the possibility of recovery, and finally, if the value is less than 1.80, these are companies that are very likely to go bankrupt (Altman 1968).

Effective use of production assets, such as plant and equipment, can affect a company's profitability and liquidity. The basic Altman model, the so-called Altman Z-score model, is one of the most well-known quantitative models for evaluating the financial position of companies. This model, although not the first, is considered a key step in business forecasting. Edward Altman based this model on the analysis of 66 manufacturing companies, divided into two groups, depending on the activity and size. At the same time, the first group consisted of 33 companies that operated successfully in the observed period, while the second group consisted of companies that were declared bankrupt and went bankrupt in the same period. Based on the application of multivariate discrimination analysis, the initial 22 financial indicators were reduced to 5 significant for the interpretation of the company's financial situation, with weights assigned to each depending on their importance (Altman, 2000). Altman formed a simple, practically applicable and useful model for classifying companies into a group

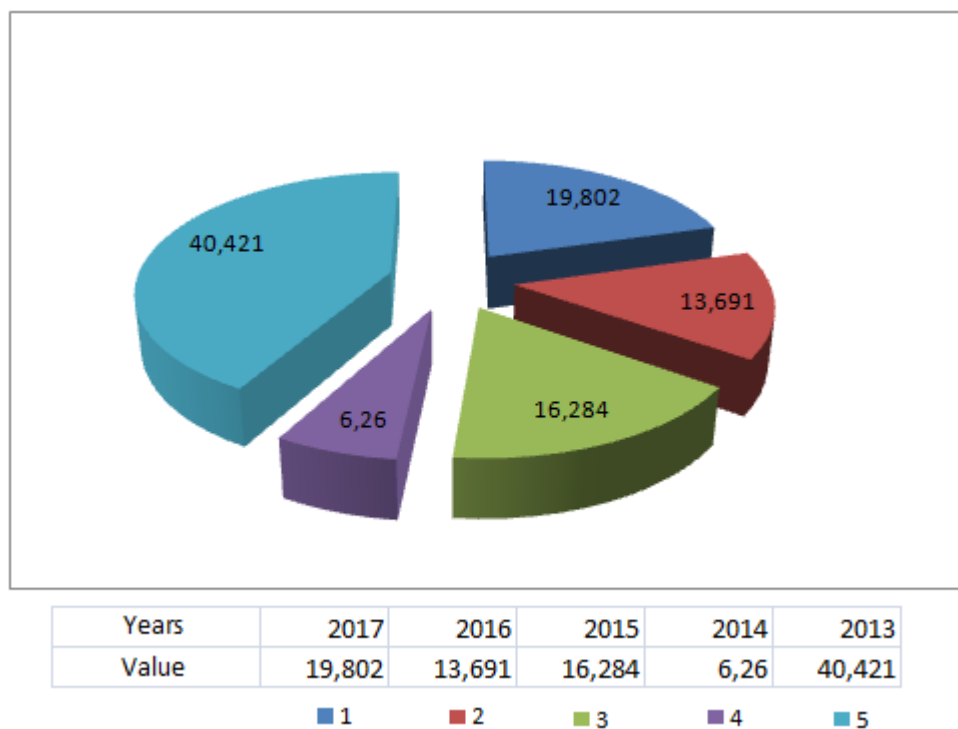
of candidates for bankruptcy and a group of “healthy” companies, so that many other studies that more or less replicated Altman's model appeared afterwards.

The obtained value of the discrimination function is interpreted in such a way that if it is greater than 3, the companies are considered successful and financially healthy, if the value is in the interval from 1.81 to 2.99, the companies operate in the gray zone, are subject to bankruptcy and are characterized as financially vulnerable, but with the possibility of recovery, and finally, if the value is less than 1.80, these are companies that are very likely to go bankrupt.

Research results

Business and financial forecasting helps businesses plan the necessary resources such as raw materials, labor and production capacity according to expected market demands. This enables more efficient management of inventory and production processes, reducing the risk of overstocking or product shortages. However, the greatest contribution of this model is present in the case of business forecasts of sustainable development of financially very stable and healthy companies.

Graph 1. Analysis and business forecasts in the field of activity C.10.32. production of fruit and vegetable juices in the Republic of Srpska



Source: Authors

For 2017 (19,802) - A high Z-score value (19,802) suggests greater financial stability or a lower risk of bankruptcy. This could indicate that the company was in solid financial condition that year. For 2016 (13,691) - Although the Z-score value is still positive, the lower value compared to the previous year may indicate a slightly lower financial stability compared to the previous year. For 2015 (16,284) - Again, a positive Z-score value suggests general financial stability, but it is lower compared to the previous year. This may indicate changes in the financial condition of the company. For 2014 (6.26) - This is a lower Z-score value, which may suggest a potential higher risk of bankruptcy or financial instability in that year. For 2013 (40,421) -

An extremely high Z-score value indicates very high financial stability or a very low risk of bankruptcy in that year.

High stability (2013) - An extremely high Z-score value (40,421) indicates an extremely stable financial condition of the company. In a strategic sense, this could indicate that the company had a strong foundation for growth, investment in new projects or acquisitions. Increasing stability (2014-2016) - Although the Z-score values were positive, there was a decrease in Z-score during these years. Strategically, this may indicate the need to analyze financial processes, reduce risk or restructure to restore a level of stability. Increase in stability (2017) - An increase in Z-score this year can be a positive sign and a strategic indicator that effective measures have been implemented to strengthen the company's financial stability.

Strategic management would take this data into account when making decisions about the company's long-term strategy. High values of the Z-score indicate stability, while a decrease in the value may indicate the need to adjust business processes or invest in financial stability in order to maintain or improve the result. This data can be useful for directing resources, identifying risks and opportunities, as well as making decisions about the company's long-term strategy.

Favorable year (2013) - A high Z-score value indicates a very stable financial condition. Strategic decisions in this period could focus on business expansion, diversification or investment in new projects and technologies in order to take advantage of the high stability of the company. Decline in stability (2014-2016) - A decrease in Z-score during this period could have triggered strategic decisions aimed at analyzing financial processes, cost efficiency or restructuring operations in order to preserve financial stability. This could include cost reduction, production optimization or debt restructuring. Improvement (2017) - An increase in Z-score can be the result of strategic decisions made in previous years. These improvements could have resulted from effective risk management, business adjustments, or focusing on profitability to restore a level of financial stability. An in-depth analysis of strategic decision-making could consider the effectiveness of the strategies undertaken in relation to changes in financial stability over the years. Also, it could investigate the impact of strategic decisions on operational results, market position or innovations in the company. This analysis can help identify successful strategies and areas that require further changes to improve the company's operations.

From the point of view of the strategy for continuous improvement of efficiency, the increase in the stability of the Z-score in 2017 indicates the success of the steps taken. Continued focus on improving the efficiency of business processes, reducing costs and optimizing resources can be key to preserving and improving financial stability. From the point of view of risk diversification strategy. Analysis of the period with a lower Z-score (2014-2016) indicates the need to consider portfolio or business diversification to reduce the risk of financial instability. Considering investments in different sectors or markets can help reduce exposure to certain risks.

From the perspective of a strategy aimed at maintaining financial discipline. Despite a high Z-score in the past, maintaining financial discipline and continuous monitoring of key financial indicators remains important. Analyzing financial performance at regular intervals can help identify potential problems and respond in a timely manner. From the perspective of a strategy focused on innovation and product diversification. Focusing on innovation and development of new products or services can add value and diversify a company's revenue. Analysis of the market and customer needs can provide insight into the areas where innovation could have the greatest impact. From the perspective of a strategy focused on the use of technology for

efficiency. Investing in technology to improve efficiency, automate processes or improve operational performance can be key to long-term competitiveness.

Strategic approach and the need for restructuring (2014), imply that the lower value of the Z-score (6.26) may indicate a potential need for company restructuring in this year. This could mean that the company was under more financial pressure or had difficulty maintaining stability. This could require debt restructuring, cost cutting or changes in business processes to improve the financial situation. The effects of the measures undertaken (2013, 2015-2017), imply a high Z-score (2013) and improvements in the following years (2015-2017) may indicate the effectiveness of the restructuring measures undertaken if they were implemented. If cost reduction, debt management or business process restructuring strategies were undertaken, improvements in financial indicators may result from these measures. On the other hand, maintaining stability (2016), implies the value of Z-score in this year is positive, but lower compared to previous years. This may indicate the need to maintain restructuring efforts in order to preserve the financial stability of the company.

Z-score analysis can be useful in evaluating the effectiveness of restructuring measures taken or in identifying the need for further actions to preserve or improve the financial stability of the company. Restructuring strategies may include adjusting business strategies, cost optimization, debt reorganization, or management changes to achieve greater financial stability.

Conclusion

Business forecasting plays a key role in the strategic management of manufacturing enterprises by providing a basis for decision-making. Business forecasts provide information about future trends, demand, industry and market changes. This data serves as a basis for planning production, resources, inventory and budget allocation. Forecasting analysis enables proactive identification of opportunities for market expansion, launch of new products or services. It also helps to identify risks such as changes in demand, changes in technology or competition. Forecasting enables manufacturing companies to optimize their supply chain through timely production planning, raw material procurement and inventory management. Better forecasts enable more efficient use of resources such as manpower, equipment and cash, leading to better utilization and cost reduction.

Based on previous research results, we can confirm research hypothesis H0: “Business and financial predictions of companies from the processing industry of fruit and vegetable juice production have positive and healthy parameters”.

Business forecasts help management in making strategic decisions, providing them with relevant information for timely response to changes in the market. Monitoring the realization of forecasts allows companies to assess the effectiveness and accuracy of their projections. This is important for adjusting future predictions and strategies. In essence, business forecasting is a key tool for strategic management in manufacturing companies, enabling them to be proactive, adaptive and competitive in the marketplace. These processes are vital for developing long-term strategies, improving operational efficiency and maintaining competitive advantage.

Business forecasts are a key tool for managers in the process of making decisions and running a company. Business forecasts provide a basis for making strategic decisions. Information about future trends, demand and changes in the environment helps managers to identify opportunities and risks to define company strategies. Based on forecasting, strategic managers

develop long-term company strategies and goals. These strategies often include plans for growth, expansion into new markets, or product diversification. Business forecasts help strategic managers to anticipate changes in the business environment and adapt to those changes in order to preserve or improve the company's competitiveness. Based on forecasting, managers develop operational plans and strategies for efficient use of resources, budget management and cost control. Monitoring the realization of forecasts allows strategic managers to evaluate the accuracy of projections and the effectiveness of strategies. This allows re-evaluation and adjustment of strategies for better results.

Using accurate and relevant forecasts helps create a competitive advantage. Managers who rely on accurate forecasts can make better informed decisions than their competitors. For strategic managers, business forecasting is a key tool that allows them to develop, adapt and implement strategies that will help the company achieve its goals and remain competitive in the market.

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ENTREPRENEURSHIP IN THE DIGITAL ERA

Slobodan Marić¹

Radmila Bijekić²,

Lazar Raković³,

Vuk Vuković⁴,

Bogdan Upiparipović,⁵

Abstract

An important factor when considering the phenomenon of entrepreneurship is the degree of technological development of the country or the level of economic development at which entrepreneurship exists. The rate of technological development over time is increasing. Accordingly, entrepreneurs are very aware of the potential opportunities that this growth creates. Using technological possibilities, entrepreneurship bases its activities on available technology that is dominantly digital, thus forming the phenomenon of digital entrepreneurship. Taking into account the digital era that is on the scene, the capitalization of the mentioned opportunities by entrepreneurs implies the movement of entrepreneurship toward the high-tech sector. Thus, technology-based entrepreneurship can be defined as companies that change their business models from traditional to business based on digital technology, and in a broader sense, it can also refer to the persistent change of our civilization, through the use of technology in this case digital, which leads to the digitization of the economy and society as a whole.

As part of the paper, we will try to consider the nature of entrepreneurship in the digital era, focusing on how the digital era can have an impact on the nature of entrepreneurship and the context in which it exists. Opportunities for entrepreneurship brought by new technologies will be analyzed, as well as one of the questions, how does the achieved level of techno-economic development determine the scope of entrepreneurial activities in the technological sector, that is, entrepreneurship based on high technology? In accordance with the research question, the aim of the paper is to determine whether there is a statistically significant difference between defined groups of countries with different levels of economic development in relation to the combination of dependent variables that indicate entrepreneurial opportunities and the scope of entrepreneurial activities based on high technology.

For the purposes of the research, a sample of 49 countries classified according to the methodology of the WEF (World Economic Forum) into three groups, of different levels of economic development, taking into account the achieved level of GDP per capita, based on the available database of the GEM project, was analyzed. The set research intentions will be realized by means of quantitative analysis, applying adequate mathematical-

¹ PhD, Associate Professor The Faculty of Economics Subotica, University of Novi Sad Republic of Serbia, slobodan.maric@ef.uns.ac.rs

² PhD, Assistant Professor The Faculty of Economics Subotica, University of Novi Sad Republic of Serbia, radmila.bjekic@ef.uns.ac.rs

³ PhD, Associate Professor The Faculty of Economics Subotica, University of Novi Sad Republic of Serbia, lazar.rakovic@ef.uns.ac.rs

⁴ PhD, Associate Professor The Faculty of Economics Subotica, University of Novi Sad Republic of Serbia, vuk.vukovic@ef.uns.ac.rs

⁵ PhD Atos Banka, Republic of Srpska Bosnia and Hercegovina, bogdan.ubiparipovic@gmail.com

statistical procedures (MANOVA and one-factor analysis of variance - ANOVA) conditioned by the nature of the available base.

Analyzing the results of the research, it can be concluded that in countries with a higher degree of economic development, there is a greater volume of entrepreneurial activities based on high technologies. We can say with certainty that digital technologies have changed the competitive environment in which entrepreneurship occurs. The technologies also provide various tools that can help entrepreneurs launch and manage new business ventures.

Keywords: entrepreneurship, technological entrepreneurship, digital era, GEM project

Introduction

The power and potential of technological changes lie not only with individuals who act independently on the market stage but also with those within existing organizations who are referred to as “dependent” (*which is absurd, since these individuals rely solely on their own creations, whereas everyone else in the organization, including the organization, is dependent on them*). The main approach to the study is based on this orientation, which seeks to demonstrate that individuals can confirm themselves as entrepreneurs (based on their environment's possibilities) by leveraging technology (in this case digital) as well as individual determination (individual readiness). When individuals engage in this type of entrepreneurial behavior, as opposed to those who do so out of necessity, they are likely to have a high level of growth potential because their competencies are coupled with the available opportunities of the environment, in this case the digital environment (Leković & Marić, 2017; Bobera, Marić & Leković, 2015).

Information and communication technologies have driven rapid changes in the digital era, which means that successful organizations must adapt to the rapid development of the digital era in order to survive and develop in an environment that is constantly changing (Doyle, 2013). In particular, the size of products is shrinking, execution is speeding up, and multifunctionality is on the rise, while operational managers have to adapt to organizational changes and constantly innovate their processes, operations, and systems by accepting innovation as a fact (Das & Joshi, 2007). Organizations rely on operational activities such as product and process development, while managers must adopt an entrepreneurial mindset to perform the same tasks in a changing environment (Newey & Zahra, 2009).

Through the digital era, new initiatives have been made possible by providing more resources for the generation of new ideas, enabling new types of innovations to be created and converted into economic and social value (Kohli & Melville, 2019). With digital technologies, such as digital artifacts, digital platforms and digital infrastructure (Nambisan, 2017), entrepreneurs can create and exploit new types of opportunities (Berger, von Briel, Davidsson & Kuckertz, 2021), innovation-based products and services, create new business models (Papadopoulos, Baltas & Balta, 2020) and finance their own ventures (Cavallo, Ghezzi, Dell’Era & Pellizzoni, 2019). Since digital technology has increased flexibility and openness, accelerated exploitation, limited unpredictability, and continuous evolution and improvement of digital innovations, it strongly shapes our way of thinking about how ventures can function as promoters of change and revenue generators within the entrepreneurial process (Berger et al., 2021). During the start-up or growth phases of a business venture, entrepreneurs mostly use digital methods. In previous research, it has been shown that the continuous evolution of digital technologies has greatly impacted and changed the entrepreneurial process and outcomes, which has influenced how entrepreneurial practice is realized, encouraging research into digitization in entrepreneurship and management (Berger et al., 2021).

1. Theoretical foundations and hypotheses development

Digital technology is present in both everyday business and non-business activities. Digital technologies have been developed primarily by entrepreneurial ventures and high-tech entrepreneurs, not traditional companies. Entrepreneurship has been around for a long time, but the digital age has changed its nature and development. A digital era has greatly influenced entrepreneurship in terms of the environment in which it exists considering all kinds of available resources, which will also influence the nature of the work in the future. As a result, technological entrepreneurship has brought profound changes to everyday life. As entrepreneurship is not a new concept, information and communication technologies enable entrepreneurs to reach markets faster than ever before.

1.1 Development of the digital environment

In terms of GDP per capita, an individual's quality of life is more than a level of material basis but is also an expression of the social, economic, political, and cultural contexts that shape the individual's behavior, determine the possibilities and needs and, therefore, the type and intensity of influence on future development flows based on acquired abilities for a particular type of activity, specifically entrepreneurship. It is evident from this indicator that countries with different levels of development have different capacities for entrepreneurial behavior, both in terms of their types and scopes of entrepreneurial activities and in terms of their motivation to engage in them. Therefore, it appears that countries with different levels of economic development have different opportunities for individuals to start entrepreneurial ventures based on their level of technological development and availability of technology, not just for consumption, but also in economic development (entrepreneurship) (Leković & Marić, 2017). A high rate of economic growth always supports technological development, and digital entrepreneurs are aware of the opportunities that economic growth provides (Richter, Kraus, Brem, Durst & Giselbrecht, 2017).

In response to the emergence of the Internet and the development of information technology, business functions have been redesigned and redefined. As the Internet became commercially viable in the early 1990s, the initial focus was on creating websites for providing product and service information to customers, followed by the introduction of e-commerce. Social media has become an increasingly important part of business in the new millennium (Leefflang, Verhoef, Dahlström & Freundt, 2014). Additionally, operations managers find value in adapting to information and communication technologies (ICTs) since ICTs are becoming increasingly important in improving organizational performance and managing organizational processes (Schlemmer & Webb, 2009). The changing environment will require companies to adapt to ICT with new strategies and structures in order to maintain long-term success (Ganesh, Madanmohan, Jose, & Seshadri, 2004). As we progress into the digital age, companies and managers will need to modify their business processes in order to keep up with the new developments of technology such as IoT (Internet of Things) and cloud-centric solutions to data requirements (Gubbi, Buyya, Marusic & Palaniswami, 2013).

One of the most important factors that enable entrepreneurship is technological development (Afawubo & Noglo, 2022), while digitalization plays a key role in encouraging the development of business ideas. Digital technologies create opportunities for entrepreneurs to launch new business ventures and stimulate new entrepreneurial activities (Del Giudice & Straub, 2011). More precisely, digital technologies enable the acquisition of value, timely insight into the market, improve their sensitivity in relation to market changes (Luo, Fan & Zhang, 2012), reduce transaction and communication costs (Niebel, 2018), expand the scope

of the market, promote international exchange (Reuber & Fischer, 2011) and remove cultural, organizational and institutional boundaries (Bouncken & Barwinski, 2021). According to Davidsson, Recker and Von Briel (2020), technological changes driven by AI act as an external factor that affects entrepreneurial activities. Moreover, digitization helps businesses operate within an ecosystem that enhances business collaboration (Ferraris, Santoro & Pellicelli, 2020) and provides complementary resources (Bouncken & Kraus, 2022). Furthermore, it is worth mentioning that digital solutions experienced expansion during the unforeseen crisis circumstances that occurred during the COVID-19 pandemic, which enabled companies and entrepreneurs to organize meetings, teamwork, and socialization within a virtual environment. Virtual solutions can replace or be complementary to physical, real business conditions (Bouncken & Tiberius, 2023) and thus reduce operational costs. With the spread of digital technologies, virtual collaboration within incubators is possible, which motivates future research (Deyanova, Brehmer, Lapidus, Tiberius & Walsh, 2022). In addition, new opportunities for entrepreneurship are provided by the use of digital technologies, which optimize business processes, assist in managerial and strategic decision-making, and enable product customization (Kraus, Palmer, Kailer, Kallinger, & Spitzer, 2019). According to Von Briel, Davidsson and Recker (2018), digital technologies are changing the nature of entrepreneurial activities. As a result, they can enable and support the start-up process by providing a broader range of financial resources through large funds, reducing communication costs via cloud computing, and reducing human resource expenditures with AI.

According to the statements in the previous part of the paper regarding the influence of the technological or digital environment, determined by the degree of economic development, on the scope, motives, and nature of entrepreneurial activities, we propose the following research hypothesis:

H1: An established distribution can be seen as a statistically significant difference between defined groups of countries with different levels of economic development based on a combination of dependent variables: Scope of entrepreneurial activity, Motivation - of entrepreneurship based on opportunities, and Scope of entrepreneurial activities in the technological sector.

1.2 Entrepreneurship in a Digital Environment

By creating specific circumstances based on digital technology, the digital era enables a completely new nature of entrepreneurship, thus changing the context of entrepreneurship and creating specific conditions for venture formation. The paper will analyze the opportunities created by digital technologies within the technological sector, as well as the motives of entrepreneurial behavior in the digital environment. Clearly, digital technologies have changed the competitive environment in which entrepreneurship takes place. The technologies themselves also provide a variety of alternatives that can help entrepreneurs launch and manage new business venture.

Due to the fact that most high-tech (digital) entrepreneurs possess primarily technical, today digital skills (Klofsten & Jones-Evans, 1996), which represent an exceptional advantage in the initial stages of entrepreneurship, technology is transferred predominantly from universities to the economy through this sector (Samson & Gurdon, 1993; Westhead & Storey, 1994). Entrepreneurship drives innovation (Hindle & Yencken, 2004), since codified knowledge and entrepreneurial culture serve as the basic resources in the commercialization of research results. Consequently, inventions will be transformed into innovations, technological innovations, and, on that basis, new entrepreneurial ventures based on the use of digital technology. In this way, technologically oriented small businesses have a double benefit, first for their own growth, and

then for other businesses because they improve their inputs (Lindholm Dahlstrand, 2007). In relation to this topic, it is imperative to stress the interdependency of technology-driven entrepreneurial ventures, whose strategic decisions and growth processes are closely intertwined with business internationalization and innovation (Onetti, Zucchella, Jones & McDougall-Covin, 2012).

Digital entrepreneurship can be defined as entrepreneurial opportunities created and encouraged by digital platforms and other information and communication technologies (Giones & Brem, 2017). Digital entrepreneurship can be found in different economic branches, such as marketing, sales, production, distribution (Rashidi, Yousefpour, Sani & Rezaei, 2013). Digital entrepreneurship also displays other characteristics that represent a symbiotic relationship between business, knowledge, and institutional entrepreneurship. Therefore, digital entrepreneurship combines the previously mentioned three forms of entrepreneurship, meaning digital entrepreneurs synergize business, institutional, and knowledge-based entrepreneurship together. As a result of this combination, traditional practices such as listed business categories can be transformed into digital ones (Hull et al., 2007). Based on the previous statements, digital entrepreneurship is based on digital opportunities and digital transformation.

A digital transformation is when a company switches from a traditional business to one based on digital technology. However, it can also refer to the continuous change that occurs in our civilization as a result of the use of digital technology, leading to digitalization of society as a whole and the economy (Hess, Matt, Benlian & Wiesböck, 2016). Thus, digital transformation implies a redesign of business practices that incorporates digital technology into all aspects of business (Bounfour, 2016). As the digital era is on the scene, entrepreneurs capitalizing on these opportunities implies a move towards high-tech. Hence, technology-based entrepreneurship refers to companies whose business models are changed from traditional to digital-based, and in a broader sense it also refers to the persistent transformation of civilization through the use of technology, in this case digital, that leads to a digitalization of society and economy as a whole (Boneva, 2018).

According to the statements in the previous part of the paper regarding the influence of the technological or digital environment, determined by the degree of economic development, on the scope, motives, and nature of entrepreneurial activities, we propose the following research hypotheses:

H2: An established distribution can be seen as a statistically significant difference between defined groups of countries with different levels of economic development based on the dependent variable - Scope of entrepreneurial activity;

H3: An established distribution can be seen as a statistically significant difference between defined groups of countries with different levels of economic development based on the dependent variable - Motivation for entrepreneurial behavior - entrepreneurship based on opportunities;

H4: An established distribution can be seen as a statistically significant difference between defined groups of countries with different levels of economic development based on the dependent variable - The scope of entrepreneurial activities in the technological sector.

2. Methodology

In this study, a sample of 49 countries was analyzed from the GEM project database. Using the WEF methodology (World Economic Forum; Schwab, 2009), the countries are categorized as

factor-driven economies: 1, efficiency-driven economies: 2, innovation-driven economies: 3. Availability of data on the selected variables was the criterion for selecting the countries in the sample. This was the same criteria used to select the year of observation, which this time is 2018, since 49 countries are represented in the sample as well as a satisfactory structure in the subsamples. The official website of the GEM project does not provide databases of recent research with the necessary structure of variables.

Dependent variables for the level of entrepreneurial activity TEA index - % 18-64 pop: Setting up firm or owner of young firm SU or BB, for the opportunity-based entrepreneurial behavior motive within the TEA index - % 18-64 pop: TEA and Opportunity motive, for the scope of entrepreneurial activity in the technological sector within the TEA index, three measures, namely the scope of entrepreneurial activity in the technological sector within the TEA index, high or medium - % within TEA: Active in technology sectors (high or medium), the scope of entrepreneurial activity in the technological sector within the TEA index with the latest technology not older than one year - % within TEA: Uses very latest technology (only available since last year), the scope of entrepreneurial activity in the technology sector within the TEA index with technology from one to five years - % within TEA: Uses new technology (1 to 5 years). Among the criterion characteristics is the level of development presented as GDP per capita in US\$, based on which the sample is divided into subsamples.

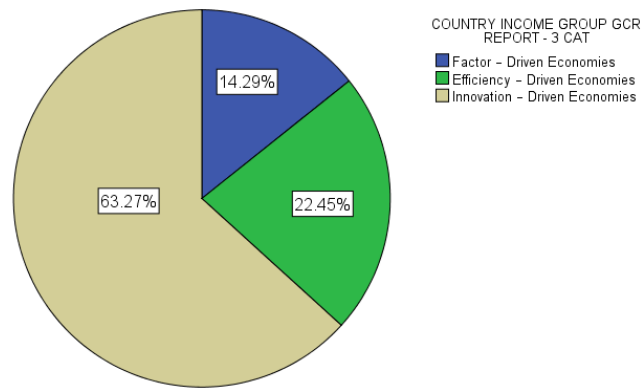
According to the criteria of GDP per capita in US\$ and the WEF methodology, there are three stages of economic development as well as three groups of countries: “factor driven economies” – for countries with GDP up to \$3,000 per capita, “efficiency driven economies” – for countries with GDP up to \$17,000 per capita, and “innovation driven economies” – for countries with GDP over \$17,000 per capita. International Monetary Fund, World Economic Outlook Database, October 2010 is the source of data for the indicator GDP per capita in US\$. Among the many datasets developed as part of this project, the GEM 2018 Adult Population Survey Country version contains data for the selected indicators. The indicators are defined as the percentage of adults (18 - 64 years old) involved in a certain stage of the entrepreneurial process or activity that is being studied.

The selected features - variables of the research space have parametric properties, and accordingly they will be analyzed by parametric procedures. We will use MANOVA procedures for multivariate data and ANOVA with post hoc tests for univariate data. Using the procedures on the basis of which the measure is derived adds a new dimension to this research.

3. Research results and discussion

The structure of the countries is presented in Figure 1, since the entire research area is affected by one of the key determinants of the independent variable - defined groups of countries in terms of the degree of economic (technological) development, divided into three categories: countries with the lowest level of development or group 1: factor-driven economies; countries with a higher level of economic development or group 2: efficiency-driven economies; and countries with the highest level of economic development or group 3: innovation-driven economies.

Table 1. The structure of countries by level of economic (technological) development



Source: Authors

Group 3 or countries with the highest technological development participated in the observed sample with 63.27% (n=31), followed by Group 2 or countries with a medium level of development with 22.45% (n=11), and Group 1 or countries with the lowest level of development with 14.29% (n=11).

It is the degree of economic development in a country that determines the business or technological environment in this case the digital environment which impacts all research units within a structured research field. It comprises the scope of entrepreneurial activity measured by the TEA index, the motivation of entrepreneurial behavior, measured by the percentage of entrepreneurial activity based on opportunities within the TEA index, and the scope of entrepreneurial activity in the technological sector within the TEA index.

The one-way multivariate analysis of variance identified differences between defined groups of countries of different degrees of economic (technological) development in relation to the combination of selected dependent variables.

Table 2. MANOVA between group of countries by observed variables

Analysis	n	F	p
MANOVA	5	86.000	.001

Source: Authors

Five dependent variables were used, namely: for the level of entrepreneurial activity TEA index - % 18-64 pop: Setting up firm or owner of young firm SU or BB, for the opportunity-based entrepreneurial behavior motivation within the TEA index - %18-64 pop: TEA and Opportunity motive, three measures for the scope of entrepreneurial activity in the technological sector within the TEA index, namely the scope of entrepreneurial activity in the technological sector within the TEA index, high or medium - % within TEA: Active in technology sectors (high or medium), the scope of entrepreneurial activity in the technological sector within the TEA index with the latest technology not older than one year - % within TEA: Uses very latest technology (only available since last year), the scope of entrepreneurial activity in the technology sector within the TEA index with technology from one to five years - % within TEA: Uses new technology (1 to 5 years). On the basis of GDP per capita, the degree of economic development was measured as an independent variable, and countries were then

classified into the three categories mentioned above. Due to the small sample size, unequal number of cases per cell, as well as certain assumptions violated in the results obtained from multivariate tests, Pillai's Trace was chosen as an indicator that is more robust and resistant to the shortcomings mentioned earlier. The obtained results indicate a statistically significant difference between the defined groups of countries with different degrees of economic (technological) development in relation to the combination of isolated dependent variables $F(5, 86) = 3.37, p = 0.001$; Pillai's Trace = 0.563; partial eta squared = 0.28.

On the basis of the values of the calculative procedures presented above, it can be said that hypothesis H1 is confirmed, and that there is a defined distribution in the form of statistically significant differences between defined groups of countries of different levels of economic development in relation to the combination of dependent variables, Scope of entrepreneurial activity, Motivation - entrepreneurship based on the opportunities and Scope of entrepreneurial activities in the technological sector.

The previous multivariate test of significance showed a significant result, so the individual dependent variables were analyzed to determine if the defined groups of countries with different levels of economic development differed based on their individual dependent variables. The results of this analysis are found in the Tests of Between - Subjects Effects calculation. Based on this analysis, only three of the five dependent variables showed statistical significance as variables of differentiation when compared to the independent variable, as follows: level of entrepreneurial activity TEA index - % 18-64 pop: Setting up firm or owner of young firm SU or BB; opportunity-based entrepreneurial behavior motivation within the TEA index - % 18-64 pop: TEA and Opportunity motive, and the scope of entrepreneurial activity in the technological sector within the TEA index is high or medium - % within TEA: Active in technology sectors (high or medium).

Table 3. ANOVA - Tests of Between – Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
WEFIncREV	% 18-64 pop: Setting up firm or owner of young firm (SU or BB)	535.097	2	267.549	6.113	.004	.210
	% 18-64 pop: TEA and Opportunity motive	148.428	2	74.214	3.497	.039	.132
	% within TEA: Active in technology sectors (high or medium)	210.982	2	105.491	9.697	.000	.297
	% within TEA: Uses very latest technology (available since last year)	938.226	2	469.113	3.014	.059	.116
	% within TEA: Uses new technology (1 to 5 years)	115.595	2	57.797	.814	.449	.034

a. R Squared = .210 (Adjusted R Squared = .176)

b. R Squared = .132 (Adjusted R Squared = .094)

c. R Squared = .297 (Adjusted R Squared = .266)

d. R Squared = .116 (Adjusted R Squared = .077)

e. R Squared = .034 (Adjusted R Squared = -.008)

Source: Authors

Due to the independent variable having three groups, subsequent univariate analyses, one-factor ANOVA with subsequent testing, were required to determine where the MANOVA analysis revealed statistically significant differences.

During the analysis of the results of the dependent variables, it was determined separately that there is a statistically significant difference in three of the five dependent variables and a clearly defined demarcation between the defined groups of countries based on the variable of total

entrepreneurial activity measured by the TEA index (TEA 18 - % 18-64 pop: Setting up firm or owner of young firm SU or BB), $F(2, 46) = 6.12, p = 0.004$. These results confirm hypothesis H2, that there is a defined distribution in the form of statistically significant differences between defined groups of countries with different levels of economic development in relation to the dependent variable - the scope of entrepreneurial activity. Although statistically significant, there is not much of a difference between the means of the two groups. Based on eta squared, that difference is 0.210. Subsequent comparisons using Tukey's HSD test show that the mean value of the Factor-Driven Economies group of countries ($M = 17.96; SD = 11.55$) is significantly different from the Innovation-Driven Economies group of countries ($M = 10.14; SD = 4.64$). The difference in favor of Factor-Driven Economies as the least developed group of countries in relation to Innovation-Driven Economies is explained by entrepreneurs in less developed environments being under pressure at the early stages of the entrepreneurial process as measured by the TEA indicator 18 - % 18-64 pop: Setting up firm or owner of young firm SU or BB, high unemployment rates in less developed countries because of underdevelopment, and low unemployment rates in highly developed countries because of large corporations. Subsequent comparisons using Tukey's HSD test show that the mean value of the Efficiency-Driven Economies group of countries ($M = 16.24; SD = 7.52$) is significantly different from the Innovation-Driven Economies group of countries ($M = 10.14; SD = 4.64$). The difference in favor of the Efficiency-Driven Economies as a medium developed group of countries in relation to Innovation-Driven Economies is explained by entrepreneurs in less developed environments being under pressure at the early stages of the entrepreneurial process as measured by the TEA indicator 18 - % 18-64 pop: Setting up firm or owner of young firm SU or BB, high unemployment rates in less developed countries because of underdevelopment, and low unemployment rates in highly developed countries because of large corporations.

Table 4. Multiple Comparisons

Tukey HSD							
Dependent Variable	(I) COUNTRY INCOME GROUP GCR REPORT - 3 CAT	(J) COUNTRY INCOME GROUP GCR REPORT - 3 CAT	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
% 18-64 pop: Setting up firm or owner of young firm (SU or BB)	Factor – Driven Economies	Efficiency – Driven	1.72488	3.19873	.852	-6.0219	9.4717
		Innovation – Driven	7.82692*	2.76853	.019	1.1220	14.5318
	Efficiency – Driven Economies	Factor – Driven	-1.72488	3.19873	.852	-9.4717	6.0219
		Innovation – Driven	6.10204*	2.32185	.031	.4789	11.7252
	Innovation – Driven Economies	Factor – Driven	-7.82692*	2.76853	.019	-14.531	-1.1220
		Efficiency – Driven	-6.10204*	2.32185	.031	-11.725	-.4789
% within TEA: Active in technology sectors (high or medium)	Factor – Driven Economies	Efficiency – Driven	-2.30131	1.59470	.328	-6.1634	1.5608
		Innovation – Driven	-5.47301*	1.38023	.001	-8.8157	-2.1303
	Efficiency – Driven Economies	Factor – Driven	2.30131	1.59470	.328	-1.5608	6.1634
		Innovation – Driven	-3.17170*	1.15754	.023	-5.9751	-.3683
	Innovation – Driven Economies	Factor – Driven	5.47301*	1.38023	.001	2.1303	8.8157
		Efficiency – Driven	3.17170*	1.15754	.023	.3683	5.9751

*. The mean difference is significant at the 0.05 level.

Source: Authors

In the analysis of the dependent variables, it was determined separately that the variable % 18-64 pop: TEA and Opportunity motive show statistically significant differences as well as a precise demarcation between the defined countries groups, $F(2, 46) = 3.50$, $p = 0.004$. Although statistically significant, there is not much of a difference between the means of these groups. Based on eta squared, that difference is 0.132. This result can be additionally explained by the fact that the degree of economic development affects the level of overall entrepreneurial activity in the early stages of the entrepreneurial process measured by the TEA index thanks to favorable business opportunities, which confirms the hypothesis H3, that there is a defined distribution in the form of statistically significant differences between defined groups of countries of different degrees of economic development in relation to the dependent variable - Motivation of entrepreneurial behavior - entrepreneurship based on opportunities.

A statistically significant difference was also identified and a precise demarcation was established between defined groups of countries depending on the variable Activity in the technological sector. (% within TEA: Active in technology sectors (high or medium)) $F(2, 46) = 9.70$ $p = 0.000$. Although statistically significant, there is not much of a difference between the means of these groups. Based on eta squared, that difference is 0.297. This result can be additionally explained by the fact that the degree of economic development affects the level of overall entrepreneurial activity in the early stages of the entrepreneurial process measured by the TEA index within the technological sector, which partially confirms hypothesis H4 since it only refers to the variable (% within TEA: Active in technology sectors (high or medium)). This means that there is a defined distribution in the form of statistically significant differences between defined groups of countries of different levels of economic development in relation to the dependent variable - the scope of entrepreneurial activities in the technological sector. Subsequent comparisons using Tukey's HSD test show that the higher the degree of development of the countries, the greater the scope of entrepreneurial activities in the early stages of the entrepreneurial process measured by the TEA index within the technological sector.

Conclusion

As a consequence of the results of this study, the main conclusion that can be drawn is that the level of economic development of a country is influenced by the total scope of entrepreneurial activities in the early stages of the entrepreneurial process, the scope of entrepreneurial activities in the early stages of the entrepreneurial process motivated by favorable business opportunities, as well as the scope of entrepreneurial activities in the early stages of the entrepreneurial process within the technological sector. It is important to note that, in addition to the fact that each individual variable contributes to a statistically significant difference between countries at different economic levels, multivariate tests confirmed that all the variables together contributed to that statistically significant difference.

The results of the research revealed that the level of technological development and digitization of the business environment is related to economic development, which justifies the selection of an independent variable in light of the selected combination of dependent variables.

Based on its both theoretical and empirical contributions, this paper is one of the few that examines the relationship between digital environments and entrepreneurial activities. As a result, this research has direct practical implications, primarily for governments and economic policy makers, demonstrating that new technological innovations increase entrepreneurial activity and encourage sustainable competitiveness of the national economy in the form of future development. As the research confirms, entrepreneurship contributes to the

competitiveness of the national economy by creating economic development, business opportunities and economic structure.

Future research directions can be identified by looking at the role entrepreneurship plays in driving economic development, and by exploring how digital technologies enable entrepreneurial performance. The study serves as a starting point for further research on the impact of digital technologies on entrepreneurship, measured as a complex construct with several dimensions.

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THE PEOPLE OF BOSNIA AND HERZEGOVINA: WHY ARE THEY LEAVING?

Milica Marić¹

Abstract

The net emigration and brain drain have been major issues Bosnia and Herzegovina has been confronting for the previous three decades. Understanding what factors influence peoples' decision to leave the country may help in resolving the key problems and reducing the negative trend. This article firstly addresses the problem of measuring the magnitude of brain drain and offers a possible proxy for the number of Bosnians and Herzegovinians currently living abroad. Secondly, it explores the relationship between the number of people that have left the country and the variables that may influence their propensity for moving away. The explanatory variables used are macroeconomic indicators that reflect the wealth and living standard of the country, as well as indices that express the peoples' attitudes towards the quality of life. Data is collected for the period from 2015 to 2020, making a model that explains 35% of the variability of the dependent variable measuring the people that have left Bosnia and Herzegovina and stayed abroad. The properties of the model are later examined, and problems of multicollinearity and non-normality are exhibited in the proposed model. Additionally, limitations and possible future courses of research are also discussed.

Keywords: emigration, brain drain, people leaving, Bosnia and Herzegovina.

1. Introduction

Migration and international mobility are common topics in social-scientific research, and yet there is still no generally accepted theoretical framework for migration studies. This is mainly due to the fact that there is a lack of cumulative knowledge to explain why some people become mobile and some do not, and what it means for the societies concerned (Castles, 2010). Understanding migration means understanding the underlying human behavior behind the decision to migrate, which is affected by a large number of interrelated variables (Arango, 2002).

The first step in trying to understand and analyze migration flows is to measure migration among the countries. The problem, both for European countries and globally, is that the concepts of migration still differ significantly among the countries, despite the efforts to harmonize the scope and measurement of migration (Fassmann, Sievers, & Reeger, 2009). The term “migrant” does not have a universally accepted definition. The United Nations define a migrant as any person who has changed his or her country of residence, including all migrants regardless of their legal status, nature, or motive of their movement (The United Nations, 2023). Others define a migrant as a person who has to struggle against bordering practices and processes of boundary-making that are implicated by the national order of things, to move to or stay in a desired place (Scheel & Tazzioli, 2022).

The first definition does not explicitly require migrants to have an intention of staying in the host country and encompasses temporary placement abroad, counting in categories such as

¹ Faculty of Economics, University of Banja Luka, milica.maric@ef.unibl.org

students who intend to return upon graduation, or even exchange students. The second definition excludes the temporary categories since it sees a migrant as someone who has an intention to stay in the destination country. Going into more depth, it is debatable what is “the intention to stay in a desired place”. Are concrete and specific actions required to prove that a person has a serious intention of staying and is actively working to achieve that goal? If yes, what would be those activities? On the contrary, does only a vague plan count as intention, without any actions yet taken? The term is open to interpretation, and the classification of the migrant category is hence provisional.

Due to the issues mentioned above, measuring migration is not just problematic in terms of data collection and availability, but also in terms of the migrant definitions and can produce different numbers depending on what is the view of the migrant.

This article uses national definitions of migrants for each of the countries included in the analysis and based on them proposes a proxy for measuring the number of emigrants from a country, in this case, Bosnia and Herzegovina, and debates the pros and cons of such a measurement. The emigrant flow is derived indirectly from the inflows of Bosnian and Herzegovinian citizens to other European countries, thus collecting data from different national registers which are subject to different national laws and requirements.

Secondly, the article uses the proposed measure to examine the factors that may shape the people's decision and propensity for leaving the country. It aims to examine the econometric model explaining the number of emigrants from Bosnia and Herzegovina by using macroeconomic indicators that reflect the wealth and living standard of the country, as well as indices that express the peoples' attitudes towards the quality of life as the explanatory variables. The article then examines the quality of such a model and gives recommendations for further improvements and adaptations.

The observed period is from 2015 to 2020, to exclude post-war migration flows and possibly reduced mobility due to the Great Recession in the years before 2015. It is debatable whether 2020 should be included as mobility and economic activity were greatly reduced as a consequence of the COVID-19 crisis, and different national measures were imposed. The data for 2020 was however kept in the analysis under the assumption that the process of reallocation and emigration could have started earlier in the year and could theoretically be completed.

The article finally discusses the problems and limitations that have arisen during the analysis and gives suggestions for future research in this field.

2. Measuring Emigration from Bosnia and Herzegovina

Bosnia and Herzegovina provides official statistics only for internal migrations, and not for external ones. The data regarding the people who renounced Bosnian and Herzegovinian citizenship is available in the publication Migration Profile, published by the Ministry for Human Rights and Refugees of Bosnia and Herzegovina. However, this data is not to be considered for the analysis as people who left do not necessarily need to renounce their citizenship, and the number of emigrants is effectively higher.

Therefore, another measure of emigration from Bosnia and Herzegovina had to be found for the analysis. External migrations, especially departures, tend to be less recorded than arrivals, as emigrants who plan to return to the host country in the future may be reluctant to inform about their departure to avoid losing rights related to their presence on the register (OECD, 2023). Additionally, data on migrant characteristics and reasons for migration are commonly obtained in surveys and survey data are not yet fully integrated into official statistics on

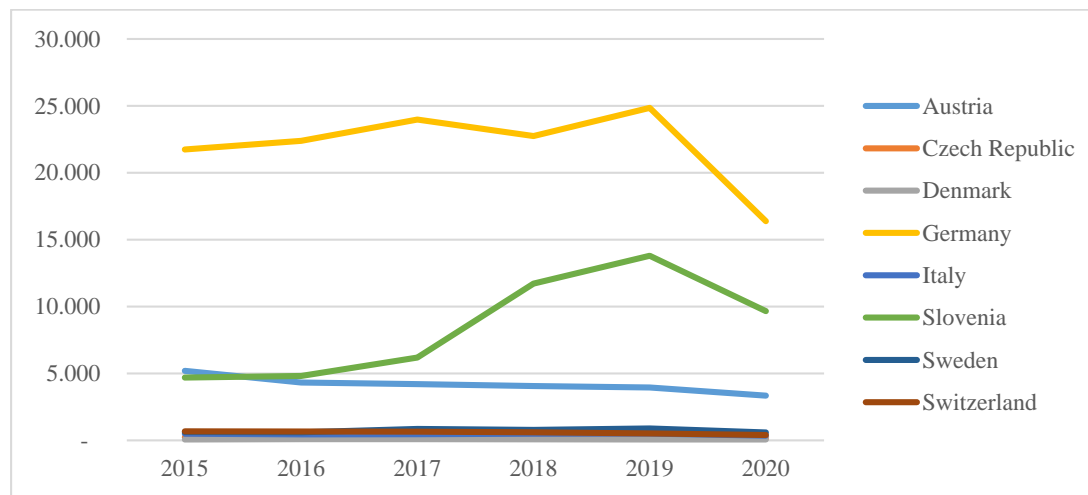
migration (Willekens, 2016). Thus, incomplete or nonexistent records of emigrants are not only a problem of Bosnia and Herzegovina and its statistical system, but rather a global issue.

Since data about arrivals of immigrants is more reliable and available, the OECD data about inflows of foreign population is taken into consideration (OECD, 2023). The data shows the inflow of foreign population by the citizenship of the immigrants for the OECD countries, suggesting that the inflow of Bosnians and Herzegovinians to destination countries can be tracked using the inflow data.

Another type of data available was the total stock of foreign nationals in the destination country, again broken down by countries of origin. Using the stock of the foreign B&H population in the destination countries could give a wrongful image about the number of emigrants from Bosnia and Herzegovina, as the foreign population stock includes those who moved away during the war activities in the 1990s and never returned. Using these numbers to examine the factors that led the people away from Bosnia and Herzegovina would not give relevant results because it was not the same factors that influenced the people's decision to leave the country in the 1990s.

Therefore, to avoid the external influences of war events during the 1990s and the Great Recession in the late 2000s and early 2010s, the numbers of inflows of Bosnians and Herzegovinians from 2015 to 2020 were taken into analysis. The data was collected for the most popular European destinations of B&H citizens: Austria, Czech Republic, Denmark, Germany, Italy, Slovenia, Sweden, and Switzerland. The countries that recorded less than 50 arrivals in any given year were not included. The data of yearly inflows of B&H citizens was collected for the period from 2015 to 2020 from the OECD International Migration Database.

Graph 1: Inflow of B&H Citizens to Destination Countries



Source: OECD International Migration Database

The inflows of the foreign population are based on national estimates, generally derived either from population registers or residence permit data (OECD, 2023). Foreigners are required to indicate possession of an appropriate residence and/or work permit valid for at least the minimum registration period to register in the destination country. The registration and residence/work permit criteria vary across the observed countries, which poses a problem of comparison between the countries. For instance, Germany requires foreigners to hold a residence permit and intend to stay in the country for at least 1 week in order to register. Austria requires them to stay at least 6 weeks, and Sweden at least a year (OECD, 2023).

Another issue with using the number of issued residence/working permits as a requirement for registration and as a proxy for the inflows of foreign nationals is that they do not always reflect the actual physical flows of the migrants. The permits may be issued overseas but individuals may decide not to use them, or delay their arrival. Permits may also be issued to persons who have been residents in the country for some time and need to have new permits issued due to a change of status, or to renew the same permit (OECD, 2023). Simply put, a person may be living for quite a while in the destination country and have a time-limited residence permit that needs to be renewed every several years. These renewed residence permits are also part of the inflow of nationals, indicating that the number does not reflect the actual number of persons that moved to the destination country in the given year. The problem could potentially be solved by using just the number of newly issued residence permits, but having the residence permit issued for the first time in one country does not explicitly mean that the person left their home country in the given year.

Additional problem are dual citizenships of the emigrants. Some people have both B&H and citizenship of another country, and may decide to disclose the other citizenship for the registration process, especially if they have more benefits in the destination country using the other citizenship status.

The inflow of foreign nationals can be seen as the number of people who arrived in the destination country (newly issued residence permits), plus the number of people who decided to stay in the destination country (number of renewed or changed residence permits). Therefore, the inflow of B&H citizens to selected destination countries is used as a proxy for the number of emigrants from B&H in the given year and the number of people who chose not to return and remain in their host countries.

The sole number of the people who moved abroad from B&H could not be obtained using the available data, which still leaves open the problem of measuring the yearly number of emigrants and keeping track of the brain drain in that way.

3. Econometric Model and Analysis

Once the measure for the emigration from B&H has been established (inflow of foreign population – IFP), the next step is to examine the factors that influence the people's decision to leave the country. To do that, the following data was collected for the observed destination countries: GDP per capita (Purchasing Power Parity), unemployment rate, labor force participation rate, Rule of Law Index, Corruption Perception Index, health spending per capita, and Human Development Index. These variables are used to account for the economic environment and wealth (GDP per capita), employment opportunities (unemployment rate and labor force participation rate), trust in the institutions (Rule of Law Index and Corruption Perception Index), and the human development (Human Development Index), suggesting the following model:

$$IFP_{i,t} = GDPpc_{i,t} + UNR_{i,t} + LFP_{i,t} + RLI_{i,t} + CPI_{i,t} + HSp_{i,t} + HDI_{i,t}$$

The estimated panel data model (Croissant & Millo, 2008) from 2015 to 2020, with the inflow of Bosnians and Herzegovinians to the destination country being the dependent variable, and others independent, is the following:

Table 1: Estimated Panel Data Model

Balanced Panel: n = 8, T = 6, N = 48

Residuals:

Min.	1st Qu.	Median	3rd Qu.	Max.
-3483.99	-514.00	-111.09	518.72	2878.90

Coefficients:

	Estimate	Std. Error	t-value	Pr(> t)
GDPpc	-6.2742e-02	3.1330e-01	-0.2003	0.842506
UNR	-1.1714e+03	4.2466e+02	-2.7584	0.009399 **
LFP	1.0676e+03	6.9341e+02	1.5397	0.133173
RLI	5.6283e+03	3.6753e+03	1.5314	0.135205
CPI	-2.8836e+02	1.3303e+02	-2.1677	0.037495 *
HSpc	-2.7176e+00	1.1991e+00	-2.2664	0.030106 *
HDI	5.9840e+04	6.7207e+04	0.8904	0.379707

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares: 119600000

Residual Sum of Squares: 54375000

R-Squared: 0.54537

Adj. R-Squared: 0.3525

Source: author's calculation

The significant variables at the 5% significance level are UNR (unemployment rate), CPI (Corruption Perception Index), and HSpc (health spending per capita). Other variables proved not to be statistically significant. The signs before UNR and CPI are negative, as expected. Bosnians and Herzegovinians tend to choose destination countries with lower unemployment rates and a lower perception of corruption, meaning they are driven by employment opportunities and trust in the country's institutions. The sign of HSpc is also negative, contrary to the expectations. The variable is defined as the estimate of current health expenditures on healthcare goods and services consumed during each year, measured in current US dollars (The Global Economy, 2023). The definition suggests that greater expenditures do not necessarily mean greater or broader health protection, but it can also indicate more expensive healthcare, resulting in higher spending per capita. This could explain the negative sign, as the migrants seem to choose countries with more affordable and widely available healthcare.

The coefficient of determination, R-squared, is 0.54537, but the increase of the R-squared with the introduction of additional variables has been reported by many authors, due to the increase of the sampling error (Akossou & Palm, 2013). The adjusted R-squared of 0.3525 is used as it provides a better estimate due to the adjustment formulae that limit the influence of the factors that increase the sampling error (Carter, 1979). This suggests that the model managed to

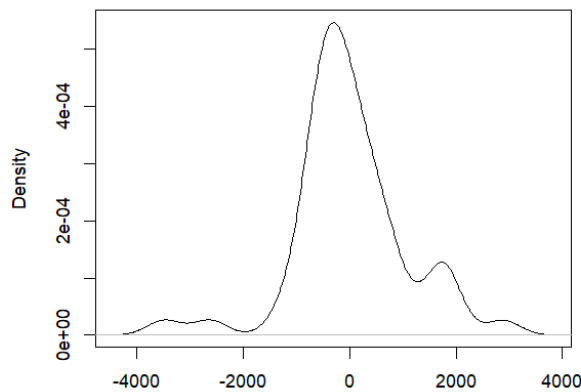
explain around 35% of the variation in the inflows of Bosnians and Herzegovinians in the selected countries, and that there are more factors to be considered and potentially included in the model to better understand the motives behind the decisions to emigrate.

The quality of the model is later examined. Firstly, the Breusch-Pagan test is used to check for heteroskedasticity in the model, by testing the null hypothesis of zero cross-equation error correlations (Pesaran, 2004). The obtained p-value is 0.121, suggesting that there is not enough evidence to reject the null hypothesis and that the model is homoskedastic.

Next, the Durbin-Watson test for serial correlation in panel models is conducted, with the p-value 0.5582 obtained as a result. The p-value suggests insufficient evidence to reject the null hypothesis of zero first-order autocorrelation of the random errors (Kabaila, Farchione, Alhelli, & Bragg, 2020).

To check the normality of the residuals, a density plot was first visualized, as shown in Graph 2.

Graph 2: Density Plot of the Residuals



Source: author's calculation

While the density plot does show a mild similarity to the normal distribution, it is visually asymmetrical and gives first hints that the residuals of the suggested model may not follow the normal distribution.

To examine the assumptions suggested by the density plot in Graph 2, the normality of the model residuals was checked using two different tests. Firstly, the normality was tested using the Shapiro-Wilk test. The p-value of 0.003576 was obtained, and it is below 0.05, meaning that there is statistically strong evidence against the assumption of normality of the residuals. The results of the violation were also confirmed using the Jarque-Bera test, which rendered the p-value of 0.006962.

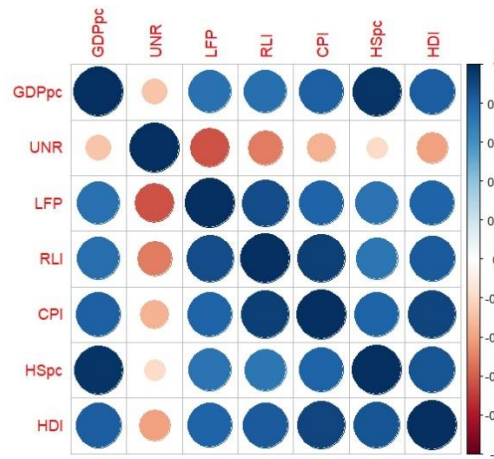
To try and achieve the normal distribution of the variables, the logarithmic transformation was created using the natural logarithm as a base. The transformed variables were then tested using the same tests, but the results did not improve, and the problem of the distribution was not resolved. Additional transformations and corrections, such as square root transformation or bootstrapping (Sainani, 2012) should be conducted to see if the assumption of the normality can be achieved.

The model in its current state violates the assumption of normality of the residuals and is not to be used as such for further analysis. Although some researchers suggest that violations of the normality assumption do not noticeably impact the results in large samples, e.g. when the

number of observations per variable is greater than 10 (Schmidt & Finan, 2018), the observation per variable ratio in this research is below 7, so it would be safer to aim for fulfilling the normality assumption.

Further analysis using the suggested model is not advisable due to the violation of the normality assumption. Nevertheless, the correlation between the variables is checked using the correlation matrix shown in the form of a heatmap, to see if the no multicollinearity assumption holds.

Graph 3: Correlation Matrix Heatmap



Source: author's calculation

The results point to a high correlation between the variables, such as HDI and CPI, HSpc and GDPpc, etc. The only variable that does not show a great correlation with the others is UNR, which is negatively correlated with LFP, but not so much with the others. Consequently, it is to say that the model also exhibits the problem of multicollinearity.

With the violation of the two assumptions of the panel regression models – normality of the residuals and no multicollinearity, the proposed model is not suitable for modelling the number of emigrants from Bosnia and Herzegovina. Additional transformations are to be made to see if the problems can be resolved. If not, the model is to be rejected and a new method of modelling the number of emigrants from Bosnia and Herzegovina should be considered.

Even though the econometric model itself did not prove to be good enough, it does still help in shedding light on the motives of the people to migrate to other European countries. They seem to primarily be driven by employment opportunities and the stability of the country's institutions. The ease of access to healthcare also looks to play a role in the migration decisions.

It would be useful to introduce new variables that measure earning opportunities, such as minimum or average wage, and also the cost of living measures. Another aspect to consider could be cultural values, which could be measured using Hofstede's cultural dimensions (Hofstede, 2011).

4. Conclusion

This article introduces the problem of migration measures, more specifically emigration measures. Emigration data proved not to be well enough recorded to provide meaningful insights for the emigration analysis, so immigration data was used to derive a proxy for emigration numbers for a country.

The article aimed to derive a proxy for the yearly number of emigrants from Bosnia and Herzegovina, using the immigration data of Bosnians and Herzegovinians to the most popular destination countries, namely Austria, Czech Republic, Denmark, Germany, Italy, Slovenia, Sweden, and Switzerland. OECD International Migration Database provides data about inflows of B&H citizens to these countries, using national data from population registers and the number of issued residence permits. Those numbers include B&H citizens who were issued new or subsequent residence permits in the host countries, meaning that the inflow numbers include both newcomers and people who are already living in the host country but had to renew or replace their residence or work permits. Therefore, the article suggests that the inflows of B&H citizens be used as a proxy for the number of people who left Bosnia and Herzegovina in the given year and for the number of people who chose to stay abroad and not return.

The second part of the article uses the proxy measure to examine what factors may affect the people's decision to leave Bosnia and Herzegovina. The econometric model using the inflow of B&H citizens as dependent and GDP per capita (Purchasing Power Parity), unemployment rate, labour force participation rate, Rule of Law Index, Corruption Perception Index, health spending per capita, and Human Development Index as independent variables for five years (2015-2020) was estimated and further examined.

The suggested model managed to explain circa 35% of the variability of the dependent variable, and while it was homoscedastic and free from autocorrelation, it exhibited problems of non-normality of the residuals and multicollinearity. Therefore, the model as such is not reliable enough to be used for further analyses without conducting additional transformations of the variables, or without introducing changes to the model. It should examine what changes in the model could resolve the problems of non-normality and multicollinearity before continuing the analysis and interpretation of the results.

Despite the violated assumptions the model still gives insights into the motivation of the people to emigrate from Bosnia and Herzegovina, with employment opportunities and stability of the country's political and economic system being the most important factors, followed by healthcare access.

The next steps in the analysis could also include the introduction of new variables to the improved model, such as measures of average or minimum wages in the host countries, measures of social policy and protection, or cultural aspects, to try and explain a higher proportion of the variability of the inflow of Bosnian and Herzegovinian citizens to host countries. Cultural aspects and proximity of the destination countries should also be considered.

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WHY IS SUB-SAHARAN AFRICAN REGION STILL UNDERDEVELOPED: MEASURING ON-THE GROUND DEVELOPMENT AGAINST AID PACKAGES ISSUED IN SOUTHERN AFRICA

Izabel Tanyaradzwa Miti ¹

Abstract

Since the outbreak of liberalisation in Sub-Saharan Africa in the 1960s, over \$1.2trillion has been issued in the form of development assistance to aid interventions designed to reduce economic vulnerability and advance infrastructural development in the region. Though many projects have been rolled out to facilitate this agenda, in southern Africa, the level of paucity when it comes to development appears to be transboundary. Six countries with diverse economic incomes and human development levels have been selected for this study. Literature shows the flow of ODAs and non-concessional China-Africa loans disbursed to South Africa, Malawi, Botswana, Zambia, Zimbabwe, and Namibia between 1963-2023 provided an opportunity for recipient countries to develop the economic outlook of their nations and ensure socio-economic as well as politico-economic stability. Historical and contemporary literature condemns the worsening of critical areas such as health, education, clean water and sanitation, housing and social infrastructures, employment, and inadequate attempts at deleveraging public debt. To leverage against these microeconomic imbalances and threats from external shocks exacerbating these challenges, SSA nations turn to the IMF and the World Bank for easy access relief and bailout loans. It is important to note all IMF programmes and IBRD loans address the same pre-existing challenges that ODAs were issued to resolve with little to no on-the-ground development for all funding streams.

1. Introduction

From a Western perspective, economic development is conceived to be a relatively grounded process configured by various actors within governments to ensure the standard of living and levels of per capita incomes within communities are enhanced (Willis and Kumar, 2009). It is also broadly associated with the curation of policies, activities, programs, and plans that improve each country's growth and economic well-being through poverty eradication and reduction of inequality to enhance the quality of life for its inhabitants. Economic welfare was first coined in the 1930s (Benham, 1930), but the definition leaned more towards a nation's financial wealth. In contemporary literature, economic welfare evaluates the productivity and output levels for goods and services exchangeable for money (Quiros-Romero and Reinsdorf, 2020). Beyond the financial viability of the economy, it also explores various activities that can either threaten (for example, the impact of artificial intelligence, robotics, and automation on employment) or enhance the general well-being of residents in an economy. Official development assistance (ODA), by definition, is a tool that measures sustainable development efforts of Development Assistance Committees (DAC) and non-DAC countries in line with sustainable development goals (SGDs) when offering loans, grants and other flows to countries or territories on the DAC list of ODA recipients to support economic welfare and development

¹ PhD Researcher Field of Study: Sustainable Economic Development in the Sub-Saharan African Region. STAMP Research Centre, Director of Studies: Dr Shazaib Butt, Supervisors: Dr Manish Unhale and Dr Vassilis Fouskas Royal Docks School of Business and Law, University of East London, UK.

(OECD, 2021). The Organisation for Economic Cooperation and Development (OECD) formally announced that an agreement in accounting procedures for ODA eligibility was yet to be confirmed.

What is known, however, is nations categorised on the DAC list consist of least-developed countries (LDC) low-income countries (LIC) and can sometimes be extended to middle-income countries (MIC). The characteristics of DAC statistics on concessions assume grant elements of either 45%, 15% or 10% and a discount ranging from 6 to 10% of bilateral or multilateral loans depending on the classification of the recipient country or institution. Non-DAC development finance is provided by emerging countries beyond the DAC membership whose role in financing development cooperation is gaining recognition on a global scale (OECD, 2019). Because data sharing with the OECD is not compulsory, conditions set in the agreements, programmes, statistics, and information reporting by non-DAC are not reflected on the OECD database. To reconcile these anomalies, the OECD often provides estimates. It is crucial to note country recording for China - Africa development funding is not on the OECD database, yet to date, this funding programme is responsible for more than 31% of significant structural transformations on the continent (Nyabiage, 2023) and is owed more than US\$696 billion by African nations (Vines *et al.*, 2022). Unlike the DAC banks, the World Bank's international bank for reconstruction and development (IBRD) cooperative is member to 189 countries which provides assistance to middle and low-income countries in need of expanded financial resources, risk management, public debt advisory services and coordinated responses to national and global challenges (World Bank, 2023). The International Monetary Fund (IMF) financially support countries hit by domestic and external crises (IMF, no date). The assistance provides a short respite for borrowing nations to implement policies that can ensure economic resilience and counteract forecasted challenges.

To represent the diverse OECD economic classifications represented in the southern region of SSA, this paper examines six nations at different levels of economic development: Malawi, Zambia (low-income), Zimbabwe (lower-middle income), Namibia, South Africa, and Botswana (upper-middle income). Though Botswana, Namibia and South Africa share the same World Bank economic classification, their population, levels of industrialisation, capital, natural reserves, debt burdens, exposure to trade markets, economic development interventions and policies vary in scale and execution. Against this background, we can effectively examine similarities between historical and contemporary patterns to the growing public debt, which currently stands at US\$1.833 trillion (UNCTAD, 2023) and the contribution of acquired ODAs, IMF and IBRD loans against the insubstantial evidence of on-the-ground development achieved to date through secondary literature.

1.1 Motivation

This research is part of an ongoing doctoral thesis: 'Navigating Towards a Sustainable Economy: Understanding Whether Financial Structures Can Boost Economic Development in the Southern Sub-Saharan African Region' that is evaluating the issuance and utilisation of all financial packages in SSA countries, particularly the southern region against on-the-ground developments taking place or should have taken place. The study appreciates the variances between African economies and the rest of the world and is looking for a different pathway that can successfully measure economic growth against on-the-ground activities outside of conventional indicators. As a result, an advanced model that could be instrumental in measuring economic development in African studies has been formulated and is currently being tested and explored further for efficacy to support the research question.

2. Disparity Between Financial Packages Received and On-The-Ground Development

Alemu and Lee (2015) employed the generalised methods of moments (GMM) model to reveal a positive relationship between development assistance and Gross Domestic Product (GDP) growth in low-income and lower-middle-income countries such as Malawi, Zambia, and Zimbabwe. According to the study, these nations leverage their limited Foreign Direct Investment (FDI) and natural resource access with financial assistance. However, low income often hinders the maintenance and development of these infrastructures and vocational capacity, which has a knock-on effect on these countries' social and economic environments. Consequently, the standard of these economies is generally low, making the realisation of economic development both complex and challenging. In the case of upper-middle-income nations, Botswana, Namibia, and South Africa have substantial access to natural resources, which is generally an influential pull factor for attracting FDI. Results from the GMM model showed FDI had a more significant impact on the economies of upper-middle-income nations in comparison to financial assistance. However, financial aid showed evidence of economic growth over time when used as a stimulus for supplementing domestic inflows, capital, and investments. Though the provision of assistance, in theory, should be short-term, in the last sixty years, it has been essential in providing primary services, such as the building of roads, healthcare, education, and somewhat strengthening the institutional capacity required to govern effectively in all economies. Studies conducted by (Calabrese and Tang, 2023) argued that despite the continual utilisation of aid to transition low-income, lower-middle-income and upper-middle-income economies over the years, an economic transformation (ET) gap is still evident across SSA. One of the significant flaws in measuring the resilience, growth and diverseness of an economy encapsulated in the research was the use of GDP. This is because, despite being a key metric for measuring development, the function of GDP is only to highlight the nation's economic size in a given period, thereby leaving room for assumptions to the effect of large economic size or high GDP = on-the-ground economic transformation and development when in most cases its farthest from reality. To an extent, this knowledge deficit could have fuelled China's economic engagement in SSA. Though China has a long history with SSA, which dates back to the 1950s (Fuchs and Rudyak, 2019), in recent years, between 2000-2020, the nation provided 1,188 non-concessional loans estimated to be worth US\$ 159.9 billion (CARI and BU GDPC, 2022) along with infrastructural development of essential economy enhancing infrastructures in key sectors such as transport, energy, and manufacturing, making China the fourth largest investor in the region (UNCTAD, 2021).

2.1 Financial Assistance Landscape

However, evidence suggests in the last sixty years, the Sub-Saharan African region (SSA) received over US\$1.2 trillion in disbursements of official development assistance (ODA) and grants from both the Development Assistance Committee (DAC) and non-DAC countries along with multilateral institutions (World Bank, 2023). In addition to this, over US\$23,261.62 billion of IBRD loans, International Development Association (IDA) credits and grants were issued between 1963-2023 to fund diverse projects in Botswana, Malawi, Namibia, South Africa, Zimbabwe, and Zambia, having the highest amount of US\$7,235.09 billion. With regard to IMF, the total disbursed funds between 1984-2022 for all six countries is nearly US\$8.163 billion, with the largest payout in a single period made to Zambia in 1995 for US\$1.485 billion and South Africa in 2020 for US\$3.051 billion under the poverty alleviation fund. Zambia's human development index (HDI) for 2021 was 0.565, 10 points above the low

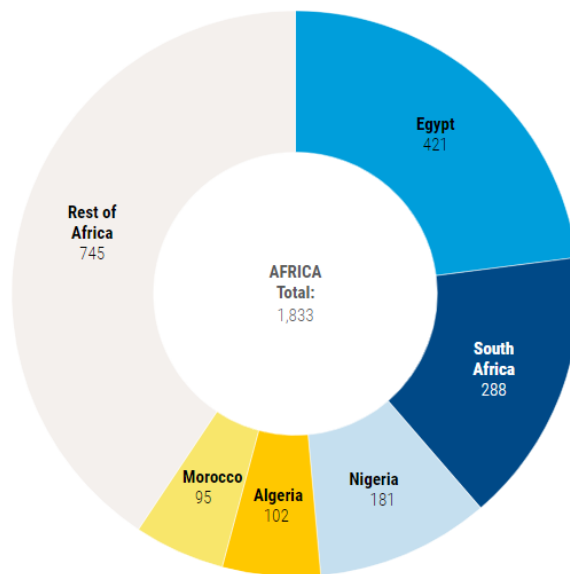
development category (United Nations Development Programme, 2022). South Africa's gini coefficient is 63, the highest in the world (World Bank, 2023).

Recently, the African Development Bank Group (2022), with the endorsement of US\$5 million from Morocco (North Africa Post, 2022), mobilised over US\$8.9 billion of concessional funds allocated to the least developed states in the region for various initiatives ranging from Covid-19 relief to reforms aimed at resolving bygone debt burdens. The flows sought to dissuade SSA countries from expensive non-concessional funding, particularly after the coronavirus pandemic. Yet, between 2020-2022, the International Monetary Fund (IMF) issued over US\$50 billion of financial assistance and has over 21 requests for further bailouts from SSA countries under consideration (IMF, 2023). South Africa, Malawi, Namibia, Zimbabwe and Zambia have been in and out of over fifty IMF programmes since 1984 (IMF, 2023). Botswana took out five (IBRD) loans with the World Bank before the recent approval of the Economic Resilience and Green Recovery Development Policy Loan 1 (DPO) of US\$250 million (World Bank, 2023). In FY2020/21, Malawi signed eight International Development Association (IDA) loans from the World Bank totalling US\$319.77 million (Ministry of Finance & Economic Affairs, 2022). Amid a succession of eighteen IBRD loan disbursements, South Africa's last loan approval with the World Bank agreed in FY2022 was worth nearly US\$440 million (World Bank, 2023). Namibia relies more on ODA disbursements from its bilateral and multilateral partners (National Planning Commission, 2023). Between FY2022/21 and 2021/22, there was a 6% increase, equalling N\$1.757 billion from Germany's ODA commitments to the nation. Also, data from the World Bank (2023) indicates additional IBRD loans and IDA credits between 1970-2021 were issued to Botswana, Malawi, Zambia, and Zimbabwe; however, in South Africa, the first issuance was from 1999-2021 aimed at poverty reduction. The IMF, through its Special Drawing Rights (SDR) programme, has made payouts of US\$330 billion out of the committed US\$650 billion in the fiscal year (FY) 2020/22 to the African continent and pledges to explore a second avenue of concession funding from G20 members commitments, the first being poverty reduction and growth trust which offered unrationed financial assistance depending on the proportion of reform programs against shocks and disasters the borrowing nation presents (Georgieva, 2022).

2.2 Origins of Deleveraging and Indebtedness

Despite rapid and stable growth in Asian transition economies, as evidenced by countries such as India and China, in the sub-Saharan region, the manifestations of economic development or welfare appear to be tangled in multifarious enigmatic knots of complexities. Most nations appear to have been undermined by challenges associated with minuscule non-diverse production, trade structures and domestic markets, increased susceptibility to external shocks and substandard connectivity with other states within the continent and the rest of the world (Coulibaly, 2017). Recent multiple crises, the Covid-19 pandemic (Gouro, 2022), the war between Russia and Ukraine (United Nations, 2023; Chand and Stilwell, 2022) and threats of America reaching its debt ceiling (Berman, 2023) heightened this. The shocks exacerbated the tightening of monetary policies globally. They perpetuated the influx in global inflation, which had a significant knock-on effect on exchange rate fluctuations, ultimately contributing to the surge in interest on public debt burdens in sub-Saharan Africa (SSA). Engaging with concessional and non-concessional loans in such circumstances becomes less grievous to many SSA nations when searching for funding for key development projects that can boost the economy. However, in 2022, as demonstrated in Figure 1 below, Africa's increased debt has created a dependency on relief and bailout loans, creating higher debt levels.

Figure 1: Public Debt by Country (in USD billion).



Source: World Economic Outlook, IMF (2023)

Even so, one major theoretical issue that has dominated economic research for many years has been surrounding the colonial history of Africa and the long shadow it cast on the origins of debt, the theoretical nature of economic development and how it can be measured successfully on the continent (Michalopoulos and Papaioannou, 2016). The study asserted that over the past six decades, extractive systems and institutions were designed with the sole purpose of remodelling infrastructural investments as a trade-off for natural resource and cash crop extraction, urbanisation, along with truncated industrialisation, which commissioned exploitative and violent supply schemes of primary commodities to European markets. This economic model employed in the region was known as Mercantilism. Mercantilism as an economic structure was conceived to increase the mother state's (colonising nation) power and wealth by strengthening its supply dependency on its colonies (Nettels, 2023). This practice increased export activities and limited imports through inflated tariffs between mother states and their foreign counterparts. To a great degree, the enterprise brought about the development of industrial structures and infrastructure such as agrarian societies, transport systems, urbanisation of villages into townships and cities, formalised education, Western medicine, and the practice of mass production for exportation purposes in Sub-Saharan Africa.

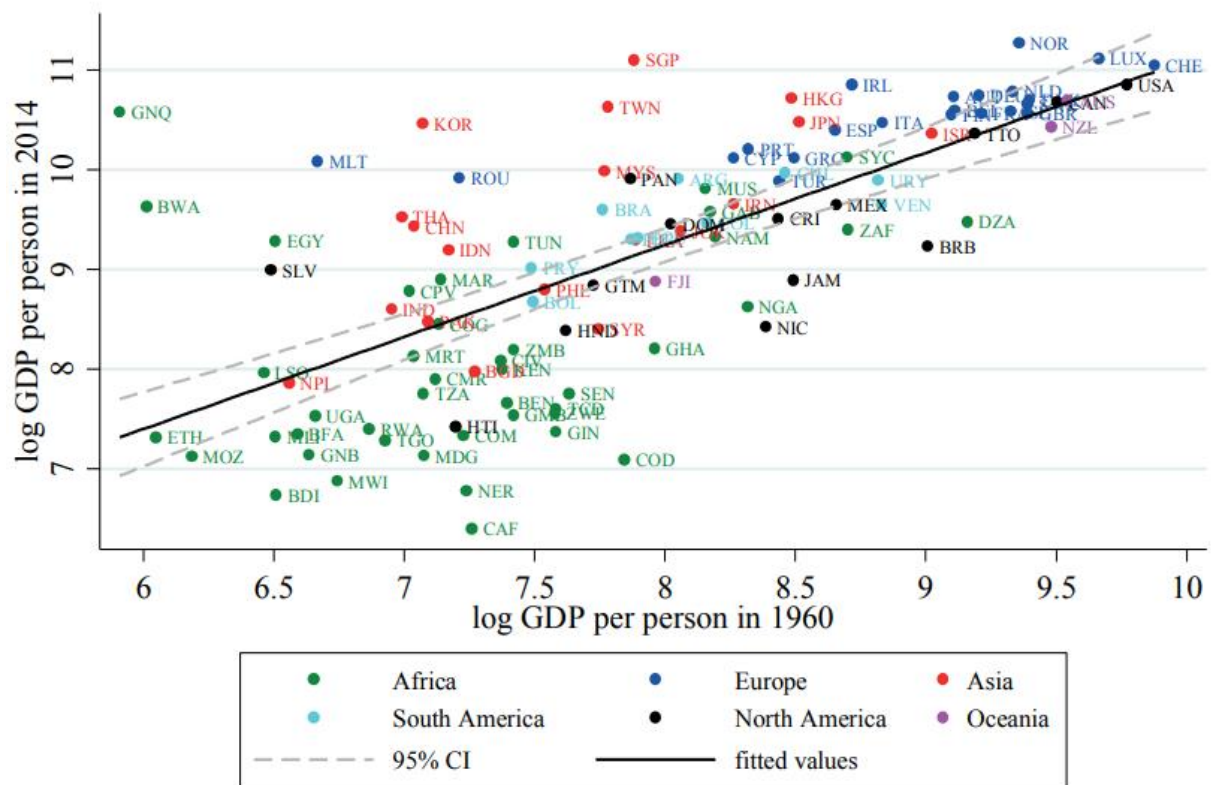
Though the trading system was very much in favour of the colonial powers, exposing African economies to international markets through exporting primary goods attracted multifarious forms of financial aid from international institutions, which incited the process of narrowing development gaps in the region. Understandably, conditions set for these packages, particularly the rationalisation of interests between manufacturers, shippers, merchants, and the mother state, favoured the investors and their profits, not the colonists. As a result, when liberalisation swept through SSA in the 1960s, former colonies automatically inherited the colonial debt of predecessor governments. Since successor administrations lacked the financial stability required to continue building and establishing their economic infrastructures, there was an overwhelming compulsion to look back to their colonial powers for financial packages to enhance development. This endeavour marked the genesis of perpetual borrowing of various forms of ODA flows, which have spanned for over sixty years, thereby exacerbating poverty

levels and depletion of resources, contributing significantly to the state of underdevelopment that still reverberates through SSA today.

2.3 Foundations of Poverty and Inequality

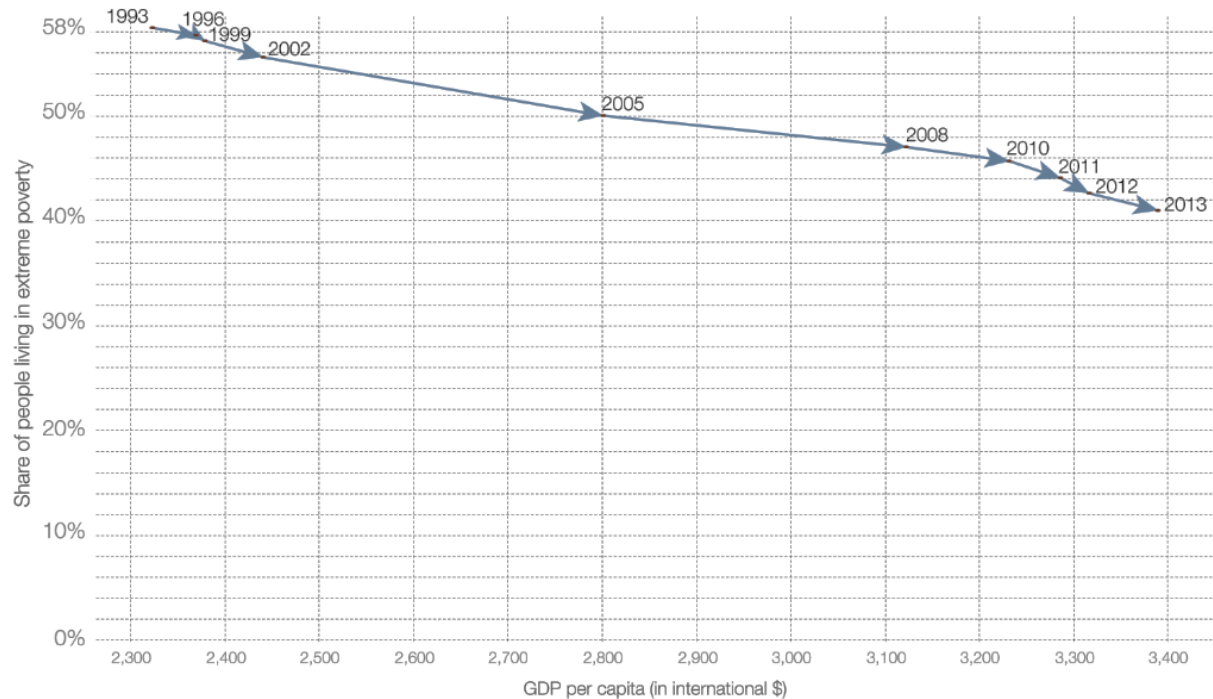
Figure 2 below provides a visualisation of the correlation of the logarithm of GDP per capita for 2014 and respective statistics in 1960, which implies that European countries that were beneficiaries of the mercantile system were wealthier, industrialised and structurally transformed in comparison to African nations that were struggling with incessantly with episodes of economic decline.

Figure 2: logarithm of similar GDP per capita statistics between 2014 and 1960



collectively received over US\$ 2 billion, respectively, from both IBRD loans and IMF poverty alleviation programmes.

Figure 3: Economic growth and Extreme Poverty in SSA



Source: (Our World in Data, no date)

These findings align with recent poverty trends, which indicate that approximately five out of six people in SSA live in acute multidimensional poverty (UNDP, 2023). (Philip and Rayhan, 2004) classified multidimensional poverty in SSA into two categories: welfare and non-welfare. The welfare phenomenon is a development indicator used when estimating levels of government expenditure to ensure the stability of primary sectors such as health, education, and essential amenities within economies in the region. With regard to healthcare, there are poor health outcomes in the region. This is because, apart from underfunding, there are exhibits of neglect, i.e., working conditions in healthcare systems are impractical due to poor maintenance of infrastructure and resource allocation. Essential studies brainstorming approaches that can be utilised to mitigate healthcare challenges advocate for increased political commitment to prioritise the modernisation of healthcare services and support its growth through budgetary allocation (Oleribe *et al.*, 2019). On the other hand, the non-welfare approach has two somewhat controversial social-centric subdimensions: the basic needs school and the school of capabilities, which assess poverty at an individual level. The operational functions of these approaches view social inequality as the leading cause of poverty and suppose that if an individual has the capacity to be functional in society, irrespective of their level of productivity, such actors are not considered to be poor. Fofana *et al.* (2023) employed a more recent classification, which considered poverty multidimensions as monetary and non-monetary. The monetary poverty dimension measures against the daily international poverty line of US\$2.15 and assesses the limitations this poses on household purchasing power parity (PPP), whilst non-monetary focuses on two indicators: objective, which includes housing conditions and availability of basic amenities and subjective, which considers general responses to satisfaction surveys concerning individual health status, and perceptions of economic hardships. Be that as it may, the socio-economic positioning of many African

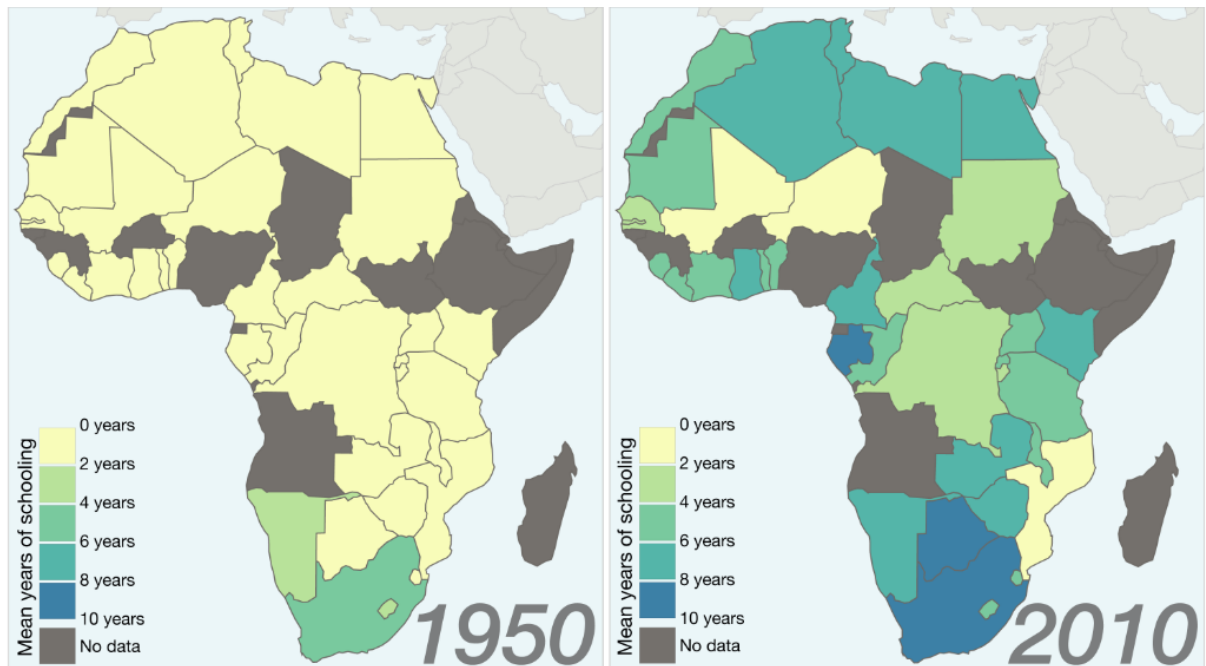
households demonstrates that poverty takes on a rather unique and relative term. This is because, on the ground, since 2000, there have been dramatic improvements in living conditions in big cities despite nearly half the population, which equates to just over 1% of the world's total population, is currently living in what most in advanced economies consider to be slums. According to Ramin (2009) and the World Bank (2023), slow urbanisation is SSA's leading cause of poverty. The studies indicated that nearly 40% of SSA's population lived in cities, while 60% lived in rural areas. In southern and eastern Africa, those who lacked basic services were in excess of 811 million, 387 million had no access to drinking water, and 737 million were deprived of adequate sanitation services. Unsafe water insufficient sanitation and hygiene (WASH) have been linked to the disproportionate increase in diseases and short life expectancy levels in the region, particularly amongst pregnant women and infants. Though reforms have been put in place and calls have been made for system changes to combat these 'on the ground challenges', delivering sustained solutions at a scale that can close water and sanitation gaps will not be straightforward. This is partly because no progress has been made in the last 15 years to expand major utilities in SSA. Most utility operations are heavily subsidised using government funding but still fail to provide basic services.

Africa is home to 60% of the world's arable land. Its agricultural sector accounts for 35 % of its GDP, yet food insecurity in SSA countries has risen since 2015. The situation has been exacerbated by the Covid-19 pandemic and conflict in Ukraine. In 2021, worsening drought conditions meant nearly 704 million people in southern Africa were exposed to moderate food insecurity. To combat these challenges, there are over thirty active government-funded green initiatives in Botswana, Malawi, Namibia, South Africa, Zambia, and Zimbabwe. These schemes aim to improve the agricultural infrastructure and increase crop yield for commercial purposes. That said, food security studies conducted by Wudil *et al.* (2022) maintain that despite the extensive agricultural potential, southern Africa ranks second highest on the Global Hunger Index (GHI) next to South Asia, with a value of 27.1. Findings from the study maintained that the inability to adapt farming techniques to contemporary methods impels SSA nations to rely heavily on expensive but avoidable food imports. Today, the subsistence of more than 50 million people in the region depends on emergency food aid provided by foreign actors.

2.4 Education and Employment in the Last 60 Years

Studies conducted by Sartorius Von Bach and Nuppenau (2022) applied longitudinal data to test the correlation between human capital formation and economic development. Results from the study demonstrated a disaggregation between increased enrolment spanning over twenty years and learning outputs. Developmental challenges in SSA, such as low income per capita, high unemployment and poverty, are often associated with ineffective education reforms (Mwinga, 2012). That said, education has improved drastically in the last 60 years. Figure 4 indicates that since the colonial era where education was not considered a priority for many African households, by 2010, across Africa, primary education was a priority for children.

Figure 4: Average years of children enrolled in education



Source: (Our World in Data, no date)

Many, if not most, children have access to some form of education; however, external factors prohibit them from completing their studies. For instance, South Africa has an active labour force of just over 16 million, while 7.9 million remain unemployed and inactive in the informal sector (ILO Database, 2023). Regarding literacy levels for the unemployed, only 2.4 per cent are educated to a degree level, whilst 90.3 per cent are educated to a Matric/GCSE/O Level or below. Of the 16 million, only 1.274 million work in the manufacturing industry, a key sector central to the nation's industrialisation, as assembly line workers and machine operators without specialised training or high-level education. This is despite the 5 per cent GDP government funding and 21 per cent non-interest income annually injected into its education system (USAID, n.d). Based on the report, the initiative had a 98.8 per cent success rate in providing school enrolment for children aged seven to fourteen. The quality of education is substandard to the point pupils exit the schooling system with little to no basic skills and core competencies required to succeed in the subnational work environment, much less a highly competitive national or international market. In the same way, Botswana's total education spending trends show that in FY2017/18, P12.7 billion was invested in the sector (UNICEF, 2017). This is nearly 10 per cent of the nation's GDP. Vision 2016, which aimed at providing access to education for the larger population, was a massive milestone and a practical step towards closing the colonial chapter where education was for the privileged few. According to Suping (2022), there are heavy investments in constructing public educational institutions, yet the commitment to teaching and learning outcomes is very low. As a result, there are unusually high failure rates across the country. Unfortunately, literacy surveys are conducted once a decade to a population aged 10-70 who either never attended formal education or attained any education past the fourth grade (ILO Database, 2023). The last survey in 2014 employed a strata sampling approach to evaluate literacy against set government initiatives and adults' ability to answer questions set out as part of the research. The results served as an indicator as to how literacy and numeracy skills could be utilised in daily socio-economic activities by participants. Emerging patterns from scores by the sample population show an average of nearly 76-96 per cent, meaning the general population in urban and rural areas were considered

literate. Questions remain as to the nature of the tests the sample population was subjected to, the complexity levels of each question, and whether it considered the functional literacy of the sample population to participate formally in critical sectors that contribute to the nation's economic growth. This is because, at the junior level, high grades achieved are Cs and Ds across the region. This affects the quality and the number of students progressing to secondary and, ultimately, tertiary education. Meaningful reforms that can address the declining education system are in short supply. Also, Malawi predominantly has a young population with a median of 17 years (UNFPA, 2023). However, an information gap makes bridging current employment strategies utilised by the government when attempting to integrate school-to-work transitions difficult and complex. Many young people at working ages have not completed their primary level education. Many cited poverty as the main factor influencing their decision to leave school prematurely. Some studies argue there is an evident detachment within Malawi's employment landscape. According to Benson *et al.* (2022), most young people can only get employment in the agricultural sector. Those who leave when much older can only find work in the industrial and service sectors. However, most of these jobs have low wages. Research by Godlonton (2020) examined the link between employment and wages. The findings showed a positive correlation between wage growth and general experience gained over time. Most young people enter the labour market with no experience. By the time they acquire a decent level of experience, most of them transition to the industry or service sectors in search of long-term prospects and higher wages, only to find themselves having to start over wage-wise due to inexperience in the sector. In 2014, only 2.2 per cent had secondary or tertiary level education. Yet, a statistical report published by the National Statistical Office (2020) maintained that the literacy rate for urban areas was 87.0 per cent and 66.5 per cent in rural areas. Also, the percentage of those who had not attended any form of schooling from the age of five is 12.2 per cent. Since 2018, the United Kingdom has been effectively supporting Malawi by improving the quality of its education system (Foreign, Commonwealth Development Office, 2022). The programme budget is £51,290,213, and to date, over £3,267 million has been spent. Other reports by the Malawi government and UNICEF claim that 16.3 per cent of the national budget was allocated to developing the education system in Malawi (UNICEF, 2021). The budget included MK2.5 billion for procurement of teaching and learning materials, MK20,000 per month for 2,000 early childhood mentors, and MK642 million from the MK1 billion requested by the Ministry of Education for special needs education. These findings are similar in Namibia, Zambia and Zimbabwe (ILO Database, 2023). There are higher levels of dependency on donor funding for education programs in SSA (Banya and Elu, 2001); 5 per cent of SSA's GDP is spent on education, yet almost half of the children do not complete primary education, and 64 million remain out of school (Klapper and Panchamia, 2023).

3. Conclusion

This review has weaved together the complexities associated with measuring economic development using conventional indicators such as GDP or HDI without considering the issuance and utilisation of development flows in SSA. Perhaps the SSA region has no financial problems; rather, other underlying factors, such as its handling of public finances, could be hindering economic development across the region. To conclude, the main thesis lucidly employs various identification techniques. It documents the historic utilisation of financial assistance within-country variation, essential for regional comparative economic development studies.

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APPLICATION AND IMPACT OF ARTIFICIAL INTELLIGENCE IN SMALL AND MEDIUM ENTERPRISES IN NORTH MACEDONIA

Lirinda Vako Abedini¹

Albion Kopani²

Armen Kadriu³

Abstract

Massive improvements in deep learning methods have led to several new industrial artificial intelligence (AI) applications that made AI relevant for every company that aims to keep competitive. Thus, AI is no longer a matter for the global Tech Companies only, but also concerns any small and medium-sized enterprise (SME).

This paper aims to provide an understanding of what AI is, its impact on SME activities, use, and barriers to adoption. The study will focus on AI application in SMEs in North Macedonia. Firstly, it will examine the automation of business processes through AI, analyzing how SMEs can utilize AI to reduce repetitive tasks and enhance productivity, the possibilities of data analysis using AI, aiming to extract valuable insights and forecast market trends.

The paper will analyze how SMEs can leverage AI to enhance their marketing strategies, offering personalized experiences and increasing customer engagement. Furthermore, it will explore the benefits of employing smart chatbots and virtual assistants to provide immediate assistance and support to customers. Another aspect that will be addressed in the study is the optimization of production processes and inventory management through AI.

Keywords: Artificial Intelligence, SMEs, digitalization

Introduction

In today's rapidly evolving technology, the impact of Artificial Intelligence cannot be ignored. AI has emerged as a game-changer for various industries, including small and medium enterprises (SMEs). The application of AI in SMEs in North Macedonia has the potential to revolutionize their operations, boost productivity, and drive economic growth.

By adopting AI, SMEs can automate repetitive tasks, optimize processes, enhance customer experiences, and make data-driven decisions, thereby gaining a competitive edge in the market.

The purpose of this paper is to explore the applications and impact of AI in small and medium enterprises in North Macedonia. We will delve into various sectors where AI can be leveraged, such as manufacturing, customer service, marketing, and logistics. Furthermore, this paper will analyze the potential challenges and barriers that SMEs in North Macedonia may encounter during the adoption of AI. These challenges could include limited financial resources, lack of AI expertise, and concerns about data privacy and security. By addressing these obstacles, SMEs can unlock the full potential of AI and reap its benefits.

¹ PhD. Candidate, l.vako@eust.edu.mk, International University of Struga

² PhD. Candidate, kopanialbion@yahoo.com, Luarasi University

³ a.kadriu@eust.edu.mk International University of Struga

The application and impact of AI in small and medium enterprises in North Macedonia present a tremendous opportunity for growth, productivity, and competitiveness. By embracing AI, SMEs can transform their operations, drive innovation, and contribute to the economic development of the country. However, it is crucial for SMEs to address challenges and invest in the necessary resources and capabilities to fully harness the potential of AI. This paper aims to shed light on these aspects and provide insights for SMEs in North Macedonia to embark on their AI journey successfully.

The European Commission defines SMEs as companies with less than 250 employees and less than €50 million in turnover or € 43 million in annual revenue. The organization should fulfill one of the economic aspects. Likewise, it has three subcategories micro, small, and medium, as Table 1 shows. Moreover, the World Bank states that SMEs play a significant role in most economies. SMEs present most worldwide businesses and are essential contributors to job creation and global economic development. They represent about 90% of companies and more than 50% of employment worldwide (World Bank)

Figure1: The European Commission’s categorization of SME’s

Type	No. of employees	Turnover (m€)	Total Balance (m€)
Medium	<250	<50	<43
Small	<50	<10	<10
Micro	<10	<2	<2

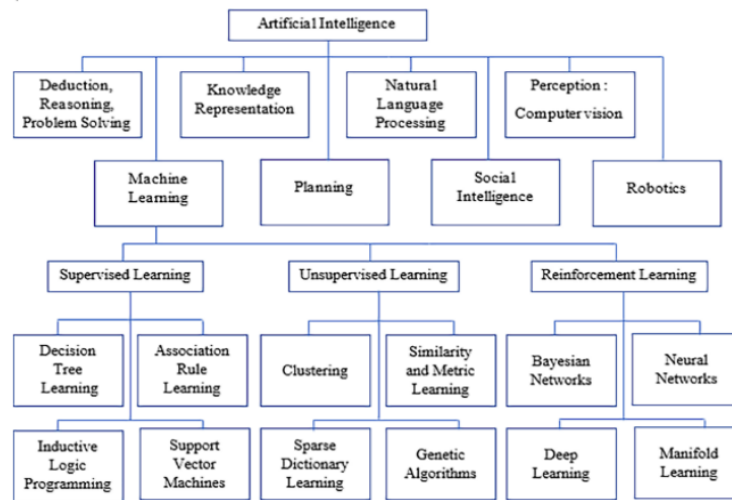
Artificial Intelligence

Artificial Intelligence (AI) refers to the development of computer systems that can perform tasks that typically require human intelligence. It involves the creation of intelligent machines that can perceive, reason, learn, and make decisions in a manner like humans. AI encompasses a wide range of technologies and techniques, including machine learning, natural language processing, computer vision, robotics, and expert systems.

AI promises to reshape industries, jobs, economies, and our daily lives. Understanding what artificial intelligence means is challenging as there is a lack of a unified definition to ground empirical studies on. For (Russel, S., Norvig, P. , 2015), AI is about artificial life-forms that can surpass human intelligence. (McCarthy, M. A. , 2007), on the other hand, argues that any data processing technology can be called AI.

The potential of AI is immense, offering advantages such as heightened efficiency, enhanced precision, cost savings, improved decision-making, and unprecedented levels of innovation. However, there are also notable concerns and challenges linked to AI, encompassing ethical considerations, privacy and security issues, potential job displacement, and the existence of biases in algorithms. Effectively addressing these challenges is pivotal to guarantee the responsible and beneficial integration of AI technologies. As AI continues its rapid advancement, its impact on society, the economy, and everyday life is anticipated to expand. Governments, businesses, and individuals must navigate the opportunities and challenges brought forth by AI, ensuring that its development and implementation align with human values, ethical standards, and overall societal well-being. Through deliberate and responsible implementation, AI holds the potential to transform industries, propel economic growth, and enhance the overall quality of life for individuals and communities.

Figure 2: Classification of AI technologies



Source: Riahi et al., 2021, p.13

The evolution of AI has brought several AI technologies, that Figure 2 depicts. Machine Learning is one of the most developed and applied (Riahi, 2021). It can be defined as systems trained (and retrained) that use data to recognize patterns and respond with classifying output. A subline called Deep Learning (DL) has been making several contributions to AI implementation. DL is an efficient AI technique, and it is the driver behind numerous recent AI advancements since it allows algorithms to train themselves to complete tasks that resemble intelligence. The technique can process a broader range of data resources, requires less data preprocessing by humans, and produces more accurate results than traditional machine-learning approaches. Some of the DL applications include natural language processing, speech recognition, forecast function in medical applications, computer vision, face recognition, object detection, intelligent transportation systems, and autonomous vehicles.

Methodology

This study explored the challenges of successful AI adoption. To determine the prevalence of AI in SMEs an online survey was conducted during the period February - April 2023 in the Republic of North Macedonia.

The survey included questions looking for answers of a categorical nature, related to AI usage and challenges. A total of 100 representatives of SMEs in the RNM were contacted, of which 43 were answered. To receive higher response rates and to ensure that only invited people participate in the online survey, personalized emails with individual delivery were sent. The survey was carried out using qualtrics.com. Further measures taken to boost response rates are:

- 1) *Questionnaires are kept brief and clear*
- 2) *Anonymity of responses was assured to avoid any concerns of respondents.*

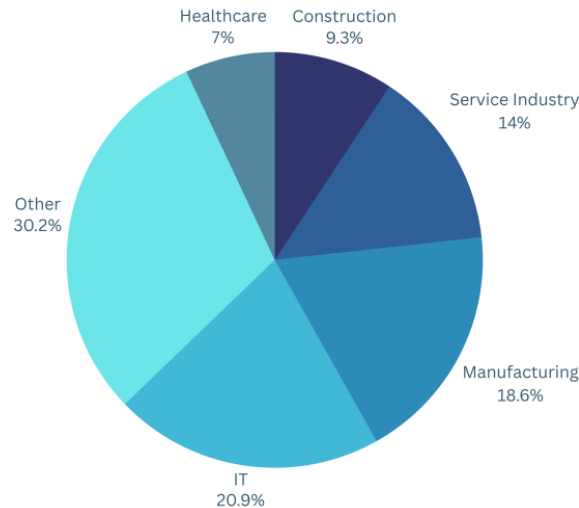
There were a total of 14 questions with optional answers an indication as clear as possible and so that the information can be processed more easily. With this, it is possible to obtain stable and independent results. The research is focused on several categories of the population with special emphasis on the employed in organizations or companies with a slightly larger number of employees. Also the data from respondents indicate an average age of 30-45 years.

Data analysis and results

A survey was conducted involving 100 representatives from small and medium enterprises (SMEs) in the Republic of North Macedonia. Participants who did not provide complete responses to the survey questions were excluded from the analysis. Ultimately, 43 company representatives who successfully completed the questionnaire were included in the study.

The distribution of enrolled responses across different industries is illustrated in the accompanying figure.

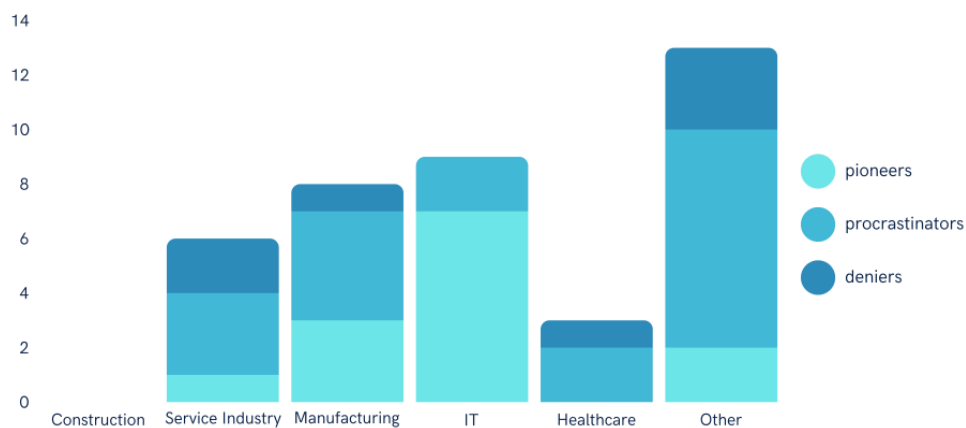
Figure 3: Respondents by industry in percentage



Considering the status of implementation, the participating companies are categorized into three groups: Pioneers, Procrastinators, and Deniers. Pioneers represent the forefront among SMEs in this region that have already deployed AI. Procrastinators, on the other hand, have not yet implemented AI but have active plans to deploy their first AI application within the next two years. A total of 13 companies are extensively engaged in exploring the applications of AI.

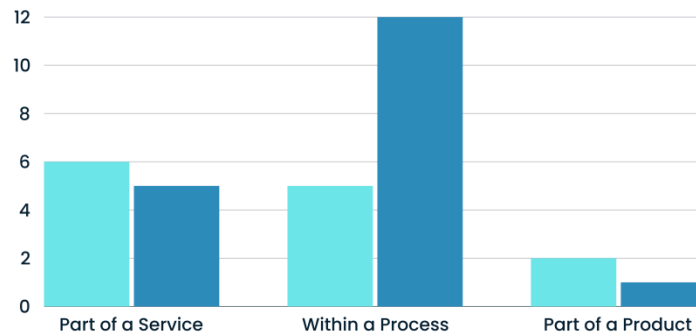
The manufacturing and IT sectors have the highest representation in terms of percentage. These companies are exploring or have already implemented industrial AI applications. Interestingly, the construction sector appears to be more conservative in this regard. The findings highlight industry-specific variations. However, it's essential to note that the sample size is limited.

Figure 4: Industrial AI applications divided by industry



Although most companies currently integrate AI as a service, most procrastinators intend to implement AI into their processes. The incorporation of AI as part of a product is of lesser importance for companies, both presently and in the medium term. Only a small percentage plan to apply AI to their products, while nearly three-quarters of procrastinators aspire to enhance their processes through AI support.

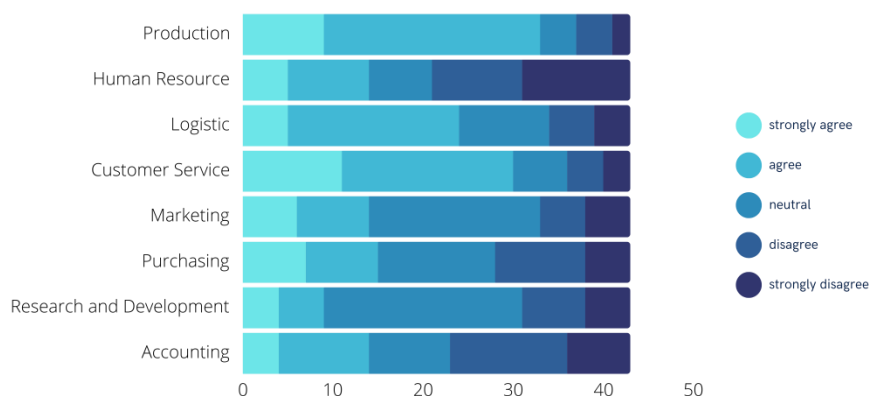
Figure 5: Use of AI in SMEs (n=30)



When asked about the relevance of AI applications in various business areas of their companies, survey respondents perceive significant potential for AI applications across nearly all segments of the value chain. More than 80 percent of respondents believe that AI applications can bring benefits to production. Furthermore, it can be affirmed that most respondents hold the belief that Customer Service (69 percent of respondents agreed or strongly agreed) and Logistics (56 percent) stand to gain from AI applications.

On the contrary, most respondents reject the use of AI in accounting and human resources. Purchasing opinions are relatively balanced, with only a few respondents expressing neutrality. The use of AI in marketing tends to be particularly neutral. It may be surprising that AI applications play a minor role in accounting, despite the potential for digitalization in many processes. However, for SMEs, deterministic algorithms are often deemed sufficient.

Figure 6: Relevance of AI application for different business areas

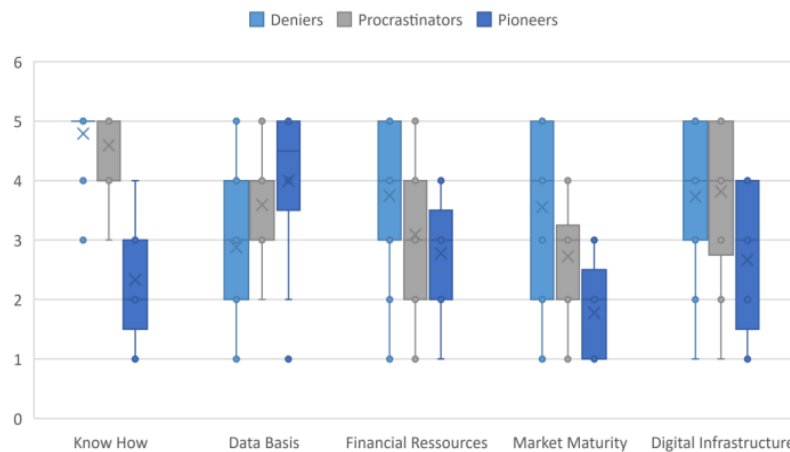


Survey findings regarding the significance of AI applications indicate that SMEs view AI-supported quality control of products and services as highly crucial. More than 75 percent rated it as either important or highly important. Predictive maintenance (68 percent) and logistic processes (57 percent) are deemed equally important, comparable to the utilization of knowledge management systems. Despite the prevalence of Chatbot and Language Assistant systems in contemporary settings, their relevance in SMEs is perceived as somewhat less

significant. Nonetheless, approximately 20 percent believe that Language Assistants are important for their companies, with some already incorporating them. Similarly, the utilization of AI for optimization in resource management and robot control is not regarded as a top priority for SMEs.

While most companies acknowledge the utility of quality control, predictive maintenance, or logistic processes for their operations, only a third of them actively engage in the specific, medium-term implementation. Consequently, the question arises regarding the obstacles that hinder companies from adopting AI. Figure 7 illustrates the fifth most frequently cited barriers in this survey.

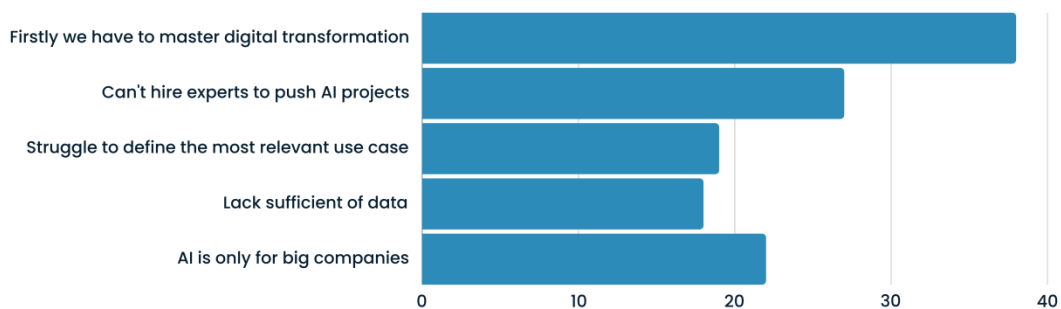
Figure 7: Barriers to progress of AI in SMEs



Findings vary concerning the status of implementation. For pioneers, the primary obstacle for further implementation is the lack of data, whereas procrastinators and deniers lean towards a lack of know-how. Almost all deniers refrain from introducing AI due to either insufficient expertise or the discouraging costs involved. As companies delve deeper into AI and refine their implementation plans, the perception of a lack of market maturity in existing technologies and cost barriers diminishes. Instead, the awareness of a missing or inadequate database continues to gain prominence.

Deniers have multiple reasons that hinder them from engaging extensively with AI. Figure 8 outlines the top 5 reasons. Seven out of ten SMEs believe that their current level of digital maturity is inadequate, and they need to prioritize digitalization before incorporating AI into their digital strategy.

Figure 8: Top 5 reasons about lack of AI implementation



More than half of SMEs also express the difficulty of competing with larger entities in hiring AI specialists (63 percent). This concern is followed by the belief that the quantity of data is insufficient for adequately training an AI application and the challenge of identifying necessary use cases and algorithms. Satisfying privacy concerns and meeting regulatory requirements do not rank within the top 5 concerns for SMEs.

Conclusion

AI stands as a key technology propelling the ongoing technological revolution and is often hailed as the next wave of digital transformation. However, numerous companies believe that mastering digital transformation is a prerequisite before delving into AI. What many overlook is that AI can act as an accelerator for digitization. Tasks that are time-consuming in digitization projects can be more efficiently addressed or significantly sped up with the assistance of AI. For instance, computer vision can easily digitize, cluster, and pre-sort analogue data, expediting the population of digital systems.

Presently, AI sees limited use among SMEs in North Macedonia, with various reasons causing hesitation. The expense, duration, and high risk of failure associated with developing proprietary applications deter many SMEs. Instead, they increasingly opt for AI-as-a-service and prefer cloud-based solutions, primarily focusing on deployments in production, logistics, and customer service. Notably, AI usage is least common in HR for SMEs, where social skills play a crucial role and ethical concerns about AI usage are conceivable.

It's striking that the majority, especially in marketing, express neutrality about AI. This may reflect a perceived need for support in these areas without a clear understanding of specific use cases. The selection and definition of potential use cases and the abundance of algorithms and platforms pose a significant challenge, hindering many SMEs from engaging with AI. Successful use cases should be better promoted in these areas, and tools to assist SMEs in selecting the most relevant ones are crucial.

Results also reveal that perceived barriers depend on the current implementation status of SMEs. While pioneers consider a lack of data to be one of the main problems, deniers view it as less critical. As awareness of AI increases, there is a shift in thinking about the necessary database, moving from a focus on quantity to an understanding that data quality is crucial. Successful AI implementation heavily relies on the quality of underlying data.

SMEs often face challenges related to the lack of know-how and the difficulty of attracting AI specialists. Despite relying on external specialists and increasingly using AI-as-a-service applications, it is essential for SMEs' staff to understand how to handle data, design and structure problems, and stay aware of emerging opportunities. Additionally, establishing valid privacy rules across industries and fostering an intuitive understanding of AI at the executive level are crucial steps for SMEs to leverage AI benefits.

While internet surveys have limitations in representing the total population, they open new dimensions in expert interrogation. For future research, the results of this quantitative study should be compared to expert assessments regarding the relevance of use cases and industrial AI applications for SMEs.

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AFRICA THROUGH THE PRISM OF THE SUDAN WAR: RECONFIGURING INTERNAL “CASTLES” ACROSS THE REGION.

Felix Nana Kofi Ofori, PhD.¹

Abstract

The raging conflicts and coup d'états across the face of Africa is a testament of a region in turmoil. This paper argues that despite the unique challenges engulfing the continent, Africans should stop pointing accusing fingers at foreign states by adopting inward strategies to reconfigure its internal 'castles' to enhance the socio-economic and political developments of the region and its peoples. Although foreign and geo-political interests cannot be discounted from the prevailing coups, this paper keenly contends that a courageous, visionary and decisive leadership from among the states can galvanise the region to become a strong and powerful competitive block in global affairs. Furthermore, it argues that with an altruistic leadership, corruption can be minimised in order to provide adequate funding to create independent regional medical research centres to develop medicines and health care strategies uniquely responsive to African needs. Finally, it is proposed that strategic initiatives such as the nascent African Continental Free Trade Area (ACFTA), coupled with a substantive regional military force should be developed and established to intervene legally to curb wanton coups thereby providing stability to shore up the regional development and growth.

Keywords: Sudan, conflicts, internal 'castles', free movement, regional solutions, good leadership

1. Introduction

For Africa, the state of socio-economic distress, political coup d'états and cultural disintegration are gradually nudging the continent to the precipice of collapse. The tentacles of corruption and avarice among political leaderships are seeping into the lives of the people who struggle each day to sustain themselves and their dependents. Coupled with the brazen misgovernment are the wanton misuse of state institutions and agents who exert brute force to intimidate and deny the masses the space to exercise their inalienable human rights and dignity as enshrined in international law and domestic constitutions (Binghama, 2010). The failure to improve the peoples' wellbeing, human rights and dignity through effective governance create paralysis, manifesting in destabilisations of Sudan, and most currently the Sahel region of Africa. It is against this profoundly bleak backdrop of, paradoxically, an enhanced human vulnerability- that this paper is being organised. Thus, the questions being posed for this discussion are: what have been the fruits of Africa's independence of over six decades?; and how does Africa develop itself into a substantive regional power capable of promoting its peoples' socio-economic wellbeing without reliance on western and foreign power? To answer the above questions, this paper, first, examines some of the underlying factors, especially the Sudan conflict and the related uprisings in the region; second, it explores the crises of exemplary leadership; third, it discusses Sudan as a prism of the African nemesis; fourth, the role of foreign powers' influence in the internal conflicts of Africa; and lastly, some strategic

¹ Sunderland University in London; Email: ofori.ofori@sunderland.ac.uk; 00447931182669

recommendations are proffered to help the region regain its rightful status as the second largest continent in the world.

2. Factors responsible for Coup d' Etat across the African region

2.1 The widespread coup d'état across the African continent, especially in Burkina-Faso, Chad, Mali, Sudan, Guinea and, most recently Niger, are due to a combination of personal greed and external influences (The Economist, 2023). Whereas the Sudan conflict serves as a prism through which the continent is examined in this paper, the people of Sudan had suffered varied degrees of vulnerabilities occasioned by the dictatorial regime of Omar Al-Bashir, which, is being re-enacted by the recent clashes between General Abdel Fattah Al- Burhan (Buhan) of the Sudan Armed Forces (SAF) and a General Mohamed Hadam Dagalo (Dagalo) (United States Institute of Peace) (USIP, 2023). The pursuit of personal ambition for power and authority translates into ugly violation of human rights and brazen distortions of socio-economic structures and infrastructural development that render the people and society depraved (USIP, 2023). Also, the conflict can be seen as a manipulation of junior military forces to achieve personal gains rather than protecting the wellbeing of the people; because both faction leaders use nationalistic sentiments and ideologies to either woo the people to support them or numb their thinking-capabilities to resent them (The Economist, 2023: 39). Furthermore, as a colonial legacy bequeathed to Africans: "A military uniform bestows an image of power, prestige and legitimacy. It can also be misused to cover up, or even justify unethical practices" (Ouédraogo, 2014: 3). Pervasively, in the continent of Africa, not only is the military complicit in craving for power, but also elected politicians collude with their elite public servants in a cabal-like system to exploit the peoples through corruption and dubious deals (Ofori, 2021). The result is often the plethora of civil uprising and military coups of which Sudan, and the Sahel region are testimonies.

2.2 Mismanagement of States resources

With mismanagement of state resources by both democratically elected politicians and military juntas in the region, socio-economic fragility ensues, creating favourable conditions for coup d'états to be engineered and succeeded (Nantulya, 2016) as the following examples affirm. Paradoxically, Niger, a west African state, which spans over 490,000 square miles and the seventh producer of uranium in the world, and with considerable amount of gold and oil is suspiciously described as the second poorest state in the world (World Atlas, 2021). This paper uses 'suspiciously' advisedly in the sense that while the social, economic, political and cultural development of the Nigerien population befits the negative description tag, mismanagement of the financial rewards earned from exporting those resources coupled with diversion of states funding by current and successive leaders are partly attributable to the conflicts in the country. Furthermore, the pervasive policy of entrusting the extracting and processing of minerals and natural resources in African states to foreign multinational corporations, backed by their governments, provide easy avenue for self-seeking leaders to enrich themselves at the expense of the masses (World Atlas, 2021). As an example, in the 1950s, Uranium was discovered in Niger at specific places such as Azelik, Madaouela and Tassa; whilst Imouraren has produced over 1 trillion tons of Uranium under the management of a French company- French Atomic Energy Commission and Conema (Now Oramo) (World Atlas, 2021). Not only is it shocking to designate a country endowed with such mineral and natural resources as the poorest in the world, but it also reflects a misgovernance characterised by bad leadership. Similarly, the Democratic Republic of Congo (DRC) is another classical example of mismanagement of state

resources which attracted the coinage ‘resource curse’.² Davies (2021), a senior economist at Fathom consulting, explained the underlying reasons for the DRC’s crisis, thus: “it is well endowed with natural resources such as Cobalt (commonly referred to as the blood diamond of batteries), Coltan (a key ingredient for the electronics industry and Copper (used for wiring in electrical equipment and motors), yet the country remains poor and divided”. The DRC’s conflict is triad in nature because instead of promoting the wellbeing of the people in the spheres of building good socio-economic infrastructures for the state, it has become the cause of inter-tribal conflict resulting in many civilian deaths, and thus providing opportunities for the government, its cronies and foreign corporations, to exploit the people as well as indiscriminately damage lands and local properties (Davies, 2021). The International Monetary Fund (IMF) (2021) also observes that “Sudan has persistent large macroeconomic imbalances due to past mismanagement and lack of external investment and financing. The weak economic status of African states often created by mismanagement and greed among elites are major contributing factors of the current crisis in the continent.

Undoubtedly, in situations of grave poverty where citizens struggle to access basic resources for livelihood and sustenance while politicians and their elite cronies live in an outward ostentation, is more likely to tease the majority into fomenting uprisings as witnessed across the region currently. In the words of the Center for Strategic and International Studies (CSIS, 2021:2): “The Guinean Military’s overthrow of President Alpha Condé—an outcome of autocratic overreach, economic mismanagement, and eroding democratic norms—points to the failure of regional bodies and international partners to anticipate and respond to an evolving coup playbook.” Besides internal struggles for political power, the recent coup d’état in Niger has traits of poor economic mismanagement laced with excessive corruption among the governing political elites. Este (2023) contends that the rapid decline in state security coupled with economic stagnation motivated the overthrow of president Bazoum of Niger. Although foreign powers’ geo-political and economic interests in Africa cannot be excused for the endemic coup d’états plaguing the region, however, the absence of altruism among African politicians to craft humane vision and articulate that vision to inspire genuine hope among the peoples has led to wanton corruption and incessant internal strife.

2.3 Pervasive corruption among political leadership and public servants in the continent

No human society is free from the menace of corruption and its related counterpart, bribery. Yet, whereas western states and other developed countries are actively seeking strategies to stem the threat of corruption, African states willfully create opportunities for such vices to thrive (Ofori, 2021). Brazenly, the cancer of corruption is at the heart of major political struggles of which coup d’états are the leading cause in Africa (Baltoi, 2022). Beyond the vestiges of colonial imperialism which are often disguised in macro-economic policies and handed to the region under bilateral and multilateral agreements (Transparency International’s Corruption Perception Index (TICI, 2023), African political elites are ripped with greed and avarice which drive them to amass excessive wealth at the expense of poor citizens. In the words of a commentator: “power-preserving political corruption, is when power-holders are using the proceeds and other funds, state or private, to maintain and/or strengthen their hold on power in illicit or immoral ways” (Amunsden 2019: xi). The urge to entrench themselves in power through illicit means underscores the argument that western powers incite and foment internal conflicts through proxy wars in the region. This view, however, does affirm the fact

² The resource curse is also known as the paradox of plenty is the phenomenon whereby economies that are well endowed with natural resources experience less favourable development than their resource poor counterparts.

that western states, especially France, is partly complicit in the conflicts across French-speaking African states. That notwithstanding, the prowess to divest state resources to pursue personal interests distort common regional and state developmental agenda, especially socio-economic institutions, which would have provided critical health, educational and technological resources, to create employment opportunities for the teeming young populations (Casey, 2017). Another strand of the argument is the rapid solicitations of bribery by public servants/agents who regard their position in public government services as an avenue to enrich themselves. The practice of bribery stifles domestic initiatives such as building hospitals, roads and other facilities to enhance the wellbeing and development of states and by extension the region. Amundsen (2019:11) opines that: “bribery is offered and paid by national and international companies to obtain rent-seeking opportunities, access to national resources, concessions, state contracts in civil engineering projects, construction works, defence supplies, and so on.” While the impact of bribery can induce vicious militarism in the region, external influences in this sphere cannot be discounted. Against that premise, this paper contends that Africa needs leadership that can craft and articulate a vision that inspires hope and good-will amongst its people as the way towards sustainable development.

2.4 Absence of Leadership to galvanise the people and region.

For all the existing debates of leadership crisis in individual African states and at the continent level, the need for a courageous leadership embodying decisiveness, vision and altruistic qualities, is urgent if Africa is to regain its rightful place in global affairs. Drawing on the exemplary leadership roles of Franco-German partnership in the architecture of the EU and its functioning, a model exists for Africa, especially Nigeria and South Africa, to emulate in order to promote the welfare, growth and development of the continent (Koopman, 2018). For example, since the inception of the EU, the Franco-German leadership has been the cog in articulating and prioritising the union’s vision beyond the interests of individual states, thus enhancing the socio-political, economic and cultural wellbeing of the union’s project (Koopman, 2018). During the tumultuous eras of the Covid-19 pandemic, banking crisis and Russia-Ukraine war, Angela Merkel and Emmanuel Macron, adopted pragmatic strategies in procuring vaccines to immunise the European population, re-capitalise the banks as well as offered substantial sanctuary and material provisions to support refugees entering the EU territories (Financial Times, 2016). Similarly, whilst a courageous and decisive leadership is offered by Abu Dhabi and Riyadh to strategise the rapid socio-economic and developmental agenda of the Gulf region, the converse is the norm in Africa, where the entire continent could not provide a single vaccine to stem the virus (Hoffman, 2023). The absence of substantive leadership in the capacities of Franco-German style is constantly plaguing the continent. Besides the absence of creative and substantive leadership in the region, African leaders also regard their peoples as naïve or second-class citizens who require little accountable leadership, a situation that conveniently breeds coup d’etats (Sandbu, 2023). Although Nigeria and South Africa have the potential to assume the reigns of leadership to chart the African vision for substantive development, both states are often plagued with corruption and abysmal economic down-turns. According to Vines (2023:12), key African economies such as “South Africa and Nigeria were already stuck with low growth and many African governments have seen their debt burdens increase- such as Ethiopia and Ghana now have debt trading at distressed levels- and more countries will follow in 2023.” Although no state has abundant resources to solve its entire socio-economic and political challenges, the two biggest economies in Africa- Nigeria and South Africa- have persistently struggled to balance their books (International Monetary Fund (IMF) (2023). Without adequate economic strength as in the Franco-German model, there is little prospect that Africa will have a strong leadership to galvanise the continent as a regional

force in global affairs. This means that it retains its weak status as a pawn in the hands of foreign powers who manipulate it into expedient proxy wars.

2.5 The Influence of foreign powers in coup d' etats in Africa

Stating that foreign powers sponsor policies which partly influence the perennial coup d' etats and civil strife in Africa is not only an established knowledge, but also a geopolitical strategy continuously being reframed to pursue an agenda (World Nuclear Association (WNA) (2023). During the dictatorial reign of the deposed Al-Bshir, the US-backed Chevron actively explored oil and related minerals as well as contributed covertly to consolidating his reign against the suppression and abuses experienced by the Sudanese (Human Rights Watch, 2003). Equally, Kepe et al. (2023:4) state that: "Moreover, Africa is another region where Moscow seeks to undermine the Western international world and the influence of the United States and its Western allies while portraying itself as pragmatic, fair, and responsible strategic partner and power broker." The preceding statement underscores the belief that foreign Powers, including Russia and China, have vested interests that transcend the socio-economic prosperity of Africans; thus, they work with disgruntled civilians and some military personnel to foment coups. Notwithstanding geo-political struggles, several internal conflicts and coup d' etats span the continent of Africa, in specific countries such as: Burkina Faso, Cameroon, the Central African Republic, the Democratic Republic of the Congo (DRC), Ethiopia, Mali, Mozambique, Nigeria, Senegal, Somalia, South Sudan and Sudan (Redealli, 2023). In all these conflict-prone states, a combination of foreign interference and mismanagement of states economies are a major factor pushing young Africans and displeased military juntas into military expeditions. This distinguishes Sudan as a prism for the paper.

3. Sudan as a Prism for the African Crisis

3.1 Because of the authority and power which reside in people occupying leadership positions in Africa, politicians often regard themselves as demi-gods with absolute freedoms to use power and state resources to advance their greed, avarice and thievery without being held accountable (Murithi, 2023). Over the years, political leaders in the region, especially Omar Al-Bashir and his cronies, had exerted over-size power to intimidate and suppress any opposing views to their mal-governance. For example, Dahir (2023), in his report of the Sudan conflict has stated that both Gen. Burhan and Gen Hamdan, who are viciously engineering the current Sudan conflict were loyal servants under the deposed president, Al-Bashir. This represents a microcosm of the African crises in two respects. First, it demonstrates the perennial determination by politicians to employ deviant strategies and policies to win elections in order to entrench themselves in office. At the age of 79 years old and before his deposition from office in 2019, Al- Bashir had been in power for three decades; however, the benefits gained by the Sudanese during his reign were a myriad of human rights abuses coupled with poverty (Dahir, 2023). Second, the desire to amass wealth for personal gratification as well as to use state resources to satisfy individual egoistic desires pervaded the reign of Al-Bashir and is amply being re-enacted by the current army generals in tearing the country asunder. Furthermore, as a prism, it is observed that the overthrowing of Al-Bashir with its subsequent factional struggles between the two army generals, has traces of the current conflicts engulfing the region especially the Sahel.

3.2 Moreover, with the many conflicts and coups raging across the African continent, the struggle for political power, mismanagement of economies, abuse of human rights and rising insecurity continue to dominate as key reasons (Mishra and Topak, 2013). As previously stated

above, the Niger coup, as at the time of organising this paper, indicates that power struggle aided by foreign support and the desire to control one's state resources replicate themselves in these uprisings (Mishra and Topak, 2022). Paradoxically, there is a feeble proposition that these conflicts are unique to the French-speaking African states. While on its face value such an argument is plausible, a critical examination of the regional conflicts portrays a contrary position. This is because the reasons which gave rise to the current coups and conflicts equally exist in most English-speaking African states, awaiting for an opportune time to transmogrify into coups as the following examples hold. First, although the World Bank (WB) (2023) in its Regional Economic Outlook has stated that: "Growth in sub-Saharan Africa will decline to 3.6 percent this year due to global slow down", however; significant variation exists as to the degree of discipline and prudence adopted by each individual state to manage the wellbeing of its people. By way of illustration, the profligacy by some statesmen, in this case, President Nana Akufo-Addo of Ghana, in hiring expensive and luxurious private jets for his foreign travels at the expense of state aircraft, cannot be attributed to global economic down-turn but irresponsible leadership, which incentivises public anger and potential uprising (Asante, 2021). Second, despite the two term-limit established by the Ivorian Constitution, President Alassane Dramane Quattara (Quatarra), has manipulatively taken advantage of his party's majority in Parliament as a strategy to run for a third term in the country's presidential election (Snergia Foundation, 2019). Given the controversies surrounding his 2010 presidential election, which led to the trial and sentencing of Laurent Gbagbo by the International Criminal Court (ICC), one would have thought that Quatarra would have exercised cautious and show respect towards the Ivorian constitution by leaving office. Third, Tinubu, the current President of Nigeria, is facing a legal challenge from the main opposition candidate, Peter Obi, in an election universally recognised an indelible stain on the image of the country's electoral and democratic dispensation (Hoffmann, 2023). The preceding examples and many others which time and space would not allow, are peculiar to most English-Speaking African states. It is therefore imperative that Africa reforms itself by constructing internal 'castles' to promote the social, economic, political and cultural independence which has eluded the continent for decades.

4. Building "Internal" Castles across the region

The extraordinary nature of the African crises requires solutions that are regionally thought through in order to build internal 'castles' to protect the interests and image of the continent against external threats and manipulations. Symbolically, castles represent protection against dangers or attacks for which they are constructed to defend. Thus, Africa needs to stop pointing fingers at foreign governments and other MNCs for their own underdevelopment by devising an inward strategic policy to shore up the continent as proposed in the following.

First, Africa needs a strong, decisive and courageous leadership through the agency of the African Union (AU), to craft and communicate a vision that embodies the aspirations, hopes and ambitions of the peoples and continent. Substantively, this can be achieved in consonance with the tenets of the founding fathers of the AU, who promulgated a transcending government beyond personal interests and whims. This reinforces the point articulated earlier, that Nigeria and South Africa, should assume a leading role as in the Franco-German partnership of the EU, to initiate an agenda that enhances the economic growth of the continent, including a political power to implement substantive sanctions to curb civil conflicts/coups as well as hold deviant heads of states accountable for misgoverning their respective peoples/states. In this respect, South Africa has set a precedent by sentencing its former sitting President, Jacob Zuma, in 2021, (Cotterill, 2023). Although the sentencing of Zuma is a limited example on the continent,

it teaches a significant lesson for all African states to emulate in order to take control of their development.

Second, to wield the necessary influence and authority to promote peace and stability needed to drive the political, economic and social developments of the peoples, a substantive regional military force should be established to intervene legally to stem illegal and unprovoked coups. This is crucial because it will free the continent from over-reliance on foreign military expertise which often breached the territorial integrity of the individual states and by extension the continent. There cannot be a meaningful African development in freedom with constant foreign military presence in the region. Whereas there are about fourteen US and other foreign military bases in Africa alone (TricoContinental, 2021); France has “hovered like a ghost. For more than 60 years, Paris has meddled in politics and business on the continent in a cosy system that came to be known as Fracafrique.” (Pilling, 2023:17). With a well-established and equipped continental military force to protect the region against internal and external threats and interferences, Africa will be better placed to manage its own affairs productively and to achieve the desired respect through sound developmental projects.

Third, strategically building an economy which promotes intra-state trade among Africans will not only induce growth to impact the socio-economic fabrics of the peoples but will also increase the competitive edge of the region vis-à-vis Europe and other developed economies. Thus, the African Continental Free Trade Area (AfCFTA)³ project is theoretically a good proposition. However, signing and ratifying the Agreement will not secure the people’s wellbeing unless legislations are passed to facilitate free movement of Africans across each other’s borders to engage in trading, taking up job opportunities and using one common currency without undue restrictions. This must be backed by the removal of restrictive tariffs which hinder sound economic activities. As the second biggest continent in the world and well resource-endowed, African states must collaborate actively to unleash the economic prosperities of the region to avoid being characterised as a stagnant economic region (Vines, 2023). Furthermore, Africa needs to adopt value-creation strategies with a view to improving the quality of its bounteous raw materials prior to exporting them outside the region. This strategy will not only strengthen its negotiating capacity at international trading fora but also enable it to secure competitive prices for its natural resources and commodities.

Fourth, security is at the heart of every human existence and the same is the case for organisations and continents of which Africa is an integral part. Undoubtedly, a major crisis confronting Africa is insecurity, which has manifested in terrorism activities such as abduction of civilians especially women and children in many parts of Africa including the northern parts of Nigeria and Niger. As a strategy to promote the economic, social and political freedoms of the peoples, it needs to devise a robust security system with an intelligence gathering capability, headquartered in one state. With such security facilities, information and intelligence can be collected and shared with individual states on potential threats in order to thwart them. Also, security arrangements and protocols can be established with credible foreign/external agencies to engage in collaborative strategies to defeat security threats that impede good governance.

Fifth, education is a key strategic policy that can be developed to enhance the competitive edge of the continent. Critically, the AU should initiate and sponsor creative educational policies, curriculum and syllabuses that are uniquely taught in all African schools and higher education institutions with a common goal to instill and spur the developmental needs of the continent

³ The Agreement establishing the AfCFTA was adopted on March 21, 2018, with May 30, 2019 making its entry into force. As at May 2022, 54 African States had signed up to their Agreement out of which 43 has deposited their instruments of ratification.

among students. Also, education should be strategised within the individual states to equip the people with critical knowledge in international negotiations, international law, business, science and vocational/technical /skills that are needed to build the infrastructural capacities of the region with little reliance on foreign sources. For over sixty years of independence, Africa has relied on foreign expertise for basic educational needs, that must stop.

Sixth, health is a critical social and developmental need. However, Africa with its rich resources -human and materials- remains dependent on foreign donors. The outbreak of Covid-19 clearly demonstrated this point extensively. Whilst the governments of the US and UK were providing funding to support the research activities of Pfizer and AstraZeneca (UK, 2022) to develop vaccines to combat the virus, Africa had been pleading with external powers for donation of vaccines. Africa must develop its medical and health research capabilities by investing resources to furnish the Africa Research Centre with requisite equipment, buildings, personnel and adequate funding. Also, invitations and opportunities should be extended to renowned African scientists around the world to share and exchange their expertise with African health practitioners at home so that the region can build its proficient continental capability to address the peculiar health needs of the peoples without reliance on external donors. Furthermore, these are achievable feats if African leaders would spend a fraction of state funds which they dissipate on personal luxuries.

5. Conclusion

This paper has examined the unique challenges of the African continent through the prism of the Sudan conflict. The key argument/contribution of this paper is that Africa must stop wagging its finger at foreign powers for their crises and develop its internal 'castles' to promote the social, economic, political and cultural wellbeing of the peoples and the region. Although this paper is inadequate by time and space to catalogue the entire debates on Africa's struggles, it is of the firm view that Africa needs an altruistic leadership to fashion creative vision that embodies the aspirations and hopes of the peoples. Without good and visionary leadership on the continent, corruption and the drive for political power to enrich and entrench oneself in power will culminate civil strife and coups as being witnessed across the region. The Sudan conflict is thus an apt reflection of all the civil strife and coups being staged and fought across the region and no developmental project will thrive under destabilisation unless sanity and calm is restored.

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BARRIERS TO SUSTAINABLE BUSINESS PRACTICES OF SUSTAINABILITY-ORIENTED SMES IN SOUTHEAST EUROPE

Miljana Talić¹

Suzana Stefanović²

Maja Ivanović Djukić³

Abstract

The subject of this paper is to analyze the barriers that limit the inclusion of SMEs in the “green economy” sector. The paper explains the concept of sustainability-oriented SMEs, analyzes the sustainable activities of SMEs in Southeast Europe (SEE) and the factors that had a limiting effect on them, with a focus on SMEs that produce green products or services. The novelty of this research lies in the approach with which sustainability is analyzed in the context of SMEs. The Flash Eurobarometer 498 database was used in order to examine the inclination of SMEs towards resource efficiency actions, the production of green products and barriers that have the greatest impact on the implementation of these actions in SEE countries. The practice of offering green products and services was also analyzed, as well as the attitudes and plans of SMEs for offering such products and services in the future. According to the perception of sustainable entrepreneurs, the biggest barriers to sustainability implementation are the complexity of administrative or legal procedures, the lack of supply of required materials, parts, products or services and the cost of environmental actions.

Keywords: Sustainable enterprises, small and medium enterprises, resource efficiency, green products, barriers to sustainability, green economy

1. Introduction

Today's business conditions almost impose on business entities the implementation of sustainable principles, so that they become a prerequisite for successful business and gaining competitiveness. Legislation, consumers who are increasingly aware and more demanding regarding the products they use, competition and other stakeholders create pressure and accelerate the process of including sustainability in the business practices of companies.

In many countries, there is a legal framework that obliges economic entities to respect environmental principles, such as reducing the emission of harmful gases, increasing energy efficiency and increasing the efficiency of the use of natural resources. In addition, certain financial incentives are provided for companies that contribute to environmental protection, apply cleaner technologies, rationally consume natural resources and are more energy efficient (Hoogendoorn et al., 2019; Talić et al., 2020).

Environmental protection and socially responsible behavior are no longer the prerogative of large companies only, but are expected of all business entities, regardless of their size. In addition to being a very important part of the economy, small and medium-sized enterprises (SMEs) have a large impact on the environment, especially when looking at their overall

¹ University of Nis, Innovation Center, Serbia, tmiljana@hotmail.com

² University of Nis, Faculty of Economics, Serbia, suzana.stefanovic@eknfak.ni.ac.rs

³ University of Nis, Faculty of Economics, Serbia, maja.djukic@eknfak.ni.ac.rs

impact. Also, problems related to environmental degradation can negatively affect SMEs, which is another reason for their interest and involvement in solving these problems. But there are other motives as well, for example, the transition to a more sustainable economy creates new opportunities for SMEs as new green markets develop (OECD, 2021).

The stated reasons encourage SMEs to increasingly deal with the efficient use of resources, eco-innovations, the production of green products and the increasing involvement of employees in “green jobs”. Small and medium-sized enterprises are often seen as a source of innovation, and innovations needed to solve environmental challenges can be especially important. The name sustainable enterprises have been adopted for companies that introduce ecological innovations and start new green businesses (Hoogendoorn et al., 2019).

Sustainable entrepreneurship is of great importance both for society and for the natural environment. However, although there are support systems in place in some countries, there are numerous obstacles that businesses face in their transition to a green economy. In order to stimulate the establishment of companies that offer “green products” and encourage their development, it is necessary to identify the obstacles that these business entities face on their way to sustainability. Therefore, the subject of this paper is to analyze the barriers that limit the inclusion of SMEs in the “green economy” sector. The goal is to propose measures whose implementation will lead to removing barriers and increasing the number of sustainability-oriented small and medium-sized enterprises in Southeast European (SEE) countries.

The paper is structured as follows. First, a review of the literature is given, within which the concept of sustainable entrepreneurship is explained and previous research is analyzed regarding the barriers faced by SMEs on the way to sustainability. After that, the characteristics of SMEs implementing resource-efficient actions or producing green products in eleven SEE countries were analyzed and barriers to achieving sustainability were identified.

2. Literature review

2.1. Sustainable entrepreneurship

As climate change mitigation activities become more and more urgent, it has become clear that the involvement of all economic actors is necessary, because their cumulative impact is very significant. The very significant role of small and medium-sized enterprises and the importance of their efforts in environmental protection has also been shown, which resulted in the creation of strategies and other guidelines for SMEs so that their focus would be on environmental protection issues (OECD, 2021).

To overcome challenges related to climate change and the degradation of living environments, the European Green Deal was created with the aim of transforming the EU into a modern, resource-efficient and competitive economy. Also, The European SME Strategy (COM, 2020) was announced in 2020 and aims to contribute to the objectives of the European Green Deal and other EU actions launched in the context of the twin digital and green transitions, namely achieving a climate-neutral, resource-efficient, and agile digital economy (European Commission, 2022).

In accordance with the requirements of modern business conditions, and the concept of sustainable development, which aims to “meet the needs of the present generations without compromising the ability of future generations to meet their own needs” (WCED 1987, p.43), sustainable entrepreneurship has developed.

The goal of sustainable entrepreneurship is “discovering and exploiting economic opportunities that initiate the transformation of the sector towards a more environmentally and socially sustainable state” (Hockerts and Wustenhagen, 2010, p.482). In line with the concept of sustainable development, the goal is to create value from an economic, social and environmental perspective (Schlange, 2009, p.18). That is, it differs from classic entrepreneurship in social, economic and ecological dimensions (Katsikis and Kyrgidou, 2009). Sustainability-oriented businesses focus on preserving nature and supporting the community, whereas expected benefits include “economic and non-economic benefits for individuals, the economy, and society” (Shepherd and Patzelt, 2011, p.142). According to Groot and Pinkse (2015, p.634), sustainable entrepreneurship refers to “the discovery, creation and exploitation of entrepreneurial opportunities that contribute to social and environmental sustainability” (Hoogendoorn et al., 2019).

Also, sustainable companies can be considered those that operate to solve some environmental problems in an economically sustainable way (Hockerts and Wustenhagen, 2010; York et al., 2016). According to Hockerts and Wustenhagen (2010), sustainable entrepreneurship has a positive impact on, often intertwined, social and environmental problems, which it solves by offering environmentally sustainable “green products” (such as products obtained from waste recycling, electricity from renewable sources, etc.) (Talić et al., 2020).

Considering the stated goals of sustainable companies, their survival and success are conditioned by the action of a large number of economic and social factors. According to Schaltegger and Wagner (2011), a company's ability to survive in the environmental sphere rests on its ability to strike a balance between the wise use of resources and the achievement of the selected environmental challenge. Other authors agree with the above statements (Chen, 2008; Dangelico and Pujari, 2010; Hellström, 2007), who advocate the opinion that green innovation is a key factor in environmental sustainability and that it has a positive and direct impact on the competitive advantage and success of green products. (Rodrigues and Franco, 2023).

2.2. Barriers to sustainability implementation

SMEs face numerous obstacles in their greening efforts. Most of these challenges are related to the nature of SMEs themselves, which have to compete with large enterprises in the market (European Commission, 2020).

SMEs have more limited access to greening resources compared to large firms. This applies to both financial resources and skills and technology (OECD, 2021). A big problem for SMEs is limited financial resources and difficulties in securing financial resources for eco-innovations. This problem is compounded by the difficulty of accessing external sources of capital, so eco-innovations in SMEs are mostly financed through bank loans or venture capital funds, so SMEs abandon the implementation of ecological innovations due to unfavorable borrowing conditions (Talić et al., 2020). Empirical studies show that the introduction of eco-innovations is often inaccessible, especially for SMEs, because it requires specific procedures for measurement, management and adjustment that can significantly affect the results of the company (Konar and Cohen, 2001; Pinget et al., 2015).

Although a growing number of countries have policies related to achieving climate goals, they are not always adapted to SMEs. Such policies usually aim to provide general information and advice as well as economic incentives. There are also noticeable variations in the way different countries deal with SMEs in environmental protection and climate policy, which leads to the conclusion that there is significant room for a mutual exchange of experiences between

countries. However, it should be borne in mind that there are a large number of different environmental challenges and opportunities facing SMEs (eco-innovation, new green markets, energy and resource efficiency, waste management and circular economy), as well as a great heterogeneity of SMEs. Existing approaches are generally not the most suitable for supporting the greening of small and medium-sized enterprises, so it is necessary to define policies that recognize the differences between types of enterprises, bearing in mind that it is not possible to define a universal policy that suits everyone. (OECD, 2021).

Another problem that can arise is a lack of information for choosing the appropriate action. This includes a lack of awareness, information and knowledge about changing environmental demands and needs, as well as support to address them (OECD, 2021). Lack of information, especially when choosing the right course of action, about financial incentives, training or support programs for the implementation of eco-innovations, and especially about difficulties in assessing costs and benefits for SMEs, can represent a big barrier.

Some of the key obstacles to the green transition of small and medium-sized enterprises may include a lack of funds, i.e., high costs of environmental actions; regulatory, legal and administrative obstacles; a lack of qualified personnel; technical barriers; and uncertainty of return on investment (European Commission, 2020). Due to their relative youth and unstable consumer markets, the market uncertainty for green products is also higher (Pinget et al., 2015).

SMEs make up the vast majority of businesses in the EU, and given this, their transition to greener, more sustainable practices is very important in reducing resource use and environmental impact (Patricio et al., 2018). And while a number of SMEs have already implemented various measures related to resource efficiency and the production of green products (European Commission, 2017a), many SMEs encounter a problem, because environmental innovations exceed their financial, technical and logistical capabilities (Dobes et al., 2017; European Commission, 2017b).

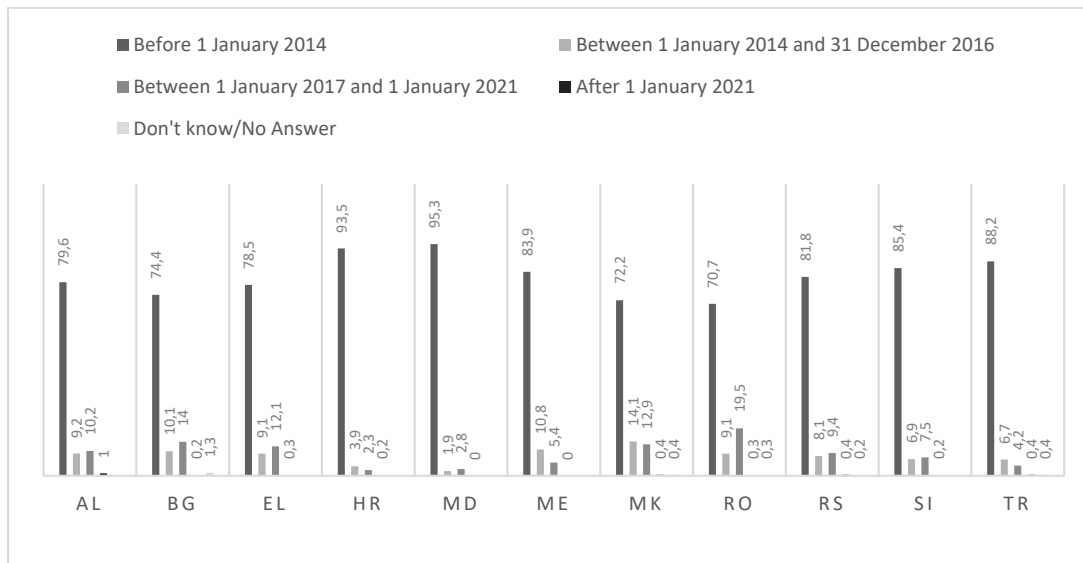
3. Methodology

The research included 4,411 small and medium-sized enterprises from 11 countries (Albania, Bulgaria, Greece, Croatia, Slovenia, Romania, North Macedonia, Montenegro, Serbia, Turkey, and Moldova) in various fields of activity (production, industry, retail, and services). The Flash Eurobarometer 498 database (European Commission, 2022) was used in order to examine the inclination of SMEs towards resource efficiency actions, the production of green products and barriers to achieving those goals. Interviews were conducted with decision-makers (managing director, managing director, managing director, financial director), persons in charge of commercial activities (commercial manager, sales manager, marketing manager), or legal officers.

3.1. Characteristics of the sample

Below are the basic characteristics of the surveyed SMEs from the countries that made up the sample. Figures 1, 2 and 3 show the structure of the sample based on the year of establishment, total turnover and number of employees.

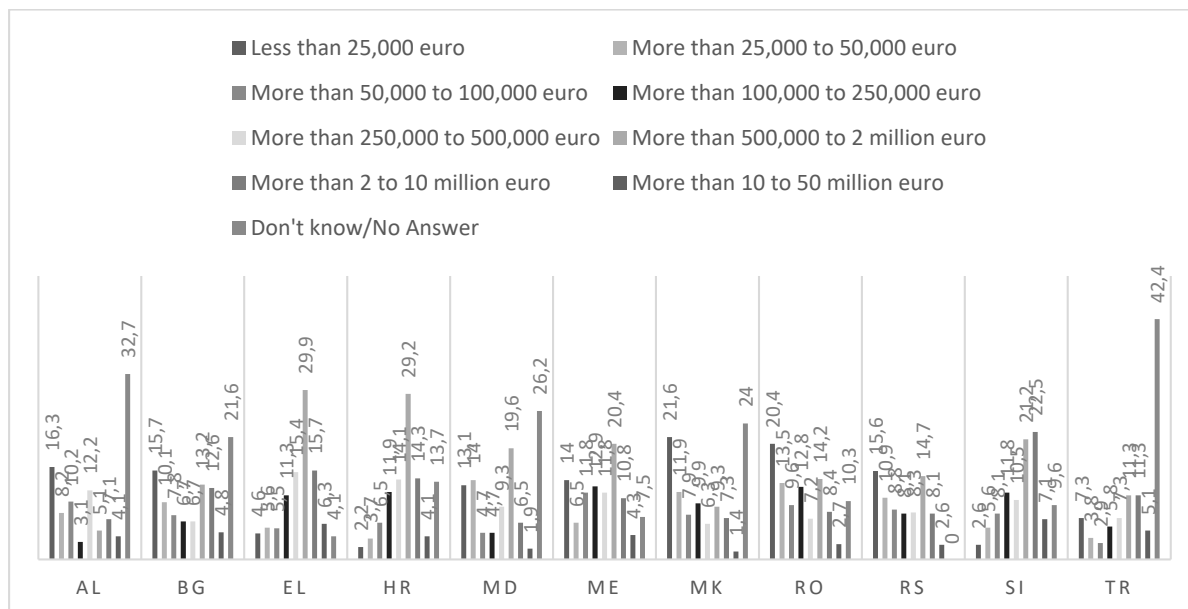
Figure 1. Time of establishment of the company



Source: Authors based on the Flash Eurobarometer 498 Report: SMEs, green markets and resource efficiency. doi:[10.2873/490067](https://doi.org/10.2873/490067)

Most of the sample consists of companies founded before 2014. As shown in Figure 1, there is a very small percentage of surveyed SMEs that were established after 2021, so the results cannot be taken into account with certainty if a comparison is made between newly established companies and those established before 2021 regarding the application resource-efficient activities and production of green products, as well as the perception of barriers to achieving these goals.

Figure 2. Company's total turnover in 2020

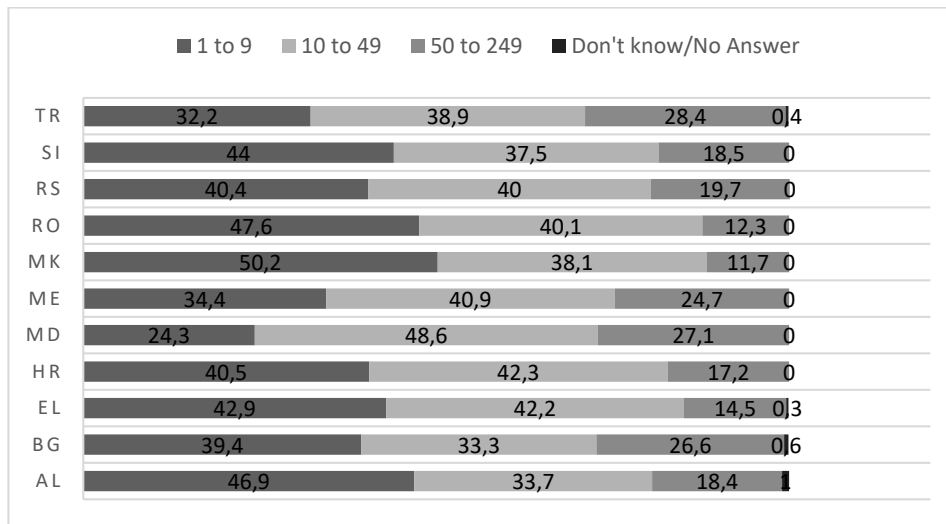


Source: Authors based on the Flash Eurobarometer 498 Report: SMEs, green markets and resource efficiency. doi:[10.2873/490067](https://doi.org/10.2873/490067)

Figure 2 shows the structure of the surveyed companies according to total turnover in 2020. The MSME category includes companies that “employ fewer than 250 persons and that have

an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million” (Extract of Article 2 of the annex to Recommendation 2003/361/EC). Since the Flash Eurobarometer 498 (European Commission, 2022) research on SMEs from Europe and the US showed that there is a significant difference between SMEs with a turnover of more than €10,000,000 and those with lower turnover values when it comes to the perception related to barriers to achieving sustainable goals, the structure of sample according to this indicator is presented.

Figure 3. Number of employees (full-time equivalent)



Source: Authors based on the Flash Eurobarometer 498 Report: SMEs, green markets and resource efficiency. doi:[10.2873/490067](https://doi.org/10.2873/490067)

Previous research (European Commission, 2017a, 2022) has shown that the larger the SME in terms of employees, the more likely it is to implement the resource efficiency measures. Also, Larger SMEs (in terms of number of employees) are less likely to have experienced difficulties when trying to set up resource efficiency actions.

3.2. Characteristics of the sample regarding offer of green products or services

In companies moving in the direction of the green economy, the category of “green jobs” was singled out. In the context of research, a “green job” is defined as “one that directly deals with information, technologies, or materials that preserve or restore environmental quality” (European Commission, 2022, p.118). Employees in “green jobs” should possess specialised skills, knowledge, training or experience because these are jobs related to resource efficiency processes and the production of green products and services, as well as compliance with environmental laws. (e.g., checking compliance with environmental legislation, monitoring resource efficiency within the company, promoting and selling green products and services) (European Commission, 2022).

Among the countries surveyed, the percentage of employees working on green jobs varies between 20% in Turkey and 88% in Moldova (although due to the small number of interviews in Moldova, this data should be interpreted with caution) (European Commission, 2022).

Green products and services are defined as “products and services with a predominant function of reducing environmental risk and minimising pollution and resources” (European Commission, 2022, p.7). Below, Table 1 shows the practise of offering green products and

services in the surveyed countries, as well as their attitudes and plans for the offer of such products and services in the future.

Table 1. Offer of green products or services

COUNTRY CODE - ISO 3166			Frequency	Percent	Valid Percent	Cumulative Percent
AL	Valid	Yes	23	23,5	23,5	23,5
		No, but you are planning to do so in the next 2 years	24	24,5	24,5	48,0
		No and you are not planning to do so	44	44,9	44,9	92,9
		Don't know/No answer	7	7,1	7,1	100,0
		Total	98	100,0	100,0	
BG	Valid	Yes	113	23,7	23,7	23,7
		No, but you are planning to do so in the next 2 years	52	10,9	10,9	34,6
		No and you are not planning to do so	297	62,3	62,3	96,9
		Don't know/No answer	15	3,1	3,1	100,0
		Total	477	100,0	100,0	
EL	Valid	Yes	241	41,2	41,2	41,2
		No, but you are planning to do so in the next 2 years	135	23,1	23,1	64,3
		No and you are not planning to do so	204	34,9	34,9	99,1
		Don't know/No answer	5	,9	,9	100,0
		Total	585	100,0	100,0	
HR	Valid	Yes	144	28,2	28,2	28,2
		No, but you are planning to do so in the next 2 years	99	19,4	19,4	47,6
		No and you are not planning to do so	219	42,9	42,9	90,4
		Don't know/No answer	49	9,6	9,6	100,0
		Total	511	100,0	100,0	
MD	Valid	Yes	46	43,0	43,0	43,0
		No, but you are planning to do so in the next 2 years	16	15,0	15,0	57,9
		No and you are not planning to do so	41	38,3	38,3	96,3
		Don't know/No answer	4	3,7	3,7	100,0
		Total	107	100,0	100,0	
ME	Valid	Yes	27	29,0	29,0	29,0
		No, but you are planning to do so in the next 2 years	18	19,4	19,4	48,4
		No and you are not planning to do so	45	48,4	48,4	96,8

		Don't know/No answer	3	3,2	3,2	100,0
		Total	93	100,0	100,0	
MK	Valid	Yes	187	37,1	37,1	37,1
		No, but you are planning to do so in the next 2 years	130	25,8	25,8	62,9
		No and you are not planning to do so	153	30,4	30,4	93,3
		Don't know/No answer	34	6,7	6,7	100,0
		Total	504	100,0	100,0	
RO	Valid	Yes	153	26,2	26,2	26,2
		No, but you are planning to do so in the next 2 years	176	30,1	30,1	56,3
		No and you are not planning to do so	228	39,0	39,0	95,4
		Don't know/No answer	27	4,6	4,6	100,0
		Total	584	100,0	100,0	
RS	Valid	Yes	111	23,7	23,7	23,7
		No, but you are planning to do so in the next 2 years	124	26,5	26,5	50,2
		No and you are not planning to do so	211	45,1	45,1	95,3
		Don't know/No answer	22	4,7	4,7	100,0
		Total	468	100,0	100,0	
SI	Valid	Yes	213	39,9	39,9	39,9
		No, but you are planning to do so in the next 2 years	62	11,6	11,6	51,5
		No and you are not planning to do so	251	47,0	47,0	98,5
		Don't know/No answer	8	1,5	1,5	100,0
		Total	534	100,0	100,0	
TR	Valid	Yes	107	23,8	23,8	23,8
		No, but you are planning to do so in the next 2 years	56	12,4	12,4	36,2
		No and you are not planning to do so	268	59,6	59,6	95,8
		Don't know/No answer	19	4,2	4,2	100,0
		Total	450	100,0	100,0	

Source: Authors

As for the offer of green products and services, the statistics in the surveyed countries are similar to the EU average, which states that at least about one in five SMEs across all Member States currently offer green products or services (European Commission, 2022). The largest number of companies that already offer green products or services is in Moldova (43%), Greece (41.2%) and Slovenia (39.9%), although in Slovenia there is also a very high percentage of SMEs that do not have a plan to offer green products and services—almost half of the

respondents, even 47%. The proportion of SMEs not offering green products or services and having no plans to do so is high in most countries, from 30.4% in North Macedonia to the highest percentage in Bulgaria (62.3%) and Turkey (59.6%). As for companies that are not currently offering green products or services but are planning to do so in the next two years, their percentage is the highest in Romania (30.1%) and the Republic of Serbia (26.5%).

4. Barriers to going green

SMEs that are undertaking resource efficiency actions were asked if they encountered any difficulties setting up these actions. They were presented with a list of nine potential barriers to going green and resource-efficient. According to the views of SME representatives from the 11 countries on which this paper focuses, the most dominant barriers are shown in Table 2.

Table 2. Potential barriers to going green and resource-efficient (% by country)

COUNTRY CODE - ISO 3166	AL	BG	EL	HR	M D	M E	M K	RO	RS	SI	TR
Complexity of administrative or legal procedures	13	27	40	41	26	31	24	47	38	19	38
Difficulty to adapt environmental legislation to your company	7	11	18	21	19	10	8	36	20	12	31
Technical requirements of the legislation not being up to date	2	17	25	27	21	22	14	33	25	13	22
Difficulty in choosing the right resource efficiency actions for your company	12	9	22	14	24	11	10	29	17	12	30
Cost of environmental actions	16	10	36	17	32	13	12	31	14	24	41
Lack of specific environmental expertise	21	10	30	18	26	23	10	34	22	13	26
Lack of supply of required materials, parts, products or services	27	11	29	21	35	23	19	30	27	20	36
Lack of demand for resource efficient products or services	9	8	23	23	32	24	12	32	20	16	28
Complexity associated with environmental labelling and certification	0	7	28	11	9	17	7	27	13	14	27
Other	8	4	0	1	1	1	3	0	2	6	0
None	35	35	28	25	18	38	31	28	24	41	27
Don't know/No answer	0	8	0	3	5	2	4	1	3	1	4

Source: Authors based on the Flash Eurobarometer 498 Report: SMEs, green markets and resource efficiency. doi:[10.2873/490067](https://doi.org/10.2873/490067)

Almost a third of the total number of SMEs undertaking resource efficiency actions cited the complexity of administrative or legal procedures as a barrier to the implementation of such actions, mostly in Romania, Greece and Croatia, while a small percentage of them in Albania consider this as a barrier (13%). In general, the second most significant barrier is the lack of supply of required materials, parts, products or services, followed by the cost of environmental actions. A large number of companies, especially from Slovenia (41%) and Montenegro (38%), reply that they did not encounter any difficulties.

5. Conclusion

Sustainable companies are businesses in the environmental sphere, founded with the aim of solving a certain environmental problem in an economically sustainable way (Cohen and Winn, 2007). This means that sustainable entrepreneurs have double goals (economic and environmental), which brings with them more problems in business compared to commercial entrepreneurs. Therefore, an understanding of the challenges faced by SMEs is needed in order to support their green transition.

Based on Flash Eurobarometer (2022) data for SMEs, the obstacles that have the greatest impact on the implementation of resource-efficient actions and the production of green products by SMEs in 11 SEE countries were examined. According to the perception of sustainable entrepreneurs, the biggest barriers are the complexity of administrative or legal procedures, the lack of supply of required materials, parts, products or services and the cost of environmental actions.

In order to encourage the development of sustainable entrepreneurship, and increase the number of sustainable small and medium-sized enterprises that offer “green products”, it is necessary to implement various measures. A deeper understanding of the financial needs of SMEs to invest in greening is needed, together with the identification of appropriate financial products and policies. It is necessary to increase the number of financial incentives (subsidies, grants, favorable sources of funding, etc.), to encourage the creation and commercialization of “green products”.

As there is a wide range in how different countries approach SMEs in environmental and climate policy, there is considerable scope for mutual learning between countries and the exchange of experiences. It is necessary to harmonize regulations with the characteristics of SMEs in order to reduce the complexity of their implementation and to define policies that recognize the differences between types of enterprises.

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INTEGRATING SUSTAINABILITY ASSURANCE SERVICES INTO THE EXTERNAL AUDITING FRAMEWORK: IMPLICATIONS IN THE WESTERN BALKAN COUNTRIES – EVIDENCE FROM MONTENEGRO

Tanja Laković¹

Milica Vukčević²

Julija Cerović Smolović³

Abstract

The urgency of solving the problem of global warming has changed the conditions of the market economy and, more than ever, emphasized the importance of integrating social and environmental performance in companies' business activities. How successful companies are in this process is a complex question, to which investors and regulators want to have an answer in the company's non-financial reports (sustainability report). With the adoption of The Corporate Sustainability Directive (CSRD) in 2022, European Commission emphasized the importance of relevant, reliable, and comparable information for the evaluation of the company's sustainable value creation for stakeholders. For the purpose of achieving this goal, the Directive recognizes auditors as potential experts and a key mechanism for ensuring the reliability and relevance of information important to all stakeholders. All countries in the Western Balkans region, in addition to numerous economic and social challenges, are facing significant obstacles in the form of escalating environmental problems. By adopting the EU Goals Strategy (2020) and signing the Sofia Declaration on the Green Plan for the Western Balkans, Montenegro joined other regional countries in recognizing the European Green Agreement as a new EU strategy for a sustainable future. In practice, here is a lack of specific actions by key stakeholders towards the inclusion of business community in the realization of the set goals in this field.

Therefore, the goal of this paper is to indicate the level of involvement of audit in the provision of assurance services, while considering the existing limitations in that process. The theoretical and empirical knowledge derived from our research work aims to contribute to a wider dissemination and awareness of this topic in the countries of the Western Balkans.

Keywords: sustainability, assurance services, audit firms, questionnaire, Montenegro

1. Introduction

The impact of the economic, social, and ecological dimensions of corporate business on the environment and the long-term consequences of climate change on the business activities of entities (EEA, 2015, 2022) made the international political and business community aware of the urgency to harmonize future social and economic development with the principles of

¹ Phone: +38267810145, Jovana Tomaševića, 37, 81000 Podgorica, Montenegro, Assistant Professor, Faculty of Economics Podgorica, Montenegro, tanjavu@ucg.ac.me,

² Phone:+38269910186, Jovana Tomaševića, 37, 81000 Podgorica, Montenegro, Teaching Assistant, Faculty of Economics Podgorica, Montenegro, milica.v@ucg.ac.me

³ Phone: +38269260229, Jovana Tomaševića, 37, 81000 Podgorica, Montenegro, Assistant Professor, Faculty of Economics Podgorica, Montenegro, julija@ucg.ac.me

sustainable development. The establishment of the Sustainable Development Goals (SDGs) in 2015 and the Paris Agreement in the same year led to a greater need for organizations to share and verify their efforts toward global sustainability (UN, 2015; UNFCCC).

By creating a regulatory framework with the Directive of Nonfinancial Reporting (NFRD) and with the Corporate Sustainability Reporting Directive – (CSRD), the European Commission gave a strong stimulus towards the promotion of mandatory sustainability reporting and its assurance for numerous EU companies. For the first time, the European Commission, through CSRD, adopted requirements for limited assurance of sustainability information at the level of the entire EU, with the ultimate goal of transitioning to reasonable assurance in the long term (2022/2464/EU). Auditors and professional bodies are faced with a multifaceted array of challenges necessitated for education, and strategic preparation to ensure the proficient execution of sustainability reporting audits (Accountancy Europa, 2022; 2022/2464/EU). This paper aims to enhance an understanding of the involvement of audit firms in Montenegro in the provision of assurance services, considering the existing limitations that accompany them in that process.

Audit firms have been assigned a key role in expanding the practice of sustainability assurance, especially in the early stages, through the transfer of professional rules and procedures from financial to sustainability auditing (Perego & Kolk, 2012). They incorporate sustainability assurance services into the external audit framework by expanding the audit process to consider the specific risks and challenges associated with sustainability reporting, including (1) the subjective nature of some non-financial metrics, (2) complexity of measuring and validating certain environmental or social impacts, (3) social responsibility disclosures, and other non-financial information ((FEE, 2015; IAASB, 2018; Reimsbach et al., 2018; Somoza, 2023; Sonnerfeldt & Pontoppidan, 2020). During the process, the auditors should evaluate the reliability of data, the appropriateness of methodologies used for data collection and measurement, and the overall transparency and credibility of the reported information. The numerous and variety of non-financial reporting standards (e.g. Task Force on Climate-Related Financial Disclosures - TCFD; Sustainability Accounting Standards Board SASB; International Integrated Reporting Council - IIR; Global Reporting Initiative - GRI), as well as standards for conducting audit engagements in the field of sustainability (ISAE3000, ISAE 3410, AA1000AS v3) is an additional challenge for auditors providing assurance services.

Numerous studies and surveys have confirmed that a large number of business entities have taken significant steps towards improving the transparency of non-financial information, especially sustainability information, (Deloitte, 2022; KPMG, 2020; Accountancy Europa, 2020), but the percentage of organizations assuring their sustainability reports in practice has not grown as rapidly as the demand for assurance (Moneva et al., 2023). Many authors have recognized legal environment, stakeholder pressures, and adoption of sustainability reporting standards as essential factors that facilitate the global diffusion of voluntary sustainability audits (Venter & van Eck, 2021), but the absence of infrastructure at both company and national levels are recognized as critical reasons for slower growth criteria (IAASB, 2018; Boiral et al., 2019a; Boiral et al., 2019b; Sonnerfeldt & Pontoppidan, 2020). That, in turn, creates the variation in the extent and maturity of sustainability reporting and its assurance from country to country, despite general trend towards enhancing sustainability practices and disclosure (IFAC, 2023).

Existing researches predominantly focus on challenges of sustainability assurance from the perspective of reporting companies, leaving a void in comprehensive researches from the standpoint of audit firms (Bartoszewicz & Rutkowski-Ziarko, 2021). This gap is particularly noticeable in understanding the impact of organizational characteristics, which can wield a

substantial influence in shaping the variability of audit firms' responsiveness to institutional pressures (Perego & Kolk, 2012). This study responds to the call for further research in emerging economies where sustainability reporting and assurance practices are still in their infancy (Hazaia et al., 2022; Boiral et al., 2019c; Pasko et al., 2021). Focused on audit firms in Montenegro, our research aims to fill this gap and shed light on these crucial dynamics.

Montenegro has integrated the UN2030 Agenda into its national policy framework in 2016 (McCluney et al., 2018). In the same year, it adopted a new Accounting Law becoming one of the pioneers in the Western Balkan region to transpose the requirements of the Directive on non-financial reporting concerning the preparation and disclosure of reports on non-financial information (Accounting Law, 2016). This was followed by Albania in 2018 and Serbia in 2019. Although mandatory assurance for non-financial information was not defined under the same laws, audit firms were required to verify during financial statement audits whether the separate non-financial report complied with the law's provisions. However, sustainability assurance practices in the Montenegro are still emerging. The concept of independent third-party assurance on non-financial (sustainability) reports is relatively new, and the number of audit firms specializing in sustainability remains limited.

Montenegro, along with neighboring countries such as Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia, endorsed the European Green Deal as the new EU strategy for a sustainable future by embracing the EU's 2020 Strategy Goals and supporting the Sofia Declaration on the Green Agenda for the Western Balkans (EU, 2020). This move suggests a likelihood of upcoming efforts to better align local laws with current European regulations and increasing pressure from civil society and the public that will sway audit firms to be active in this field. Considering the ongoing global significance of the matter concerning sustainability assurance services and the involvement of audit firms in this capacity, this serves as the driving force behind the initiation of this research. For this reason, the goal of the authors of this paper is to indicate which factors influence the level of sustainability assurance services provided in Montenegro by audit firms. The factors taken into consideration were (1) knowledge of external auditors; (2) type of audit firm, (3) recruitment of necessary staff, and (4) management's readiness to respond to potential market trends.

In order to achieve this goal, four hypotheses were created:

H1: Knowledge of external auditors has a statistically significant impact on the provision of sustainable assurance services in Montenegro.

H2: The type of audit firm has a statistically significant impact on the provision of sustainable assurance services in Montenegro.

H3: Recruitment of the necessary staff has a statistically significant impact on the provision of sustainable assurance services in Montenegro.

H4: Management's readiness to respond to potential market trends has a statistically significant impact on the provision of assurance services in Montenegro.

As recommended in many already published studies (Boiral et al., 2019c; Pasko et al., 2021), the authors accepted an online questionnaire as a method of collecting data required for this research. The questionnaire was conducted in period from May to June 2023. The method used in the paper to confirm/reject hypotheses was regression analysis, added by the factor analysis. The factor analysis was applied to reduce the number of variables to one common component that best expresses them integrally. The sampling adequacy for that analysis was tested with the Kaiser-Meier-Olkin measure and Bartlett's test of sphericity, with the help of the statistical package SPSS.

Based on the author's insights, this study is the first empirical research in Montenegro, as well as in other Western Balkan countries, to delve into the perceptions of auditors concerning sustainability assurance services' provision. Regarding its practical implications, this paper can serve as a basis for further research on this topic, especially in countries with a similar or the same level of economic development, such as Montenegro. Additionally, it can supply valuable insights for the future activities of the auditors' supervisory board and the national professional organization, as they establish an institutional structure for introducing sustainability assurance services in Montenegro. Furthermore, it has the capacity to foster broader distribution and understanding of this subject within the Western Balkans countries.

This paper consists of five sections. Besides of introduction, this paper provides insight into the literature review in section 2. Section 3 describes research methodology and hypothesis, as well as survey structure, sample characteristics, and applied regression model and factor analysis. In section 4 it gives results and discussion of the paper. The last section offers final conclusion, recommendations, limitations and guidelines for future researches.

2. Literature review

The increasing popularization of the concept of sustainable development has increased the public's expectations from auditors to ensure the credibility of published sustainability information through the provision of assurance services (FEE, 2015, IAASB, 2018; Reimsbach et al., 2018; Farooq i DeVilliers, 2019; Somoza, 2023; Sonnerfeldt & Pontoppidan, 2020). Sustainability assurance services may increase the credibility of sustainability information and the reputation of the reporting entity (Hazaea et al., 2022; Braam & Peeters, 2018; Simnett et al., 2009), improve management communication with stakeholders (Simnett et al., 2009; Cohen & Simnett, 2015) while identifying areas for further improvements in the field of internal controls and the quality of available data for sustainability reporting (FEE, 2015; IAASB, 2018). In light of this, investors, regulators and other stakeholders are challenging auditors to demonstrate multiple competencies and specialized knowledge in conducting audit engagements.

The significant growth of the importance of sustainability assurance has caught the growing interest of researchers (Farooq et al., 2017; Hazaea et al., 2022; Krasodomska, et al., 2021; Ruiz-Barbadillo & Martínez-Ferrero, 2020) and practitioners (Deloitte, 2022; KPMG 2020) who are intrigued by various aspects of this phenomenon (Oware & Moulya, 2022; Somoza, 2021; Pasko et al., 2021). While some studies are focused on the determinants of sustainability report assurance practices (Silvola & Vinnari, 2021; Somoza, 2023), others have examined the variation in assurance quality across types of assurance providers and assurance standards (Bartoszewicz & Rutkowska-Ziarko, 2021; Channuntapipat et al., 2020; Fernández-Feijoo et al., 2016; Farooq. & DeVilliers, 2019a,b; Perego & Kolk, 2012; Simnett et al., 2009).

According to Channuntapipat et al. (2020), audit firms have successfully managed to compete with non-accounting professionals by bolstering their market share in sustainability assurance. This achievement is attributed to their portrayal as well-rounded professionals and subject matter experts guided by ethical principles (Fernández-Feijoo et al., 2016), and adherence to enhanced assurance standards such as ISAE 3000 (Silvola & Vinnari, 2021; Farooq & DeVilliers, 2019a,b). Furthermore, the findings of several empirical analyses in the European context have lent support to this observation. Companies, particularly in shareholder-oriented environments, are more likely to select auditing firms as assurers, with a preference for one of the prominent Big Four firms – Deloitte, PricewaterhouseCoopers, Ernst & Young, and KPMG (Cuadrado-Ballesteros et al., 2017; Somoza, 2021; Boiral et al., 2019c). As highlighted by

Ruiz-Barbadillo and Martínez-Ferrero (2020), this tendency aligns with the capacity of auditors to provide both financial audit and sustainability assurance services. The recent IFAC survey in 2023 underscores this trend, revealing that 70% of sustainability assurance reports reviewed in 2021 were provided by the same audit firms that conducted statutory audits for the reporting entities, with a prevalent usage of ISAE 3000, particularly notable within the European context (IFAC, 2023).

As incorporating sustainability assurance services into the external audit framework requires more complex and multifaceted competencies than financial auditing (Martínez-Ferrero et al., 2018; Boiral et al., 2019c), the topic of assurance service providers' expertise has garnered significant attention. Researchers have emphasized the skill levels and independence as critical factors influencing the selection of assurers (Samoza, 2021; Channuntapipat et al., 2020; Braam & Peeters, 2018; Farooq & DeVilliers, 2017; Martínez-Ferrero et al., 2018; Andon, 2015). Addressing this issue, Boiral et al. (2019c) uncovered a noteworthy disparity between the qualifications of most assurance providers and the intricate skills and knowledge demanded for proficient sustainability assurance. Their study underscores the notion that strengthen credibility in sustainability assurance necessitates the involvement of experienced audit partners and subject-matter experts for fieldwork. This alignment of expertise not only enhances the assurance process but also reinforces the assurance provider's ability to deliver more comprehensive sustainability assessments. Martínez-Ferrero et al. (2018), also, documented that greater industry-specific knowledge and expertise increase the quality of sustainability assurance services. Big Four firms could benefit from this due to their resources and established global networks. However, small assurance providers who rely on a small team with less versatile backgrounds might struggle with this approach (Boiral et al., 2019c).

However, it's important to note that only a small group of researchers have focused on understanding the factors that affect how audit firms make decisions when providing assurance services in the field of sustainability (Eugénio et al., 2022; O'Dwyer, 2011; Channuntapipat et al., 2019). A study by O'Dwyer (2011) focused exclusively on accounting firms, revealing substantive differences in the practitioner's perceptions and practical conduct of sustainability assurance, pointing to a range of factors such as professional and educational backgrounds, as well as personal commitments as potential sources of variation. The authors Bartoszewicz & Rutkowska-Ziarko (2021), examining the situation in Poland, stated that the key obstacles to the provision of audit services in the area of non-financial reports are: insufficient demand, lack of time to provide additional services in addition to financial audit services, and insufficient experience in this topic. Additionally, the authors highlight the lack of staff in the audit firm as an important obstacle. Similar results were obtained by Eugénio, et al (2022), investigating the perception of Portuguese audit professionals on non-financial reporting and its assurance.

A review of the available literature suggests that the extent and maturity of sustainability reporting and its assurance varies from country to country, as a result of various factors at the country, industry and company levels. The findings highlights the pivotal role played by legal frameworks, stakeholder pressures, and the adoption of sustainability reporting standards in driving the worldwide proliferation of voluntary sustainability audits. However, it is noteworthy that only limited subsets of researchers have directed their focus toward understanding the determinants that impact audit firms' decision-making processes in delivering assurance services within the realm of sustainability (Eugénio, et al., 2022; O'Dwyer, 2011; Channuntapipat, et al., 2019). This research gap underscores the need for a comprehensive investigation into the interplay of internal factors shaping the provision of such services in the context of sustainability assurance.

Unlike previous research, this study, in addition to auditor knowledge, also takes into account the recruitment of necessary personnel by audit firms and audit firms management's readiness to respond to potential market. However, there is a lack of research conducted in countries with lower or moderate economic development, as well as those characterized by weaker legal systems and with shareholder orientation.

As far as we aware, similar research has not been carried out in Montenegro so far. This becomes the main motive for conducting this analysis, with the knowledge that the factors affecting the provision of assurance services were not the subject of analysis by researchers from the region, which is an additional confirmation of the justification of conducting this research,

3. Methodology section

In order to confirm/reject the formulated hypotheses, researchers conducted an online survey on the Montenegrin market, in period from May to June 2023. The questionnaire was sent to 29 audit firms operating in Montenegro (Ministry of Finance, 2020). Out of a total respondents 14 of them responded, which means that the response rate was approximately 50%. The questionnaire was filled out by executive directors of audit firms with more than 5 years of auditing experience.

The survey consisted of two groups of questions. The first set of questions examined the perception of respondents about the factors that encourage or limit the provision of assurance services. Questionnaire was formulated on the basis of a survey of Eugénio et al. (2022) and Bartoszevicz & Rutkovska-Ziarko (2021). The answers was scaled according to a Likert scale with divisions from 1 to 5. The second group of questions refers to the collection of demographic characteristics of audit firms.

The dependent variable is scaled on a Likert scale from 1 to 5, depending on what services the auditing company provides (5 - audits and assurances; 4 - advisory and consulting services; 3 - we do not currently provide services of this type, but we plan to; 2 – no, we do not provide services and have no plans, and 1 - other).

According to the hypotheses that we have set in advance, it is necessary to determine independent variables from the survey questions. Those are:

- Knowledge of external auditors;
- Type of audit firm (does the firm belong to an international audit firm or Big4, or is it a local type);
- Recruitment of the necessary personnel;
- Management's readiness to respond to potential market trends

The independent variable knowledge of external auditors consists of answers to the questions how familiar are they with assurance standards (ISAE 3000, AA1000AS, and ISAE 3410 - variables st1, st2, and st3), how familiar are they with sustainability reporting standards (Task Force on Climate-Related Financial Disclosures – TCFD; Sustainability Accounting Standards Board SASB; International Integrated Reporting Council – IIR; Global Reporting Initiative – GRI - variable st_esg1, st_esg2, st_esg3 and st_esg4), and how familiar they are with the new Sustainability Directive (variable dir). Given the fact that here we have a total of seven variables related to the knowledge of external auditors, a principal component analysis was conducted, in order to reduce the number of variables to one common component that best expresses them integrally. All variables are scaled on a Likert scale from 1 to 5 (1 - I am not familiar at all and 5 - I am completely familiar).

The type of audit firm is a variable that takes the value 1 if the firm belongs to an international audit firm or Big4, and 0 if it is at the local level.

The recruitment of the required personnel includes two variables, which represent the answers to the questions: Have they announced a competition for hiring additional auditors (variable recruit1) and do they plan to hire experts as part of the audit team (variable recruit2). The recruit1 variable is scaled as follows: 1 – no, it is not planned this year either; 2 – no, but it is planned for this year; 3 - yes, at the level of the network to which the audit company belongs, and 4 - yes, at the local level. Similarly, the variable recruit2 is scaled from 1-5: 1 – no, because we do not provide these services yet; 2 - no, because we have our own staff who are trained for the required services; 3 – no, for other reasons; 4 - yes, but only for the provision of consulting services, and 5 - yes.

Management's readiness to respond to potential market trends is measured using two variables, which we named readiness1 and readiness2.

The variable readiness1 is the answer to the question To what extent is your audit firm preparing for the potentially growing demand for assurance services, i.e. expressing opinions on non-financial reports (1- no, we have adopted the “wait and see” approach; 2 - preparations are underway, but with less intensity; 3 – we are ready to a large extent, and 4 – we are already ready), while the variable readiness2 is formed from the answer to the question To what extent will your audit firm provide assurance services for non-financial statements in the next 3 years (1 – significantly less than today; 2 – less than today; 3 – no changes in relation to the existing situation; 4 – more than today, and 5 – significantly more than today).

After defining the knowledge variable, regression analysis will be used to examine the impact of other three variables (the type of audit firm, recruitment of the necessary personnel, management's readiness to respond to potential market trends) on the assurance services provided by the audit firm in terms of non-financial, sustainable reporting in Montenegro, in order to confirm/reject the formulated hypotheses.

Therefore, in order to accept/reject the set hypotheses, linear regression was applied. To apply a regression analysis that assesses whether the knowledge of external auditors in the current sustainability regulatory framework has a significant impact on the provision of sustainability assurance services in Montenegro, it was necessary to integrate the variable knowledge, as a complex component expressed with 7 indicators, into one common factor, which was carried out with using factor analysis i.e., Principal Component Analysis. A description of the above is given below.

First, we conducted a Principal Component Analysis in order to single out one component that best reflects the seven variables related to the knowledge of external auditors. In that manner, we conducted sampling adequacy for that analysis. It is conducted in SPSS by Kaiser-Meyer-Olkin measure and Bartlett's test of sphericity (Table 1). The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is a statistic that indicates the proportion of variance in variables that may be caused by underlying factors. We have obtained the value of this index equal to 0.663, which is good enough. Bartlett's test of sphericity tests the hypothesis that the correlation matrix is an identity matrix, which would indicate that selected variables are unrelated and therefore unsuitable for structure detection. Small values (less than 0.05) of the significance level indicate that a factor analysis may be useful with the data. Our value is lower than 0.05 (0.000 in our case), so it indicates that our data are suitable for factor analysis – principal component analysis is a type of factor analysis. The reliability of this analysis was acceptable since Cronbach's Alpha is 0.858.

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.663
Bartlett's Test of Sphericity Approx. Chi-Square	86.158
Df	28
Sig.	.000

Source: Authors' calculations

Table 2: Total variance explained in the principal component analysis of seven variables representing knowledge of external auditors

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.274	53.428	53.428	4.274	53.428	53.428
2	1.675	20.943	74.371	1.675	20.943	74.371
3	1.195	14.934	89.306	1.195	14.934	89.306
4	.431	5.387	94.693			
5	.271	3.381	98.074			
6	.074	.929	99.003			
7	.046	.573	99.577			
8	.034	.423	100.000			

Source: Authors' calculations

Note: Seven variables representing knowledge of external auditors are st1, st2, st3, st_esg1, st_esg2, st_esg3 i st_esg4 i dir.

We have chosen selections to produce a solution using principal components extraction, which is then rotated for easier interpretation. We selected VARIMAX type of rotation. The findings of the factor analysis revealed three factors that explained 89.306% of the variance (Table 2). The first factor explained 53.428% of the variance. The second and third factor explained 20.943% and 14.934% of the variance, respectively. Having in mind first factor explains more than a half of total variance, we have integrated all seven variables in this single factor to represent integrally the knowledge of external auditors. The component correlation matrix that presents the correlation between the extracted factors/components and variables in Principal Component Analysis (PCA) are presented in Appendix (Table A1).

Now we can proceed with the regression analysis where we want to estimate the impact of this single factor representing integrally the knowledge of external auditors (REGR factor score 1 for analysis 1), type of audit firm (variable company), recruitment of the necessary personnel (variables recruit1 and recruit2) and management's readiness to respond to potential market

trends (variables readiness1 and readiness2) on the provision of assurance services in Montenegro.

4. Results and Discussion

The results of the regression model are presented in Table 3.

Table 3: Regression analysis results (dependent variable is the the provision of sustainability assurance services in Montenegro)

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	3.878	.894		4.337	.003
REGR factor score 1 for analysis 1	-.013	.240	-.015	-.055	.958
company	-1.904	.872	-.938	-2.184	.065
1 recruit1	.553	.251	.594	2.205	.063
recruit2	-.297	.253	-.426	-1.174	.279
readiness1	.834	.265	.730	3.146	.016
readiness2	-.372	.262	-.378	-1.419	.199

Source: Authors' calculations

Based on the probabilities of estimated coefficients in the regression model, expressed in the last column of Table 3, we can see that all variables that have a p-value (Signature) lower than 0.10, have a statistically significant impact on the dependent variable, with 90% confidence level. Beside constant term, the type of company firm (variable company), one variable of recruitment of the necessary personnel (variable recruit1), and one variable of management's readiness to respond to potential market trends (variable readiness1) all have a significant impact on the provision of sustainability assurance services in Montenegro. The impact of variables recruit1 and readiness1 is positive, while the impact of the type of the firm is slightly negative.

The histogram and normal P-P plot of standardized residuals of the regression model that provide the normal distribution of residuals are presented in Appendix (Graph A1 and Graph A2).

In accordance with the information delineated in the provided table, one can deduce that the initial null hypothesis, signifying the absence of statistical relevance between the auditor's knowledge (complex component) and the facilitation of sustainability assurance services within Montenegro, has not garnered support. Conversely, the classification of the company (variable company), the acquisition of essential personnel (variable recruit1), and the management's readiness to respond to potential market trends (variable readiness1) exhibit substantial influence over the sustainability assurance services' provision by the audit firm. As such, this outcome corroborates the validity of the second, third, and fourth hypotheses.

The above results indicate that auditors in Montenegro don't have a sufficient level of knowledge of sustainability reporting and assurance standards, which indicates that different types of continuous education are needed. The obtained findings support the results of a recently conducted research by the authors Laković & Vukčević (2023), which indicate that

auditors have identified additional education as a factor that can contribute to the development of audit engagements in the area of sustainability in the future. Authors Eugénio et al. (2022) provide similar conclusions. This is also a recommendation to regulatory, professional and educational organizations as well as the Audit and Assurance Councils regarding the creation of additional incentives and the promotion of various continuous forms of education in this area.

In line with previous research (Cuadrado-Ballesteros et al., 2017; Samoza, 2021; Boiral et al., 2019; Ruiz-Barbadillo and Martínez-Ferrero (2020)), this research also confirmed that the type of audit firm affects the level of assurance services provided. This study also supports the fact that Big Four firms are a key institutional factor for the diffusion of new auditing and accounting practices, especially in less developed and small audit markets.

In the context of the interpretation of the results obtained by examining the impact of the recruitment variable, it is shown that it was statistically significant but with a slightly negative impact, which confirms that the engagement of additional specialized personnel in auditing firms is necessary in order to provide quality assurance services. This result is in line with Bartoszewicz & Rutkowska-Ziarko (2021) conclusions. It is, also, important to emphasize that the engagement of additional experts in Montenegro will have a positive impact only if it is implemented at an optimal level and on a sustainable basis.

The management readiness can be the key factors for the adoption of new services, which is confirmed by the results of this study. The first variable (readiness1) has a positive impact on the provision of assurance services, which indicates that the readiness of audit firms to provide these services is crucial for their development and further implementation. However, the negative sign of the second variable (readiness2), that is not statistically significant in our model, indicates that even in the next three years we can't expect more significant activities on the development and provision of these services from the majority of auditing firms (predominantly local).

The aforementioned indicates that the main drivers of changes in the development and provision of assurance services will be Big Four firms. This does not exclude a greater active role of other participants such as educational and professional institutions as well as Audit and Assurance Councils Montenegro in raising awareness both on the supply side and on the demand side for these services in the Montenegrin market. In addition, it should not be overlooked that in the structure of economic entities, Montenegro has more than 90% of small and medium-sized enterprises that are mostly financed through the banking sector. This means that, in addition to audit firms, financial institutions can play an important role in stimulating the demand for assurance services from areas of sustainability, which can be the subject of future research analysis.

5. Conclusion

This research presents an empirical analysis based on the perception of statutory auditors in Montenegro, indicating which factors among knowledge of external auditors, type of audit firm, recruitment of necessary staff, and management's readiness to respond to potential market trends, influence the sustainable assurance service provision in Montenegro. The findings suggest that the level of provision of assurance services is at a low level and that the type of audit firm, the hiring of additional and specialized personnel, and management's readiness to respond to potential market trends, have a significant influence on the provision of such services. In providing these services, the highest level of commitment and preparation is held by audit firms that are in the process of hiring additional staff. However, it is important to point

out that the biggest barrier to the provision of assurance services is insufficient familiarity with the existing reporting and assurance standards.

This study brings a valuable addition to the discourse surrounding sustainability assurance in the Western Balkan region, taking into account investments that will be provided by the EU in the future, for this region. It accomplishes this by shedding light on the variables that influence the decision-making in engaging with assurance services within Montenegro. In terms of practical implications, this paper has the potential to spark novel avenues for future research. Enhancing the dissemination and awareness of this subject matter across Western Balkan countries could contribute to the expansion of research in this domain. Future researches can be conducted in the direction of examining the role of all mentioned participants in promoting quality non-financial (sustainability) reports through an interview in order to obtain an in-depth analysis of their views in this process

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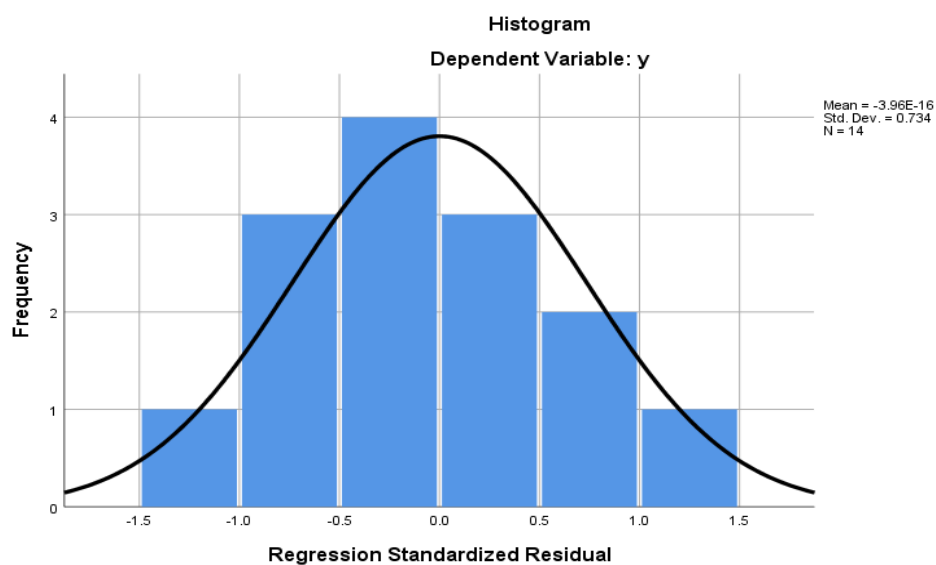
Appendix

Table A1: Component matrix of PCA

	Component		
	1	2	3
st1	.483	.681	.494
st2	.716	.506	-.243
st3	.768	.541	-.027
st_esg1	.822	-.543	.067
st_esg2	.775	-.074	.399
st_esg3	.752	-.477	.385
st_esg4	.838	-.356	-.312
dir	.628	.087	-.694

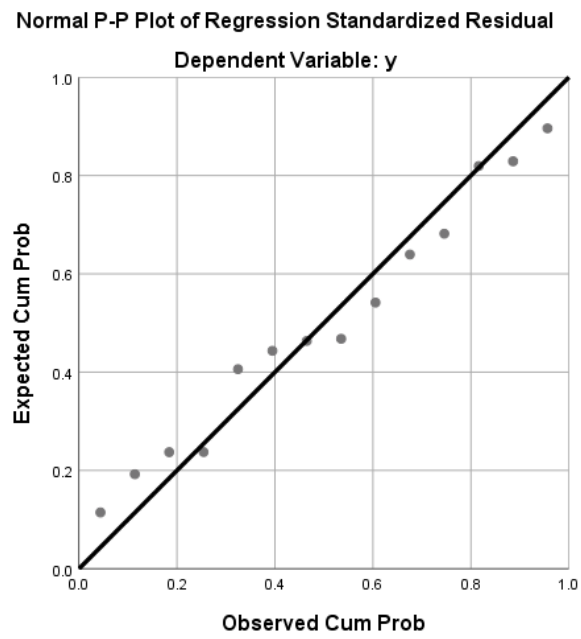
Source: Authors' calculations

Graph A1: Histogram of regression standardized residuals



Source: Authors' calculations

Graph A2: Normal P-P plot of regression standardized residuals



Source: Authors' calculations

PERFORMANCE ANALYSIS OF BUSINESSES IN THE CONTEXT OF DEBT, FINANCIAL PERFORMANCE AND INTERNATIONALIZATION

Panagiotis Charalampakis¹

George Mavridoglou²

Ilias Makris²

Stavros Stavroyiannis²

Antonios Georgopoulos¹

Abstract

In this study, we employ Principal Component Analysis (PCA) to create four factors and examine their impact on the performance of listed companies in five European countries. Initially, we developed a model to assess the influence of Debt, Stock Market Activity, and Internationalization on the performance of French, Italian, Spanish, Portuguese, and Greek businesses. We found differences both in the relationship between performance and independent factors and in statistical significance. Subsequently, we developed two additional models (Model B and Model C) to investigate how the Country factor affects the results.

To the best of our knowledge, no research exists with a similar empirical approach focusing simultaneously on the performance of businesses in these five specific Eurozone countries. After examining the impact of each factor on the performance of businesses in each country using our primary model, we used these results as a guide to group businesses into pairs of countries in Model B to assess the effect of the Country factor on the final outcome. Furthermore, we compared the influence of the Country factor between the businesses of the two strongest economies and the three weaker economies in our sample. These findings contribute to the innovations of this study.

Keywords: Company Performance, Principal Component Analysis, Panel data, Debt, Stock Market Activity, Internationalization

1. Introduction

The literature provides various definitions for business performance. All agree that measuring the performance of businesses is important because it helps us in evaluating the degree and manner of the impact of organizational resources (Sharma & Gadenne, 2002; Madu et al., 1996), improving businesses (Al-Matari et al., 2014), their functioning (Bititci et al., 1997), and their management (Demirbag et al., 2006). It also facilitates the quantification of success/failure, measurement of management performance, error detection, and incentive improvement (Koufopoulos et al., 2008; Waggoner et al., 1999; Neely et al., 1995), as well as attracting new investors (Rouf, 2011).

Most researchers use Return on Assets (ROA) to measure business performance (Al-Matari et al., 2014). Notable examples include Hart & Ahuja (1996), Anderson & Reeb (2003), Goddard et al. (2009), Koufopoulos et al. (2008), Contractor et al. (2003), and Kotabe (2002).

¹ Department of Business Administration, University of Patras, Greece

² Department of Accounting and Finance, University of Peloponnese, Greece

Another indicator used to measure business performance is Earnings Before Interest and Taxes (EBIT), calculated as:

$$\text{EBIT} = \text{Net Income} + \text{Interest Expense} + \text{Taxes}.$$

EBIT has been employed by Berger & Ofek (1995) to measure the impact of differentiation on firm value. Erik Lie & Heidi J. Lie (2002) have also used and compared it with multiples used for estimating corporate value.

The indicator of Net Sales or Revenue and Return on Sales (ROS) is utilized in the literature to evaluate the operational capacity of businesses. It represents the profit generated per monetary unit of sales and is the ratio of operating profits to net sales. Researchers use it to measure business performance, often in combination with ROA and ROE. Examples include Hart & Ahuja (1996), who used all three indicators. Researchers such as Lee & Park (2010), Makris (2014), and Jung (2003) focused on sales volume as a determinant of growth and financial health to measure business performance.

The capital structure plays a significant role in financial economics as it is related to a firm's ability to meet the requirements of various stakeholders (Modigliani & Miller, 1958, 1963).

The literature presents conflicting findings regarding the relationship between financial debt and firm performance. There are studies that conclude a positive relationship between the level of debt and firm performance (Taub, 1975; Roden & Lewellen, 1995; Ebaid, 2009; Margaritis & Psillaki, 2010).

Many studies report a negative relationship between the level of debt and firm performance. Firms with a high debt ratio may face a higher risk of bankruptcy, resulting in financial difficulties that negatively impact profitability and growth (Goretti & Souto, 2013, p. 4). Studies by Daskalakis & Psillaki (2008), De Luca (2014), Padrón et al. (2005), Fernanda & Serrasqueiro (2017), Ananiadis & Vasrakelis (2008), Balios et al. (2016) also conclude a negative relationship between the two variables.

There are also studies that did not find a clear relationship between financial leverage of firms and their performance, such as Harris & Raviv (1991) and Ebaid (2009).

Measuring performance based on the market reflects shareholders' expectations regarding the future performance of firms, which is based on their past or current performance. All the literature converges on the positive relationship between Market Value and firm performance. Some notable studies include Pavone (2019), Tahir et al. (2013), Tan & Floros (2012), Goddard et al. (2005), Ben Jabeur et al. (2020), Cho & Pucik (2005).

The term Internationalization is not limited to the export activity of businesses. It also includes agent networks, subsidiaries, importers, exporters, local sales networks, export consortia, licensing, joint ventures, participations, and franchising (Colapinto et al., 2015). Successful production activity leads to the entry of the company into the export process. Kugler & Verhoogen (2008) conclude that exported products are considered of better quality and command higher prices.

There is an argument supporting the notion that higher productivity is the cause, rather than the result, of a firm's export behavior. Given that entry into foreign markets is costly, only large firms have the privilege to choose to export (Kalogera et al., 2020; Tsao & Lien, 2013). It is also argued that more productive firms choose to export, and this makes them even more productive (Aw & Hwang, 1995; Bernard & Jensen, 1999; Clerides et al., 1998; Bernard & Wagner, 1997; Wagner, 2002; Kraay, 1999; Castellani, 2002; Delgado et al., 2002; Alvarez,

2002 in Chile). These studies cover a wide range of time periods and use various methodologies. Each analysis concludes that exporters have higher productivity than non-exporters and that exporting firms are larger, have higher capital intensity, and pay better wages. Therefore, exports may be associated with improved firm performance, but this could be due to the capabilities of the firm itself that led it to export, rather than being the direct result of its export activities.

There are also studies that yield mixed conclusions, such as those by Riahi-Belkaoui (1998) and Contractor et al. (2003), who found mixed results regarding the relationship between firm performance and internationalization. They argued that there is a minimum threshold below which the relationship is negative, above which the relationship becomes positive, and beyond a certain point, the performance-internationalization relationship turns negative again.

Gerpott & Jakopin (2005) concluded that there is no particular point where higher degrees of internationalization imply higher levels of profitability. In fact, they found that higher degrees of internationalization were associated with lower profitability.

2. Methodology

The main research questions of the study are:

- i. Study the relationship between each of the independent factors and the dependent factor for each country during the examined time period.
- ii. Interpret, in economic terms, the relationship between each of the independent factors and the Performance factor of the companies for each country.
- iii. Compare the findings of the five countries we examine among themselves and interpret them in economic terms.

2.1 Sample

The research focuses on the listed companies of the five countries for the period 2008-2017: France, Italy, Greece, Portugal and Spain—the data was derived from the WordScope Datastream database. The sample obtained by country is presented in Table 1. Companies from the financial sector were excluded.

Table 1. Sample size by country

Country	Initial sample size	Final sample size
France	423	319
Italy	240	94
Spain	177	71
Portugal	90	48
Greece	230	117
Total	1160	649

For each company, the following variables were obtained. Prices were standardised by country and company and outliers and companies with more than 30% of values missing were identified. These firms were removed from the original sample.

Table 2. Variables and Components

Group of Variables	Variables
Performance	Return on Assets (ROA)
	Earnings Before Interest and Taxes (EBIT)
	Net Sales or Revenues
	MarketCapitalization/ Total Assets
Dept	TotalDebt/Total Assets
	Short Term Debt
	Long Term Debt
	Total Debt/Common Equity
Market	Market Price Year End
	Cash Flow per Share
	Earnings per Share
Internationalization	International Operating Income
	Foreign Sales/Total Sales
	Foreign Income/Total Income

2.2 Statistical analysis and Models description

According to the group of variables (Table 2) and using Principal Components Analysis (PCA) for each group, year and country, the following set of factors were created :

$$F_{1i}^t = \alpha_i^t \cdot x_{1i}^t + \beta_i^t \cdot x_{2i}^t + \gamma_i^t \cdot x_{3i}^t + \delta_i^t \cdot x_{4i}^t \quad (1)$$

$$F_{2i}^t = \alpha_i^t \cdot x_{5i}^t + \beta_i^t \cdot x_{6i}^t + \gamma_i^t \cdot x_{7i}^t + \delta_i^t \cdot x_{8i}^t \quad (2)$$

$$F_{3i}^t = \alpha_i^t \cdot x_{9i}^t + \beta_i^t \cdot x_{10i}^t + \gamma_i^t \cdot x_{11i}^t \quad (3)$$

$$F_{4i}^t = \alpha_i^t \cdot x_{13i}^t + \beta_i^t \cdot x_{14i}^t + \gamma_i^t \cdot x_{15i}^t \quad (4)$$

where $F_{1i}^t, F_{2i}^t, F_{3i}^t, F_{4i}^t$ respectively represent the factors of Performance, Debt, Stock Market Activities, and Internationalization for country i (France, Italy, Spain, Portugal, Greece) in year t (2008,...2017), $\alpha_i^t, \beta_i^t, \gamma_i^t, \delta_i^t$ represents the component values of each country i , corresponding to year t , and $x_{1i}^t, x_{2i}^t, \dots, x_{15i}^t$ represents the value of the respective variable included as a component of the corresponding factor.

Model A

In model A, for each country, a panel model was implemented. According to the score of Hausman test fixed effects and random effects models were selected.

Model B

To implement the Model B, we used data from the top 25% of businesses regarding market capitalization. The total sample size we used was 146 companies, 79 French, 26 Italian, 14 Portuguese, and 27 Greek companies.

We grouped the countries based on the patterns of signs in the regression equations and created two groups. The first group includes French and Italian businesses, while the second includes Portuguese and Greek.

Model C.

In Model C, countries were grouped by the strength of their economies. The first group consists of France and Italy (countries with economic problems put without MoU with EU), while the second group consists of Spain, Portugal, and Greece (countries with MoU with EU). The sample was the same as in Model B; the final sample included 165 businesses from all countries, of which 79 were French, 26 were Italian, 37 were Spanish, 12 were Portuguese, and 11 were Greek.

3. Results

3.1 Model A

The following regression equations are derived from the data for each country:

$$\text{France: } F1 = -0,013F2+0,205F3+0,051F4 \quad (5)$$

$$\text{Italy: } F1 = -0,136F2+0,176F3+0,056F4 \quad (6)$$

$$\text{Spain: } F1 = -0,180F2+0,465F3-0,180F4 \quad (7)$$

$$\text{Portugal: } F1 = 0,039F2+0,801F3-0,019F4 \quad (8)$$

$$\text{Greece: } F1 = 0,202F2+0,421F3-0,004F4 \quad (9)$$

One interesting finding from the regressions above is the negative relationship between the Debt (F2) and Performance (F1) in the three largest economies of our study, France, Italy, and Spain. This indicates that businesses in a large economy (even in a crisis), have a dynamic where an increase in debt would not necessarily lead to an increase in performance. In high-performing businesses, they can meet their obligations and generate high profits, so they do not need to seek external financing for their activities but instead utilize their resources. In contrast, in the two smaller and economically weaker countries, Portugal and Greece, we observe a positive regression between Debt and Performance of their businesses. Clearly, within the broader context of these two countries' exposure to debt, Portuguese and Greek businesses, for the most part, had to operate as leverage points in order to perform, and their management had to seek external capital to finance their activities.

As observed from the regression equations, the Stock Market factor (F3) equally has the highest coefficient in all countries. This is the only common characteristic among the coefficients and the five countries. The Stock Market positively and significantly influenced the Performance of businesses in all the countries in the study and to a greater extent compared to the other factors. Stock market performance acted as a driving force for most businesses in all the countries of our study and contributed to their overall performance.

The third factor, Internationalization (F4) presents an interesting finding. The two major economies France and Italy, exhibit a positive regression between Internationalization and the Performance of their businesses. This indicates the presence of strong outward-oriented businesses with significant dynamism that support and benefit from their activities beyond borders. On the other hand, the businesses in the remaining three countries, Spain, Portugal, and Greece, show a negative regression between Internationalization and Performance during the same period. The competitiveness of their businesses is not on the same level as French and Italian businesses when it comes to their activities beyond their borders.

3.2 Model B

What is easily distinguishable in the results of Model A is that the businesses of the two largest economies in our study, France and Italy, as well as the two smaller ones, Portugal and Greece, exhibit similarities in the signs of the regression equations.

In model B, a dummy variable was used and assigned a value of 0 to the French and Italian companies and 1 to the Portuguese and Greek companies.

The Fixed Effect model presented a problem of collinearity in the independent variable Country Group (F5). This indicates that the effects of time-invariant processes, such as the Country factor, are lost in the fixed effect model (Bell & Jones, 2014). Since in cases of time-invariant observations, these cannot be evaluated by the fixed effect model, as is the case with our country dummy variable, the Random Effect model can serve as a viable alternative (Plümper & Troeger (2004), Bell & Jones (2014), Hawawini et al., (2004)).

The regression equation is:

$$F1 = 0.043F2 + 0.510F3 + 0.068F4 - 0.489F5 \quad (10)$$

The Debt (F2) and Export (F4) activity of Portugal and Greece do not exhibit the statistical significance that the other factors demonstrate. Although they are not statistically significant, they are still considered useful for formulating trends (Pavone, 2019). All coefficients, except for the Group factor, have a positive sign. Therefore, any change in the independent factors positively affects the Performance of the studied businesses, except for the Group factor, which has a negative impact.

3.3 Model C

As mentioned above, in model C, the first group of countries consists of France and Italy, while the second group consists of Spain, Portugal, and Greece. A dummy variable was used to group countries, assigning a value of 0 to France and Italy and a value of 1 to Spain, Portugal, and Greece. Random effect (RE) model used. The results of the RE model are presented in the table below. According to the results the coefficients for Debt (F2) and Internationalization (F4) were not statistically significant.

The regression equation is:

$$F1 = -0.022F2 + 0.416F3 + 0.045F4 - 0.453F5 \quad (11)$$

The relationship between Debt and Performance in Model B is positive (0.044), whereas in Model C, with the addition of Spanish companies, it becomes negative (-0.022). Regarding the other elements, the findings of Models B and C are similar.

4. Conclusions – Discussion

From the results of first model A, can be derived the following:

- for French companies, there is a negative and statistically insignificant relationship between Debt-Performance and a positive and statistically significant relationship between the Financial Market factor-Performance and Internationalization-Performance,
- for Italian companies, the relationship between Debt and Performance was negative statistically significant, between the Financial Market factor and Performance and

Internationalization and Performance, the relation is positive, but only in the first case is statistical significance,

- in the case of Spanish companies, there is statistical significance among all the factors studied, a negative relationship between Debt-Performance and Internationalization-Performance, and a positive relationship between Financial Market activity-Performance,
- for Portuguese companies, the results led to a positive but statistically insignificant relationship between Debt-Performance, a positive and statistically significant relationship between the Financial Market factor-Performance, and a negative and statistically insignificant relationship between Internationalization-Performance.
- for Greek companies, the relations are positive and statistically significant relationship between Debt-Performance and the Financial Market factor-Performance, and negative and statistically insignificant relationship between Internationalization-Performance.
- The Country factor negatively and significantly affects the performance of Portuguese and Greek companies in Model B and Spanish, Portuguese, and Greek companies in Model C, compared to the reference countries of France and Italy that we use as the base countries.

The negative relationship between the debt and performance of French, Italian, and Spanish firms, confirms with Myers' (1977) position that companies with greater growth opportunities have lower debt levels. Focusing on French firms, the Debt-Performance relationship aligns with those of Ben Jabeur et al. (2020), Daskalakis & Psillaki (2008), Goddard et al. (2005), and Weill (2008). Similar alignment is observed for Italian firms with the results of De Luca (2014) and Goddard et al. (2005), as well as for Spanish firms with the results of Padrón et al. (2005). However, the results differ from those of Weill (2008) for these two countries, who focused their study on the period 1998-2000, which likely explains the non-conformity of the results.

As for Portuguese firms, no alignment is observed in the Debt-Performance relationship with what has been identified in the literature. Fernanda & Serrasqueiro (2017) examined a sample of small and medium-sized Portuguese firms for the period 2007-2011 and found a negative relationship between profitability and debt. The possible reason for the discrepancy in the conclusions compared to our research may lie in the size of the studied firms, as the sample of Fernanda & Serrasqueiro consisted of small and medium-sized enterprises.

Similarly, for Greek firms, our results do not align with those of Balios et al. (2016), Ananiadis & Varsakelis (2008), and Daskalakis & Psilaki (2008). The reasons for the differentiation from the results of the aforementioned studies can be attributed to the nature of the studied firms in the first case and the study period in the latter two cases.

Although similar variables were used for measuring company performance and debt, empirical studies on the relationship between capital structure and firm performance in developed countries have provided various conclusions.

From the significance levels and regression equations, the Financial factor equally exhibits the highest statistical significance and coefficient in all countries. This is the unique common characteristic of the coefficients across the five countries. The performance of the studied firms and the five countries we examine is particularly and significantly influenced by the stock market, surpassing the other factors to the greatest extent. This result fully aligns with the findings of Goddard et al. (2005), Ben Jabeur et al. (2020), Pavone (2019), Tahir et al. (2013), and Tan & Floros (2012).

The two largest economies we investigate, France and Italy, have a positive relationship between outward orientation and the performance of their firms. This result coincides with the research of Bernard & Jensen (1999), Cerrato & Piva (2015), and Makris (2014). But the results for Spanish, Portuguese, and Greek firms are in contrast to the findings in the literature on the same topic. Thus, our results for Spanish firms differ from the results of Delgado et al. (2002), for Portuguese firms differ from the results of Bernard & Jensen (1999), and for Greek firms differ from the results of Makris (2015) and Kalogera et al. (2020). In all three countries, contrary to our findings, the literature points to a positive relationship between Internationalization and Performance. The reasons for this differentiation are attributed to the different periods covered by each study.

Based on the findings of Model B, the country group is negatively related to performance. The findings of Model C yield the same relationships as Model B, except that the Debt factor is negative in this case. Regarding the statistical significance conclusions, Model C is similar to Model B. These conclusions align with the empirical research of Hessels & Parker (2013), the findings of Weill (2008), Goldszmidt et al. (2011), and Bancel & Mittoo (2004), as the firms in our sample from weaker economies do not show the same prospects for improving their performance compared to firms in stronger economies.

A future research study could include the impact of additional independent factors on business performance, such as the size of businesses, research, and innovation.

After the decade of 2008-2017, humanity has been constantly facing a series of unprecedented challenges for today's standards, such as the COVID-19 pandemic, the war in Ukraine causing a rapid increase in fuel and energy prices, and a potential food crisis. These challenges have a direct impact on the economies of countries and the performance of their businesses. A study exclusively focusing on the performance of businesses in countries that received support/rescue packages due to the crisis and examining their progress in this difficult environment would be of great interest. It would provide an opportunity to compare business performance during continuous crises and evaluate the opportunities that have emerged for certain sectors of businesses during these years.

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INSTITUTIONS, GLOBALIZATION AND ECONOMIC DEVELOPMENT IN THE COUNTRIES OF THE REGION COMPARED TO THE “NEW EUROPE”

Jelena Trivic¹

Abstract

In this paper, institutions are measured by *World Governance Indicators* database, which observes 6 indicators of the quality of institutions: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruption. We compare the quality of the institutions of the countries of the region with the countries of the so-called New Europe, but also with the most developed countries of European Union led by Germany. We also perform a correlation analysis between the quality of institutions and economic development measured by GDP per capita in purchasing power parity (PPP) and economic development measured by Human Development Index (HDI). The research results show that the countries of the region significantly lag behind the countries of Central Europe and the Baltics when it comes to the quality of institutions, and that the countries of Central Europe still lag behind developed Europe. Our results also show a very high and positive correlation between the quality of institutions and economic development.

Keywords: Transition, institutions, economic development, World Governance Indicators, GDP per capita in PPP, Human Development Index, reforms.

JEL Classification: O43, F15, F63, F68.

Introduction

The word institution has a diversity of meanings. Nobel Laureat, Douglass North's concept of institutions, which has been used by most of the authors, defines institutions as the formal and informal “rules of the game” in society. According to North's definition (North: 1990, p. 3) “Institutions are the rules, regulations (humanly devised constraints) that structure political economic and social interaction. They consist of both: formal rules (constitutions, laws, property rights) and informal constraints (sanctions, taboos, customs, tradition and codes of conducts). Organization or individuals are entities which devise and implement these institutions. In North's view the purpose of the rules and conventions is to define the rules by which the game (in this case upgrading economic development) is played, monitored and enforced. Institutional environment in that sense comprises of institutions (formal and informal ones) and enforcement mechanism. Institutions are often ineffective if they are not enforced (Tešić, 2010, p. 103). A nation can have antitrust law but if government doesn't enforce that law, business can act as if the antitrust law did not exist.

Similarly, using the definition within New Institutional Economics (NIE), World Bank (1998, p. 11) defines institutions as formal and informal rules and their enforcement mechanisms that shape the behavior of individuals and organizations in the society.

While exploring the role of institutions in economic development, Hall and Jones (1998, p. 2) coined a new term - *social infrastructure*, which includes institutions and government policies

¹ Associate Professor at the Faculty of Economics University of Banja Luka

that determine economic environment within which individuals accumulate skills, and firms accumulate capital and produce output.

Positive relationship between the quality of institutions and economic growth and development has been proven by many researchers (Acquah et al., 2023; Acemoglu et al., 2004; Acemoglu and Robinson, 2010; Eicher and Leucher, 2009; Kanani and Larizza, 2021; Knack and Keefer, 1995; Hall and Jones, 1998; La Porta et al., 1998; Nikzad, 2021; Udin et al., 2023).

Moreover, According to the most general Dunning's theory, institutions are one among other locational factors which determine FDI inflows in one country (Dunning, 1977). Institutions reduce uncertainty involved in human interaction by giving us a pattern for our behavior. In the context of firms' operating costs, development of better institutional environment implies lower transaction cost, lower risk and lower uncertainty for foreign companies that are entering new markets (Dumludag, Sukruogly, 2007). There is a wide literature which confirms that institutions and transaction cost play important role in the economic performances of a country².

Numerous empirical studies confirmed that lack of political and economic stability, uncertain regulatory framework, inexperienced and slow bureaucracy, under-developed legal system and widespread corruption discourage economic development. A transparent and more business friendly environment is a condition to attract more investors (Grosse, Trevino 2005).

In the previous few papers, we analyzed the correlation between the quality of institutions and economic development, comparing the countries of the region with the countries of Central Europe and the Baltic States, as well as with the youngest members of the European Union. In this paper, we will also compare the countries of the region with the countries of Central Europe and the Baltic, but also with the most developed countries of the European Union, and we will determine the gap between the countries of the region and "New Europe", as well as the gap that still exists between New Europe and the most developed members of the European Union. What is worrying is that the gap between the countries of New Europe and the most developed EU countries is rapidly decreasing, while the gap between the countries of the region and New Europe is still increasing.

1. How to measure Institutions?

There are several data sources and indicators by which it is possible to empirically measure quality of institutions: World Governance Indicators, International Country Risk Guide, Index of Economic Freedom, Economic Freedom of the World, Corruption Perception Index. In this paper institutions are measured by World Governance Indicators Database (2014) developed by Kaufman et al. (2010) which indicates quality of Governance in certain country. This indicator is composed of six components: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruption. Each variable of six indicators goes from -2.5 to 2.5 where higher value indicates higher result.

² Transaction cost theorem was established by Ronald Coase and the theorem is also called Coase Theorem.

Table 1: Six measures of institutional quality in *World Governance Indicators Dataset*

<i>Voice and Accountability (VACC)</i>	Captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.
<i>Political Stability (PS)</i>	Measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.
<i>Government Effectiveness (GE)</i>	Captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
<i>Regulatory Quality (RQ)</i>	Captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
<i>Rule of Law (ROL)</i>	Captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
<i>Control of Corruption (COC)</i>	Reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as capture of the state by elites and private interests.

Source: *World Governance Indicators (2023), Description of Methodology*, <https://info.worldbank.org/governance/wgi/Home/Documents>

2. How to measure economic development

In the economic literature, gross domestic product per capita is still used as a generally accepted measure of economic development. In many of our earlier works (Trivic, 2018; Tesic, 2013; Trivic, 2021) we also used this indicator, but always with the emphasis that we used GDP per capita according to purchasing power parity, which is published by the IMF in its comprehensive World Economic Outlook Database.

In this paper, in order to more precisely and significantly show the importance of the development of institutions for economic development, apart from the standard indicator of gross domestic product per capita at purchasing power parity, we used also the Human Development Index.

According to UNDP (2023) Human Development Index (HDI) is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and having a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions. The health dimension is assessed by life expectancy at birth, the education dimension is measured by mean of years of schooling for adults aged 25 years and more and expected years of schooling for children of school entering age. The standard of living dimension is measured by gross national income per capita. The HDI uses the logarithm of income, to reflect the diminishing importance of income with increasing GNI. The scores for the three HDI dimension indices are then aggregated into a composite index using geometric mean³.

³ UNDP (2023) Human Development Report 2021/2022: Uncertain times, unsettled lives Shaping our future in a transforming world. https://hdr.undp.org/system/files/documents/global-report-document/hdr2021-22pdf_1.pdf

3. Institutional quality in transition countries, “New Europe” and developed Europe

3.1. Unit of analysis – three samples of comparison

Our sample includes three different groups of countries:

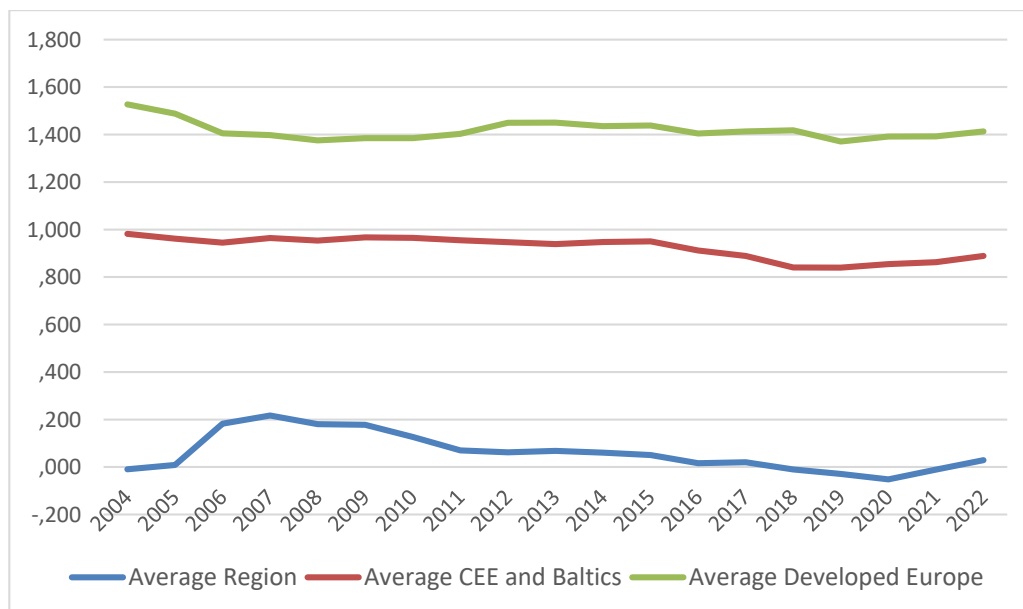
1. Five Western Balkan countries – Albania, Bosnia and Herzegovina, Monte Negro, North Macedonia and Serbia. All countries of the sample have the status of candidate countries for membership in EU.
2. Eight Central European Economies and Baltics, i.e. “New Europe” – Czech Republic, Hungary, Poland, Slovak Republic, Slovenia, Lithuania, Latvia and Estonia.
3. Four Developed Europe – Austria, Germany, Netherlands and Belgium.

We choose three samples of culturally and geographically close countries which all belong to European continent and all aspire to become members of EU or they already are. The ideas is to asses and compare the quality of institutions and institutional environment in these three samples and to see how much Western Balkan countries lack behind countries which joined EU already 10 year ago. The countries of Central Europe could not be regarded anymore as transition countries as they finished their path from centrally planned to market economies.

3.2. Comparative analysis of institutional quality in three samples of countries

The first graph shows the progress in building institutions, measured by the *Voice and Accountability* variable, for the three sample countries that we presented earlier⁴.

Figure 1: Comparison of *Voice and Accountability* between averages in WB, CEE and Baltics and Developed Europe

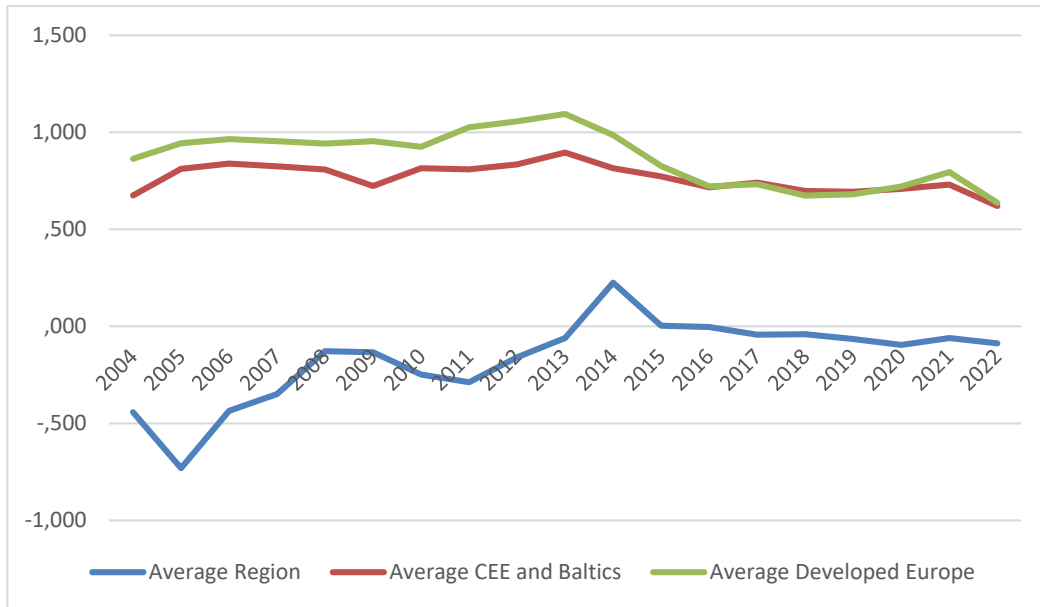


Source: World Governance Indicators Database, 2023

⁴ The values of the variables by region were calculated as simple arithmetic means.

It is obvious from the graph that the countries of the region are significantly behind the countries of Central Europe and the Baltics, and especially the countries of developed Europe. The absolute difference, as can be seen from the graph, is greater between the countries of the region and CEE/Baltics, than between CEE/Baltics and Developed Europe.

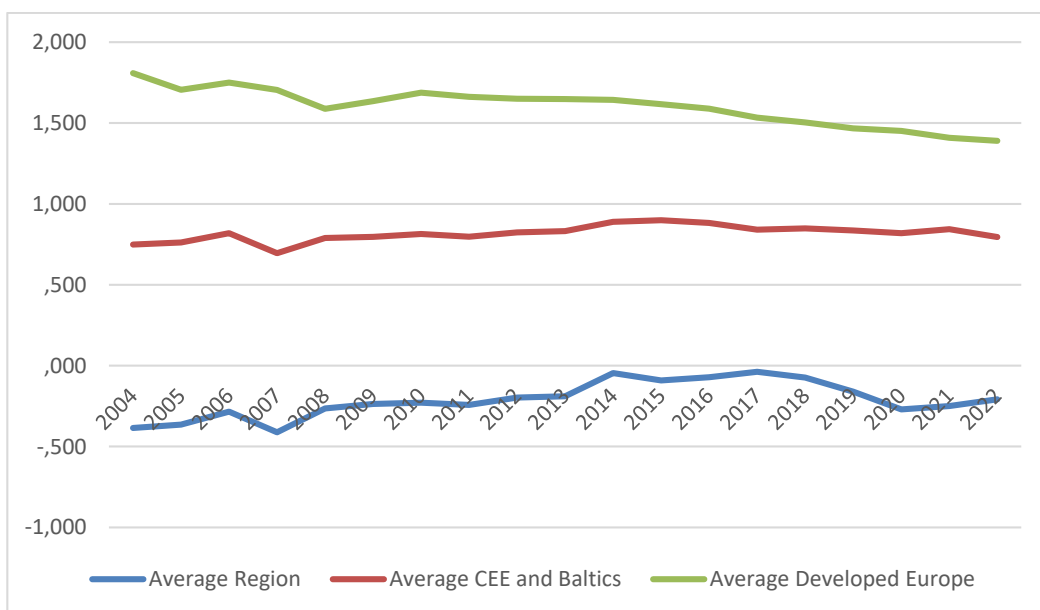
Figure 2: Comparison of *Political Stability* between averages in WB, CEE and Baltics and Developed Europe



Source: World Governance Indicators Database, 2023

From the graph, we can see that political stability in the countries of Central Europe and the Baltics is at the same level as in the countries of developed Europe, while the countries of the region still lag behind the other two sample countries.

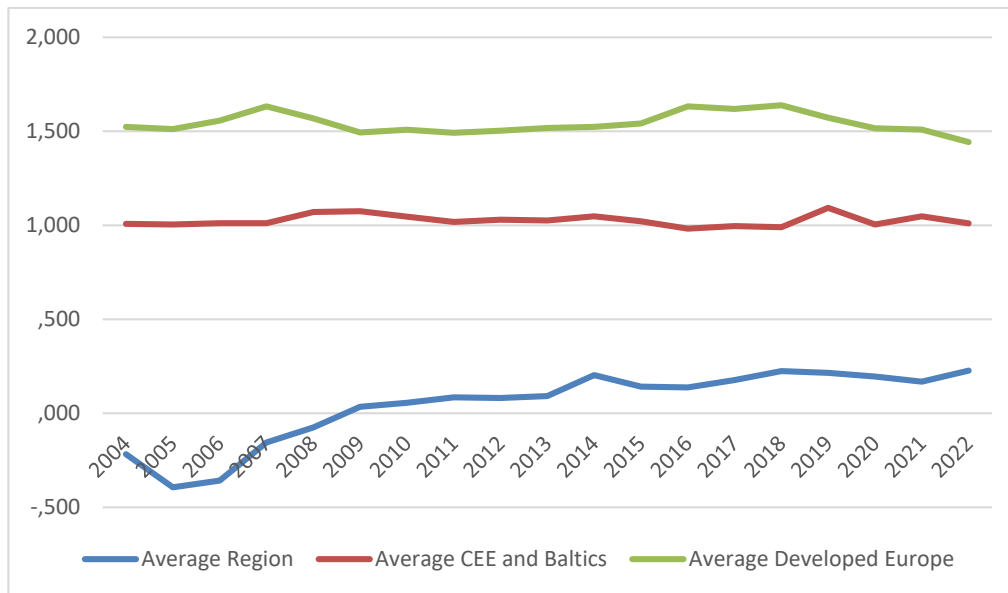
Figure 3: Comparison of *Government Effectiveness* between averages in WB, CEE and Baltics and Developed Europe



Source: World Governance Indicators Database, 2023

Figure 3 looks a lot different than the previous figure 2. There is a clear difference in the efficiency of public authorities in all three regions, of course with the expected order, where the leading countries are developed Europe, then New Europe, and the countries of the region are significantly behind.

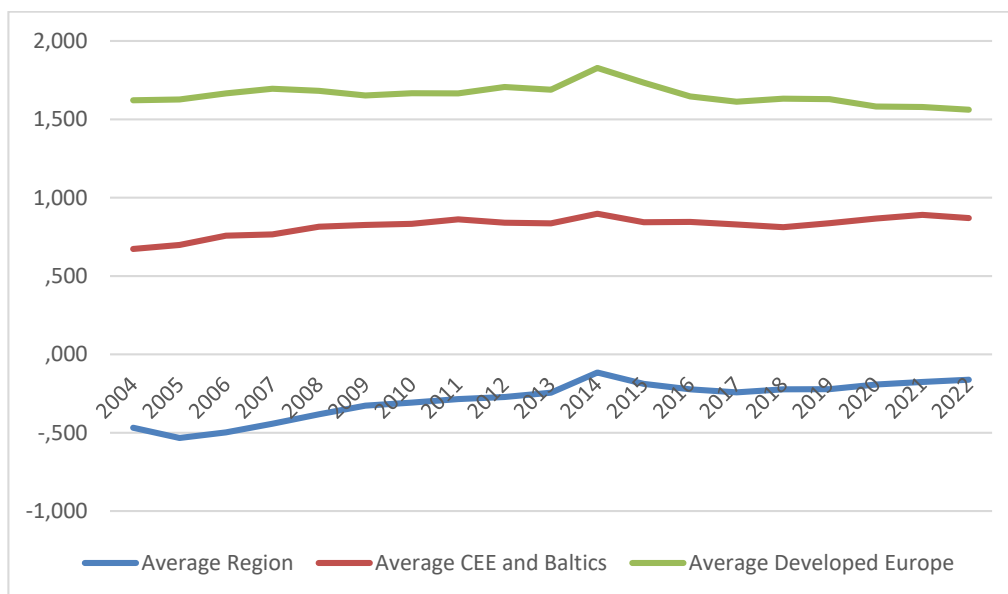
Figure 4: Comparison of *Regulatory Quality* between averages in WB, CEE and Baltics and Developed Europe



Source: World Governance Indicators Database, 2023

The analysis of the graph indicates that there is progress in the construction of the institutional environment according to the Regulatory Quality variable in the countries of the region, while the countries of Europe are stagnating in both samples. However, their regulatory framework is at a much higher level than in the countries of the region.

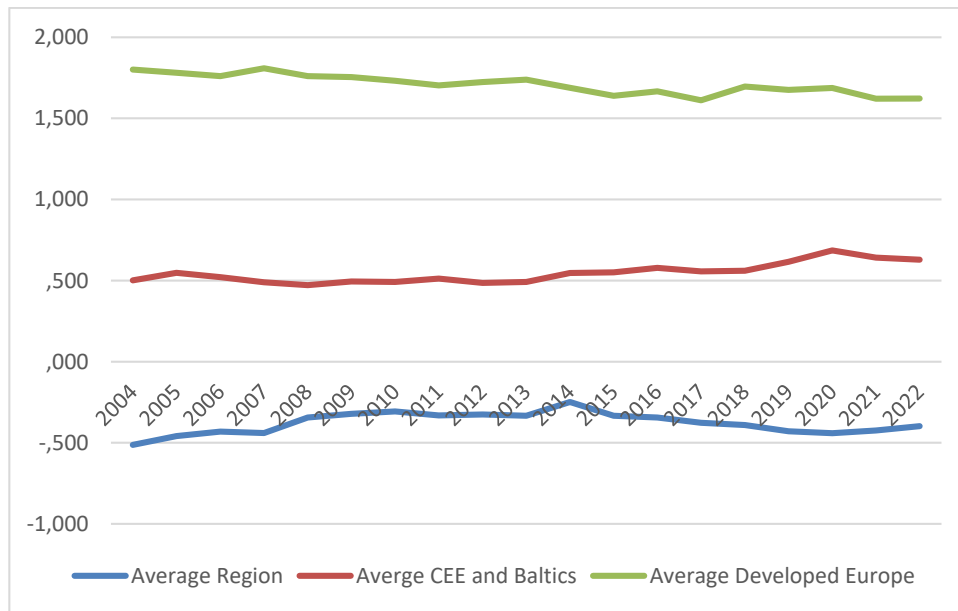
Figure 5: Comparison of *Rule of Law* between averages in WB, CEE and Baltics and Developed Europe



Source: World Governance Indicators Database, 2023

The progress of the countries of the region according to this indicator is noticeable, although they are still significantly behind the European countries from both samples. The rule of law is perhaps the most significant indicator of progress in building institutions, along with the next indicator shown in the following graph.

Figure 6: Comparison of *Control of Corruption* between averages in WB, CEE and Baltics and Developed Europe



Source: World Governance Indicators Database, 2023

Control of Corruption is progressing but very slowly in the countries of the region. As expected, the countries of the region lag behind the countries of New Europe, and New Europe lags behind developed Europe. However, if we were to look at the precise data provided in the appendix of the paper, we would see that according to this indicator, the countries of developed Europe are even regressing slightly, although they are still far above the average of the other two samples.

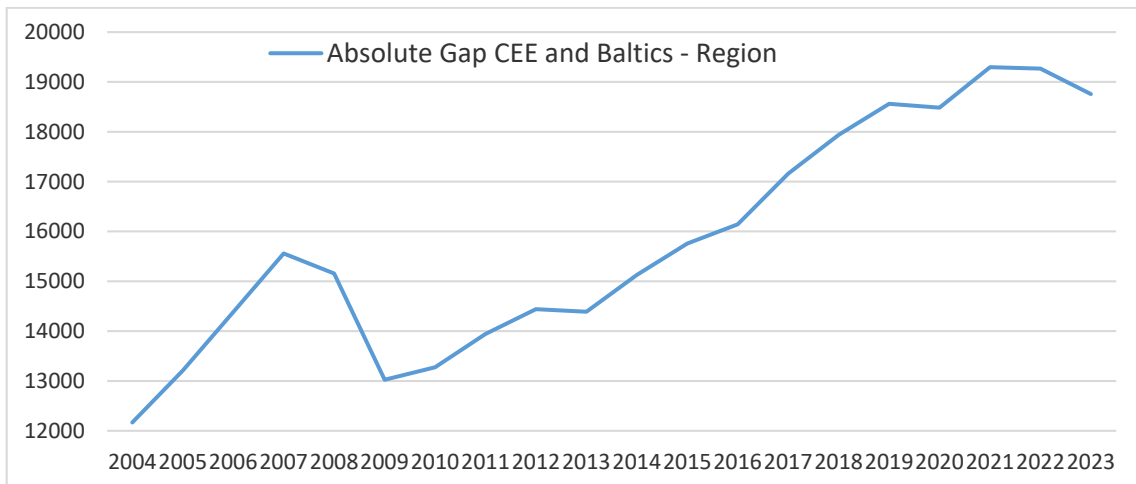
4. Economic development and institutional quality

4.1. The gap between the economic development of the countries of the region and CEE/Baltics

Before showing the high degree of correlation between the development of institutions and economic development measured by various indicators, we will present very interesting graphs that show that the countries of Central Europe and the Baltics are catching up with the countries of Developed Europe, while the gap between the countries of the region and the countries of Central Europe and the Baltics is increasing in terms of economic development.

It is illusory to compare the countries of the region with the developed countries of Europe, so we make a comparison between the following samples: WB with CEE/Baltics and CEE/Baltics with Developed Europe.

Figure 7: Absolute gap between CEE/Baltics and countries of the region



Source: World Economic Outlook Database, October 2023, Author's calculation based on Table 10

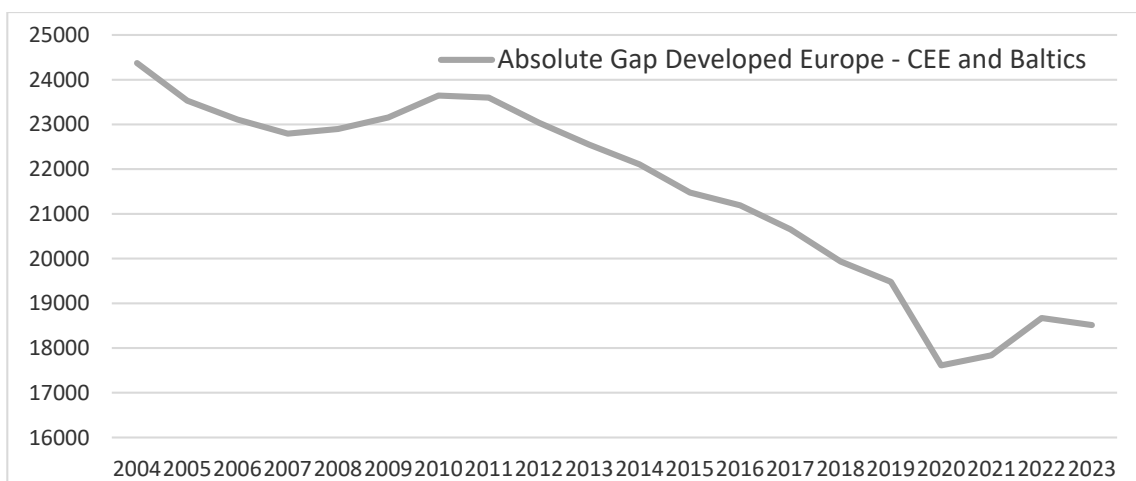
The graph shows the absolute difference between GDP per capita on average in the countries of the region and the countries of Central Europe and the Baltics. We see that the gap is increasing over time in absolute terms. The difference between GDP per capita in the region and the countries of New Europe in 2004 amounted to 12 thousand dollars per purchasing power parity, and in 2023 it will amount to almost 19 thousand dollars.

The situation is completely different if we talk about the gap between the countries of New Europe and the countries of developed Europe. This gap is narrowing as shown in the following chart.

The gap between the countries of New Europe and developed Europe in 2004 amounted to slightly more than 24 thousand dollars per purchasing power parity, and in 2023 it will amount to about 18 thousand dollars.

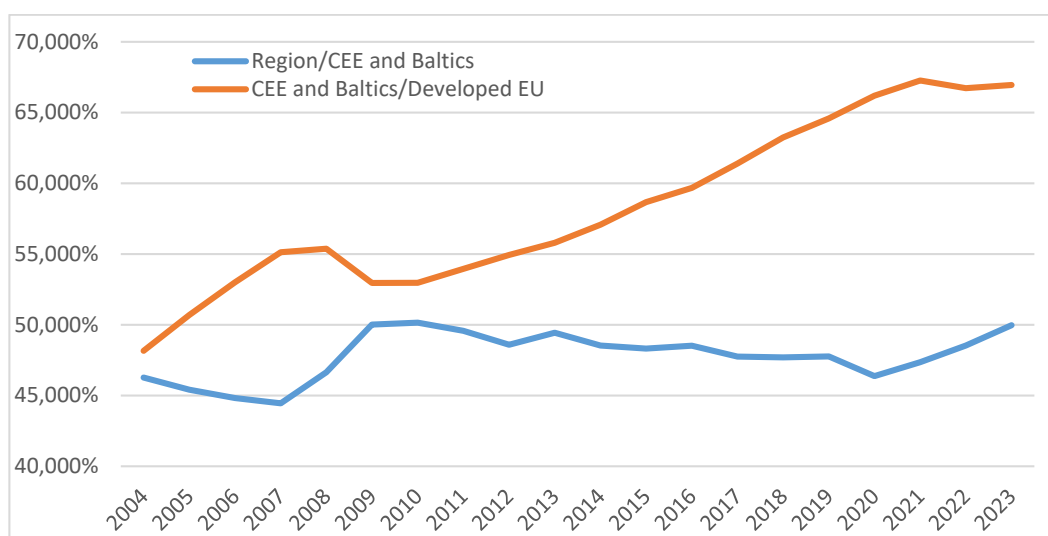
The following graph shows how much the countries of the region lag behind New Europe, and how much New Europe lags behind developed Europe, in a relative terms. What is noticeable from the graph is that since 2004 the New Europe is catching up with the developed Europe, while the countries of the region are stagnating in relation to the New Europe in a relative terms.

Figure 8: Absolute gap between Developed Europe and countries of the New Europe



Source: World Economic Outlook Database, October 2023, Author's calculation based on Table 10

Figure 9: The relative backwardness of the countries of the region compared to New Europe



Source: World Economic Outlook Database, October 2023, Author's calculation based on Table 10

GDP per capita measured in purchasing power parity in the countries of the region is at the level of 50% compared to the countries of New Europe and since 2004 there has been no significant progress, while the countries of the New Europe were catching up with developed Europe. In 2004, their GDP per capita was below 50% of the GDP of developed Europe, while today it is at the level of 67% of the GDP of developed Europe.

4.2. Correlation between GDP per capita in PPP and institutional quality

The following table shows the correlation coefficients between each of the variables of institutional quality and economic development measured by GDP per capita by purchasing power parity. It is clear that there is a very strong and positive correlation between the quality of institutions and economic development.

Table 2: Correlation between GDP per capita in PPP and institutional quality

	Gross domestic product per capita, constant prices in PPP for 2023	Voice and Accountability	Political Stability	Government Effectiveness	Regulatory Quality	Rule of Law	Control of Corruption
Albania	15983	0,14	0,11	0,07	0,16	-0,17	-0,41
Bosnia and Herzegovina	16038	-0,33	-0,44	-1,06	-0,16	-0,31	-0,68
Serbia	21300	-0,10	-0,17	0,07	0,14	-0,11	-0,46
Montenegro	22874	0,27	-0,06	-0,03	0,54	-0,13	-0,12
North Macedonia	17474	0,16	0,12	-0,08	0,45	-0,10	-0,32
Slovak Republic	34495	0,89	0,44	0,38	0,85	0,62	0,21
Slovenia	41993	0,97	0,71	1,07	0,69	0,97	0,77
Czechia	40048	1,04	0,82	1,09	1,39	1,10	0,66
Hungary	35617	0,42	0,64	0,53	0,41	0,42	-0,10
Poland	37199	0,60	0,50	0,26	0,72	0,43	0,51
Estonia	36952	1,20	0,72	1,34	1,56	1,43	1,54
Lithuania	40227	1,06	0,65	0,99	1,30	1,06	0,75
Latvia	33404	0,93	0,48	0,69	1,17	0,92	0,69
Germany	53945	1,41	0,61	1,29	1,52	1,53	1,82
Austria	56421	1,41	0,64	1,47	1,28	1,71	1,26
Netherlands	59891	1,54	0,72	1,58	1,71	1,66	1,92
Belgium	53762	1,29	0,58	1,23	1,25	1,35	1,50
Correlation Coefficient		0,93	0,79	0,89	0,83	0,94	0,91
Determination Coefficient		0,86	0,63	0,79	0,70	0,88	0,84

Source: World Governance Indicators Database, 2023 and World Economic Outlook Database, October 2023

The correlation is strongest between the variables Rule of Law and economic development and Control of Corruption and economic development.

4.3. Correlation between HDI and institutional quality

In our earlier works, we exclusively used GDP per capita in PPP as a measure of economic development. The contribution of this paper is that we verified the positive correlation between the quality of institutions and economic development by comparing the quality of institutions and economic development measured by the Human Development Index. Results are shown in the next table.

Table 3: Correlation between institutional quality and HDI

	Human Development Index for 2021 (value)	Voice and Accountability	Political Stability	Government Effectiveness	Regulatory Quality	Rule of Law	Control of Corruption
Albania	0,796	0,14	0,11	0,07	0,16	-0,17	-0,41
Bosnia and Herzegovina	0,780	-0,33	-0,44	-1,06	-0,16	-0,31	-0,68
Serbia	0,802	-0,10	-0,17	0,07	0,14	-0,11	-0,46
Montenegro	0,832	0,27	-0,06	-0,03	0,54	-0,13	-0,12
North Macedonia	0,770	0,16	0,12	-0,08	0,45	-0,10	-0,32
Slovak Republic	0,848	0,89	0,44	0,38	0,85	0,62	0,21
Slovenia	0,918	0,97	0,71	1,07	0,69	0,97	0,77
Czechia	0,889	1,04	0,82	1,09	1,39	1,10	0,66
Hungary	0,846	0,42	0,64	0,53	0,41	0,42	-0,10
Poland	0,876	0,60	0,50	0,26	0,72	0,43	0,51
Estonia	0,890	1,20	0,72	1,34	1,56	1,43	1,54
Lithuania	0,875	1,06	0,65	0,99	1,30	1,06	0,75
Latvia	0,863	0,93	0,48	0,69	1,17	0,92	0,69
Germany	0,942	1,41	0,61	1,29	1,52	1,53	1,82
Austria	0,916	1,41	0,64	1,47	1,28	1,71	1,26
Netherlands	0,941	1,54	0,72	1,58	1,71	1,66	1,92
Belgium	0,937	1,29	0,58	1,23	1,25	1,35	1,50
Correlation Coefficient		0,93	0,81	0,90	0,84	0,93	0,94
Determination Coefficient		0,86	0,66	0,81	0,71	0,86	0,88

Source: World Governance Indicators Database, 2023 and World Economic Outlook Database, October 2023

As can be seen from the table, almost identical results were obtained. A strong correlation between HDI and institutional quality is more than evident.

Conclusions

Institutions or the institutional environment and their quality are considered by many authors to be one of the important factors of economic growth and development, in addition to the traditional factors: labor, capital and technical progress. According to the postulates of Douglas North and the postulates of the New Institutional Economy, institutions are defined as the rules of the game, written and unwritten rules of the game that structure political, economic and overall social movements. It is important to distinguish the concept of institutions from organizations. Organizations are only entities responsible for enforcing the rules of the game.

According to some other authors, institutions are defined as social infrastructure, which includes the rules of the game and government policies within which the economic environment is determined, where individuals accumulate skills and firms accumulate capital and produce for the market.

In this work, institutions were measured by *World Governance Indicators* database, which observes 6 indicators of the quality of institutions: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruption.

We compared the quality of the institutions of the countries of the region with the countries of the so-called New Europe (countries of Central Europe and Baltics) that gained membership in 2004, but also with the most developed countries of European Union led by the Germany.

From the analysis of all six indicators of the quality of institutions, we conclude that the countries of the region are far behind the countries of developed Europe, but also the countries of New Europe.

We performed a correlation analysis between the quality of institutions and economic development measured by GDP per capita at purchasing power parity. The research results show that the countries of the region significantly lag behind the countries of Central Europe and the Baltics when it comes to the quality of institutions, and that the countries of Central Europe still lag behind developed Europe.

Our research results also showed a high and positive correlation between the quality of institutions and economic development measured by GDP per capita in purchasing power parity, which is still a standard and generally accepted indicator of economic development. In this paper, in addition to GDP per capita, we also used the Human Development Index as a measure of the economic development of a country and correlated it with the development of institutions. Correlation analysis between the quality of institutions and economic development, measured in both ways, showed an extremely strong positive correlation between the development of institutions and economic development and confirmed our earlier assumptions that institutions are one of the important factors in the development of a country.

Given that the countries of the region are still in the transition phase, results also point to the conclusion that our countries are still quite stuck in transition and that it is necessary to speed up key reforms such as the rule of law, the fight against corruption and the effectiveness of government policies in order to catch up with the more developed countries of Central Europe and the Baltics.

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APPENDICES: TABLES

Table 4. Values of indicator Voice and Accountability (VACC)

Country Name	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Albania	0,01	0,00	0,08	0,11	0,17	0,14	0,12	0,06	0,02	0,05	0,14	0,16	0,17	0,20	0,19	0,14	0,09	0,09	0,14
Bosnia and Herzegovina	0,17	0,21	0,19	0,13	0,02	0,00	-0,08	-0,16	-0,10	-0,12	-0,07	-0,10	-0,13	-0,21	-0,26	-0,24	-0,32	-0,32	-0,33
Serbia	-0,18	-0,21	0,21	0,31	0,28	0,33	0,29	0,28	0,20	0,29	0,21	0,23	0,20	0,12	-0,01	-0,05	-0,12	-0,13	-0,10
Montenegro	0,11	0,13	0,26	0,26	0,24	0,24	0,19	0,21	0,22	0,18	0,16	0,14	0,08	0,12	0,06	0,02	0,04	0,17	0,27
North Macedonia	-0,16	-0,10	0,17	0,28	0,20	0,17	0,11	-0,04	-0,03	-0,06	-0,14	-0,18	-0,23	-0,14	-0,03	-0,02	0,06	0,14	0,16
Average Region	-0,01	0,01	0,18	0,22	0,18	0,18	0,13	0,07	0,06	0,07	0,06	0,05	0,02	0,02	-0,01	-0,03	-0,05	-0,01	0,03
Slovak Republic	0,95	0,90	0,93	0,95	0,94	0,88	0,91	0,97	0,97	0,96	0,96	0,97	0,96	0,91	0,85	0,86	0,88	0,90	0,89
Slovenia	1,11	1,09	1,07	1,06	1,02	1,06	1,05	1,06	1,00	1,00	0,96	0,99	1,01	1,01	0,97	0,98	0,93	0,91	0,97
Czechia	0,95	0,91	0,96	1,00	1,03	1,03	1,01	1,02	0,97	0,98	1,03	1,04	1,03	0,88	0,82	0,83	0,98	1,01	1,04
Hungary	1,15	1,18	1,02	1,04	0,97	0,91	0,89	0,84	0,75	0,74	0,55	0,56	0,40	0,54	0,49	0,34	0,39	0,40	0,42
Poland	1,02	0,94	0,80	0,88	0,95	1,03	1,04	1,03	1,06	1,00	1,11	1,04	0,84	0,78	0,71	0,67	0,62	0,58	0,60
Estonia	1,09	0,99	1,07	1,07	1,09	1,09	1,11	1,13	1,11	1,12	1,17	1,19	1,21	1,21	1,19	1,18	1,17	1,18	1,20
Lithuania	0,88	0,90	0,86	0,89	0,85	0,90	0,92	0,86	0,93	0,94	0,96	0,97	1,00	0,99	0,90	0,99	1,00	1,03	1,06
Latvia	0,70	0,78	0,85	0,83	0,78	0,85	0,79	0,74	0,78	0,77	0,85	0,85	0,84	0,80	0,79	0,86	0,87	0,90	0,93
Average CEE and Baltics	0,98	0,96	0,94	0,96	0,95	0,97	0,97	0,96	0,95	0,94	0,95	0,95	0,91	0,89	0,84	0,84	0,85	0,86	0,89
Germany	1,50	1,49	1,37	1,34	1,34	1,33	1,30	1,35	1,39	1,41	1,44	1,42	1,36	1,43	1,44	1,35	1,37	1,42	1,41
Austria	1,48	1,38	1,37	1,37	1,36	1,39	1,43	1,40	1,45	1,46	1,39	1,38	1,34	1,39	1,40	1,34	1,39	1,39	1,41
Netherlands	1,70	1,67	1,54	1,52	1,48	1,46	1,45	1,54	1,61	1,57	1,55	1,56	1,54	1,50	1,50	1,48	1,52	1,49	1,54
Belgium	1,44	1,42	1,34	1,36	1,32	1,35	1,36	1,33	1,35	1,37	1,37	1,39	1,38	1,34	1,33	1,31	1,28	1,27	1,29
Average Developed Europe	1,53	1,49	1,41	1,4	1,38	1,38	1,38	1,4	1,45	1,45	1,44	1,44	1,4	1,41	1,42	1,37	1,39	1,39	1,41

Source: *World Governance Indicators Database*, 2023 and Author's calculation

Table 5. Values of indicator *Political Stability (PS)*

Country Name	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Albania	-0,43	-0,51	-0,51	-0,20	-0,03	-0,05	-0,19	-0,28	-0,14	0,09	0,49	0,34	0,34	0,37	0,37	0,11	0,09	0,20	0,11
Bosnia and Herzegovina	0,02	-0,50	-0,44	-0,63	-0,54	-0,67	-0,69	-0,82	-0,54	-0,40	-0,02	-0,40	-0,40	-0,35	-0,40	-0,42	-0,45	-0,42	-0,44
Serbia	-0,51	-0,76	-0,54	-0,59	-0,54	-0,48	-0,42	-0,28	-0,22	-0,08	0,18	0,23	0,13	0,08	0,01	-0,08	-0,17	-0,09	-0,17
Montenegro	0,05	0,11	0,77	0,82	0,58	0,57	0,60	0,50	0,22	0,14	0,27	-0,06	0,04	0,06	-0,06	-0,05	-0,06
North Macedonia	-0,85	-1,16	-0,74	-0,43	-0,30	-0,30	-0,52	-0,62	-0,49	-0,42	0,26	-0,29	-0,36	-0,26	-0,21	0,01	0,11	0,06	0,12
Average Region	-0,44	-0,73	-0,44	-0,35	-0,13	-0,13	-0,25	-0,29	-0,16	-0,06	0,23	0,00	0,00	-0,04	-0,04	-0,07	-0,10	-0,06	-0,09
Slovak Republic	0,59	0,90	0,78	1,04	1,08	0,92	1,05	0,97	1,09	1,12	1,04	0,87	0,71	0,90	0,74	0,67	0,63	0,62	0,44
Slovenia	1,08	1,09	1,09	1,10	1,15	0,94	0,87	0,97	0,94	0,88	0,97	0,95	0,98	0,87	0,89	0,80	0,70	0,76	0,71
Czechia	0,65	0,94	1,05	1,02	1,05	0,91	0,99	1,11	1,05	1,08	0,99	0,97	0,96	0,99	1,03	0,94	0,91	0,95	0,82
Hungary	0,83	1,00	0,99	0,75	0,75	0,54	0,69	0,74	0,68	0,80	0,67	0,74	0,64	0,80	0,74	0,76	0,84	0,80	0,64
Poland	0,15	0,36	0,35	0,68	0,91	0,94	1,02	1,07	1,05	0,97	0,84	0,86	0,50	0,51	0,48	0,55	0,49	0,49	0,50
Estonia	0,70	0,61	0,74	0,63	0,57	0,57	0,66	0,61	0,64	0,75	0,78	0,61	0,66	0,64	0,58	0,63	0,71	0,75	0,72
Lithuania	0,77	0,78	0,87	0,82	0,75	0,63	0,72	0,67	0,79	0,96	0,74	0,75	0,81	0,77	0,73	0,77	0,92	0,81	0,65
Latvia	0,62	0,81	0,84	0,56	0,20	0,35	0,53	0,32	0,45	0,59	0,49	0,44	0,47	0,45	0,40	0,43	0,46	0,67	0,48
Average CEE and Baltics	0,67	0,81	0,84	0,82	0,81	0,72	0,81	0,81	0,83	0,90	0,81	0,77	0,72	0,74	0,70	0,69	0,71	0,73	0,62
Germany	0,64	0,89	1,03	1,00	0,94	0,86	0,80	0,84	0,78	0,93	0,93	0,69	0,67	0,57	0,58	0,55	0,64	0,73	0,61
Austria	1,09	1,10	1,07	1,28	1,34	1,19	1,15	1,19	1,34	1,36	1,27	1,13	0,89	1,03	0,88	0,89	0,89	0,90	0,64
Netherlands	1,02	0,99	0,90	0,78	0,86	0,95	0,94	1,11	1,19	1,14	1,05	0,91	0,90	0,91	0,84	0,82	0,83	0,89	0,72
Belgium	0,71	0,79	0,86	0,76	0,62	0,82	0,81	0,95	0,92	0,94	0,70	0,58	0,43	0,42	0,39	0,46	0,52	0,66	0,58
Average Developed Europe	0,86	0,94	0,96	0,95	0,94	0,95	0,93	1,03	1,06	1,09	0,99	0,83	0,72	0,73	0,67	0,68	0,72	0,8	0,64

Source: *World Governance Indicators Database*, 2023 and Author's calculation

Table 6. Values of indicator Government Effectiveness (GE)

Country Name	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Albania	-0,41	-0,70	-0,58	-0,43	-0,37	-0,26	-0,28	-0,20	-0,27	-0,32	-0,05	0,03	0,03	0,10	0,08	-0,06	-0,15	-0,04	0,07
Bosnia and Herzegovina	-0,70	-0,76	-0,63	-0,86	-0,60	-0,72	-0,74	-0,74	-0,45	-0,43	-0,49	-0,62	-0,45	-0,52	-0,67	-0,71	-1,08	-1,07	-1,06
Serbia	-0,25	-0,36	-0,24	-0,26	-0,25	-0,07	-0,08	-0,13	-0,17	-0,18	0,00	0,00	-0,04	0,07	0,07	-0,02	-0,04	0,01	0,07
Montenegro	..	0,33	0,16	-0,28	-0,01	-0,01	0,13	0,08	0,12	0,15	0,29	0,17	0,14	0,17	0,09	0,11	-0,11	-0,03	-0,03
North Macedonia	-0,18	-0,33	-0,13	-0,24	-0,09	-0,13	-0,18	-0,22	-0,21	-0,17	0,02	-0,03	-0,03	-0,02	0,06	-0,12	0,03	-0,12	-0,08
Average Region	-0,39	-0,36	-0,28	-0,41	-0,26	-0,24	-0,23	-0,24	-0,20	-0,19	-0,05	-0,09	-0,07	-0,04	-0,07	-0,16	-0,27	-0,25	-0,21
Slovak Republic	0,82	0,88	0,83	0,69	0,85	0,86	0,78	0,78	0,78	0,73	0,79	0,74	0,79	0,67	0,58	0,55	0,50	0,49	0,38
Slovenia	0,90	0,89	0,95	0,89	1,11	1,14	1,01	0,98	1,02	1,00	1,00	0,94	1,09	1,13	1,08	1,04	1,12	1,14	1,07
Czechia	0,86	0,91	1,08	0,85	0,95	0,87	0,90	0,92	0,92	0,92	1,03	1,03	1,01	1,03	0,95	0,92	0,91	1,07	1,09
Hungary	0,80	0,75	0,84	0,69	0,70	0,67	0,64	0,65	0,61	0,68	0,58	0,51	0,46	0,48	0,44	0,45	0,54	0,60	0,53
Poland	0,44	0,45	0,33	0,36	0,46	0,52	0,63	0,60	0,66	0,66	0,77	0,74	0,65	0,55	0,55	0,51	0,32	0,25	0,26
Estonia	0,90	0,94	1,15	1,01	1,16	1,00	1,08	1,07	0,95	0,97	1,01	1,04	1,06	1,07	1,15	1,14	1,30	1,35	1,34
Lithuania	0,69	0,76	0,72	0,66	0,56	0,69	0,74	0,70	0,83	0,83	0,98	1,15	1,03	0,93	1,03	1,01	1,02	1,02	0,99
Latvia	0,57	0,53	0,65	0,43	0,52	0,62	0,72	0,69	0,83	0,88	0,95	1,05	0,97	0,87	1,00	1,07	0,84	0,83	0,69
Average CEE and Baltics	0,75	0,76	0,82	0,70	0,79	0,80	0,81	0,80	0,82	0,83	0,89	0,90	0,88	0,84	0,85	0,84	0,82	0,84	0,80
Germany	1,47	1,50	1,65	1,63	1,51	1,58	1,52	1,50	1,53	1,51	1,67	1,66	1,66	1,61	1,52	1,50	1,31	1,29	1,29
Austria	1,84	1,68	1,83	1,86	1,77	1,66	1,81	1,60	1,56	1,57	1,55	1,45	1,48	1,47	1,46	1,49	1,61	1,53	1,47
Netherlands	2,07	1,94	1,78	1,72	1,69	1,74	1,77	1,82	1,84	1,81	1,84	1,83	1,82	1,81	1,81	1,77	1,81	1,73	1,58
Belgium	1,85	1,71	1,74	1,60	1,38	1,57	1,65	1,72	1,67	1,70	1,52	1,53	1,40	1,24	1,22	1,11	1,08	1,09	1,23
Average Developed Europe	1,81	1,71	1,75	1,7	1,59	1,64	1,69	1,66	1,65	1,65	1,64	1,62	1,59	1,53	1,5	1,47	1,45	1,41	1,39

Source: *World Governance Indicators Database, 2023* and Author's calculation

Table 7. Values of indicator Regulatory Quality (RQ)

Country Name	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Albania	-0,19	-0,40	-0,15	0,03	0,14	0,24	0,23	0,28	0,24	0,25	0,28	0,17	0,19	0,22	0,26	0,27	0,22	0,18	0,16
Bosnia and Herzegovina	-0,23	-0,58	-0,47	-0,29	-0,18	-0,11	-0,12	-0,06	-0,06	-0,07	-0,04	-0,18	-0,14	-0,06	-0,14	-0,13	-0,18	-0,20	-0,16
Serbia	-0,47	-0,62	-0,53	-0,44	-0,39	-0,18	-0,07	-0,02	-0,07	-0,06	0,18	0,14	0,02	-0,05	0,10	0,10	0,08	0,04	0,14
Montenegro	..	-0,13	-0,55	-0,13	-0,07	0,03	-0,01	0,00	0,03	0,09	0,18	0,23	0,23	0,32	0,39	0,39	0,42	0,42	0,54
North Macedonia	0,02	-0,23	-0,09	0,04	0,12	0,19	0,24	0,22	0,26	0,25	0,42	0,36	0,38	0,44	0,52	0,44	0,44	0,41	0,45
Average Region	-0,22	-0,39	-0,36	-0,15	-0,08	0,03	0,06	0,08	0,08	0,09	0,20	0,14	0,14	0,18	0,22	0,22	0,20	0,17	0,23
Slovak Republic	1,08	1,13	1,08	0,97	1,08	1,05	1,00	1,00	1,04	0,93	0,89	0,77	0,88	0,81	0,80	1,00	0,77	0,87	0,85
Slovenia	0,84	0,88	0,79	0,80	0,85	0,91	0,76	0,69	0,63	0,62	0,66	0,61	0,63	0,56	0,64	1,00	0,91	0,82	0,69
Czechia	1,00	1,11	1,11	1,05	1,22	1,31	1,30	1,20	1,05	1,08	1,00	1,08	0,97	1,22	1,27	1,24	1,23	1,34	1,39
Hungary	1,17	1,05	1,20	1,21	1,17	1,08	1,01	1,03	0,98	0,90	0,75	0,75	0,59	0,64	0,56	0,59	0,47	0,49	0,41
Poland	0,76	0,81	0,70	0,77	0,84	0,98	1,02	0,96	1,00	1,05	1,06	0,95	0,91	0,80	0,87	1,01	0,85	0,83	0,72
Estonia	1,23	1,25	1,29	1,32	1,39	1,39	1,39	1,39	1,41	1,44	1,67	1,66	1,69	1,63	1,54	1,58	1,53	1,55	1,56
Lithuania	1,06	0,94	0,97	1,01	1,04	0,95	0,96	0,93	1,12	1,15	1,19	1,26	1,12	1,15	1,09	1,15	1,08	1,27	1,30
Latvia	0,92	0,87	0,93	0,95	0,97	0,92	0,93	0,95	1,01	1,04	1,17	1,07	1,07	1,14	1,13	1,18	1,18	1,22	1,17
Average CEE and Baltics	1,01	1,00	1,01	1,01	1,07	1,07	1,05	1,02	1,03	1,03	1,05	1,02	0,98	1,00	0,99	1,09	1,00	1,05	1,01
Germany	1,47	1,52	1,57	1,62	1,49	1,52	1,57	1,55	1,53	1,54	1,70	1,71	1,81	1,77	1,76	1,71	1,58	1,63	1,52
Austria	1,51	1,60	1,64	1,69	1,61	1,45	1,45	1,38	1,52	1,48	1,48	1,39	1,43	1,43	1,52	1,45	1,40	1,34	1,28
Netherlands	1,77	1,65	1,68	1,80	1,78	1,70	1,73	1,80	1,75	1,76	1,76	1,79	1,96	2,04	2,01	1,85	1,75	1,74	1,71
Belgium	1,35	1,27	1,33	1,42	1,41	1,31	1,28	1,24	1,22	1,28	1,15	1,27	1,33	1,23	1,26	1,28	1,34	1,33	1,25
Average Developed Europe	1,52	1,51	1,56	1,63	1,57	1,49	1,51	1,49	1,5	1,52	1,52	1,54	1,63	1,62	1,64	1,57	1,52	1,51	1,44

Source: *World Governance Indicators Database, 2023* and Author's calculation

Table 8. Values of indicator *Rule of Law (ROL)*

Country Name	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Albania	-0,70	-0,76	-0,70	-0,66	-0,60	-0,49	-0,39	-0,44	-0,52	-0,52	-0,31	-0,32	-0,32	-0,41	-0,41	-0,43	-0,38	-0,28	-0,17
Bosnia and Herzegovina	-0,49	-0,52	-0,50	-0,47	-0,41	-0,36	-0,36	-0,33	-0,20	-0,14	-0,13	-0,26	-0,19	-0,20	-0,23	-0,23	-0,32	-0,30	-0,31
Serbia	-0,74	-0,95	-0,54	-0,46	-0,49	-0,47	-0,43	-0,33	-0,33	-0,30	-0,09	-0,08	-0,13	-0,18	-0,17	-0,14	-0,12	-0,11	-0,11
Montenegro	-0,22	-0,14	-0,21	-0,19	-0,09	-0,02	-0,06	-0,06	-0,06	-0,03	0,01	-0,04	-0,13	-0,11	0,00	-0,01	-0,04	-0,08	-0,13
North Macedonia	-0,19	-0,30	-0,54	-0,42	-0,32	-0,29	-0,30	-0,27	-0,25	-0,23	-0,06	-0,24	-0,34	-0,31	-0,31	-0,31	-0,11	-0,10	-0,10
Average Region	-0,47	-0,53	-0,50	-0,44	-0,38	-0,33	-0,31	-0,29	-0,27	-0,24	-0,12	-0,19	-0,22	-0,24	-0,22	-0,22	-0,19	-0,18	-0,16
Slovak Republic	0,46	0,49	0,49	0,43	0,53	0,53	0,56	0,60	0,49	0,46	0,49	0,47	0,60	0,51	0,47	0,50	0,65	0,68	0,62
Slovenia	0,91	0,88	0,90	0,95	1,01	1,07	1,00	1,05	1,01	0,99	1,00	0,95	1,05	0,99	1,02	1,08	1,04	1,00	0,97
Czechia	0,76	0,86	0,86	0,88	0,90	0,96	0,93	1,02	1,02	1,02	1,14	1,11	0,99	1,09	1,02	1,02	1,02	1,09	1,10
Hungary	0,85	0,84	0,98	0,94	0,91	0,77	0,77	0,76	0,61	0,58	0,51	0,38	0,41	0,54	0,55	0,50	0,49	0,51	0,42
Poland	0,42	0,47	0,38	0,41	0,55	0,65	0,71	0,79	0,82	0,84	0,87	0,80	0,59	0,40	0,38	0,39	0,52	0,43	0,43
Estonia	0,88	0,90	1,13	1,12	1,16	1,12	1,15	1,18	1,15	1,19	1,37	1,30	1,19	1,25	1,20	1,24	1,34	1,39	1,43
Lithuania	0,56	0,58	0,71	0,69	0,68	0,72	0,78	0,77	0,84	0,83	0,94	0,98	1,00	0,96	0,92	0,99	0,95	1,07	1,06
Latvia	0,54	0,57	0,62	0,72	0,78	0,79	0,76	0,74	0,78	0,76	0,87	0,77	0,93	0,90	0,92	0,98	0,92	0,95	0,92
Average CEE and Baltics	0,67	0,70	0,76	0,77	0,81	0,83	0,83	0,86	0,84	0,84	0,90	0,84	0,85	0,83	0,81	0,84	0,87	0,89	0,87
Germany	1,62	1,65	1,77	1,76	1,73	1,65	1,64	1,62	1,67	1,64	1,85	1,76	1,58	1,57	1,59	1,58	1,52	1,57	1,53
Austria	1,82	1,85	1,90	1,94	1,91	1,78	1,80	1,80	1,86	1,83	1,94	1,81	1,76	1,80	1,85	1,86	1,77	1,75	1,71
Netherlands	1,74	1,75	1,77	1,77	1,75	1,81	1,81	1,81	1,85	1,83	1,97	1,91	1,85	1,76	1,74	1,74	1,71	1,70	1,66
Belgium	1,31	1,26	1,22	1,32	1,34	1,38	1,42	1,43	1,45	1,46	1,55	1,46	1,39	1,32	1,34	1,34	1,33	1,29	1,35
Average Developed Europe	1,62	1,63	1,67	1,7	1,68	1,65	1,67	1,67	1,71	1,69	1,83	1,73	1,65	1,61	1,63	1,63	1,58	1,58	1,56

Source: *World Governance Indicators Database, 2023* and Author's calculation

Table 9. Values of indicator *Control of Corruption (COC)*

Country Name	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Albania	-0,72	-0,81	-0,79	-0,71	-0,61	-0,55	-0,53	-0,70	-0,78	-0,75	-0,59	-0,54	-0,47	-0,48	-0,55	-0,56	-0,57	-0,58	-0,41
Bosnia and Herzegovina	-0,32	-0,23	-0,30	-0,37	-0,36	-0,38	-0,34	-0,33	-0,31	-0,24	-0,30	-0,42	-0,49	-0,55	-0,61	-0,65	-0,64	-0,67	-0,68
Serbia	-0,49	-0,41	-0,28	-0,34	-0,30	-0,32	-0,32	-0,30	-0,36	-0,33	-0,25	-0,32	-0,38	-0,44	-0,40	-0,45	-0,45	-0,46	-0,46
Montenegro	-0,47	-0,35	-0,38	-0,38	-0,24	-0,22	-0,25	-0,22	-0,13	-0,29	-0,08	-0,12	-0,08	-0,08	-0,01	-0,03	-0,04	-0,04	-0,12
North Macedonia	-0,55	-0,49	-0,40	-0,39	-0,21	-0,15	-0,09	-0,11	-0,05	-0,06	-0,03	-0,27	-0,30	-0,33	-0,39	-0,46	-0,49	-0,37	-0,32
Average Region	-0,51	-0,46	-0,43	-0,44	-0,34	-0,32	-0,31	-0,33	-0,33	-0,33	-0,25	-0,33	-0,34	-0,38	-0,39	-0,43	-0,44	-0,42	-0,40
Slovak Republic	0,34	0,45	0,38	0,30	0,31	0,27	0,25	0,23	0,07	0,05	0,12	0,11	0,15	0,10	0,23	0,19	0,42	0,21	0,21
Slovenia	1,02	0,90	1,03	1,01	0,94	1,05	0,92	0,94	0,83	0,72	0,72	0,74	0,79	0,78	0,84	0,89	0,78	0,69	0,77
Czechia	0,38	0,48	0,35	0,32	0,34	0,38	0,38	0,38	0,31	0,30	0,43	0,47	0,56	0,57	0,51	0,53	0,56	0,62	0,66
Hungary	0,67	0,63	0,63	0,60	0,43	0,40	0,30	0,33	0,30	0,29	0,16	0,12	0,07	0,09	0,06	0,03	0,07	0,01	-0,10
Poland	0,11	0,25	0,26	0,28	0,45	0,44	0,51	0,56	0,66	0,65	0,68	0,69	0,76	0,70	0,62	0,61	0,62	0,55	0,51
Estonia	0,98	0,99	1,01	0,97	0,95	1,00	0,99	1,05	1,09	1,18	1,30	1,26	1,23	1,20	1,47	1,53	1,58	1,51	1,54
Lithuania	0,37	0,31	0,16	0,10	0,11	0,23	0,37	0,32	0,39	0,42	0,55	0,58	0,68	0,52	0,47	0,67	0,78	0,82	0,75
Latvia	0,15	0,37	0,36	0,34	0,23	0,20	0,20	0,28	0,24	0,32	0,41	0,43	0,40	0,50	0,30	0,48	0,69	0,72	0,69
Average CEE and Baltics	0,50	0,55	0,52	0,49	0,47	0,49	0,49	0,51	0,49	0,49	0,55	0,55	0,58	0,56	0,56	0,62	0,69	0,64	0,63
Germany	1,84	1,88	1,79	1,73	1,75	1,75	1,77	1,74	1,82	1,80	1,81	1,78	1,78	1,80	1,90	1,87	1,83	1,78	1,82
Austria	2,03	1,91	1,90	2,00	1,83	1,69	1,60	1,47	1,43	1,54	1,47	1,47	1,50	1,50	1,57	1,52	1,48	1,24	1,26
Netherlands	1,98	1,96	2,04	2,16	2,10	2,12	2,09	2,08	2,09	2,02	1,96	1,83	1,86	1,75	1,89	1,87	2,00	2,00	1,92
Belgium	1,36	1,38	1,30	1,35	1,36	1,45	1,47	1,52	1,56	1,60	1,51	1,47	1,53	1,40	1,43	1,45	1,45	1,46	1,50
Average Developed Europe	1,8	1,78	1,76	1,81	1,76	1,75	1,73	1,7	1,72	1,74	1,69	1,64	1,67	1,61	1,7	1,68	1,69	1,62	1,62

Source: *World Governance Indicators Database, 2023* and Author's calculation

Table 10. GDP per capita in PPP (international dollars, 2017) from 2004 to 2023 (estimates starts after 2021) and calculation of absolute and relative gap between WB and CEE/Baltics and between CEE/Baltics and Developed Europe

Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Albania	7768	8240	8781	9377	10158	10570	11017	11327	11507	11644	11875	12174	12597	13040	13571	13863	13419	14640	15384	15983
Bosnia and Herzegovina	8793	9159	9675	10270	10867	10830	11008	11241	11332	11842	11994	12540	12973	13420	13966	14390	13972	15030	15683	16038
Montenegro	13526	14073	15266	16280	17421	16376	16789	17306	16821	17401	17695	18283	18819	19703	20711	21559	18280	20651	21903	22874
North Macedonia	10689	11171	11715	12454	13113	13040	13448	13746	13667	14043	14529	15074	15485	15640	16077	16712	15986	16641	17048	17474
Serbia	11607	12286	12964	13855	14701	14357	14520	14928	14899	15404	15233	15588	16193	16621	17464	18318	18274	19840	20804	21300
Average Region	10477	10986	11680	12447	13252	13035	13356	13710	13645	14067	14265	14732	15213	15685	16358	16968	15986	17360	18164	18734
Austria	48941	49700	51151	52883	53486	51349	52170	53519	53642	53333	53267	53273	53648	54394	55274	56276	52395	54300	56650	56421
Belgium	45811	46653	47546	48953	48793	47423	48391	48492	48518	48470	49046	49796	50097	50727	51424	52326	49232	52180	53583	53762
Germany	44427	44815	46618	48115	48714	46100	48148	50039	50158	50237	51137	51451	52175	53374	53737	54190	52072	53700	54276	53945
Netherlands	48889	49744	51376	53236	54235	51991	52405	52959	52179	51960	52544	53347	54264	55509	56490	57258	54638	57796	59901	59891
Average Developed EU	47017	47728	49173	50797	51307	49216	50279	51252	51124	51000	51499	51967	52546	53501	54231	55013	52084	54494	56103	56005
Czech Republic	28656	30538	32525	34235	34851	32965	33651	34163	33834	33784	34561	36334	37113	38916	40019	41062	38774	40858	40615	40048
Hungary	23627	24688	25715	25815	26129	24439	24744	25276	25096	25608	26778	27830	28518	29833	31497	33046	31558	33965	35673	35617
Poland	18252	18900	20068	21503	22412	23034	23781	24954	25338	25556	26568	27742	28590	30055	31839	33259	32599	34969	36946	37199
Slovak Republic	19348	20626	22377	24800	26168	24712	26332	27025	27322	27461	28176	29602	30150	30984	32187	32950	31808	33343	34056	34495
Slovenia	30185	31314	33018	35199	36436	33320	33527	33762	32786	32396	33257	33962	35024	36680	38296	39378	37439	40267	41293	41993
Estonia	23748	26160	28884	31215	29693	25398	26078	28057	29067	29596	30549	31113	32086	33903	35064	36343	35921	38484	37798	36952
Latvia	18067	20243	22888	25381	24747	21502	20954	21969	23859	24590	25338	26526	27391	28571	29954	30954	30438	31982	33171	33404
Lithuania	19263	21094	23022	25885	26836	23109	23989	26018	27383	28644	29913	30807	31987	33827	35515	37256	37238	39381	39896	40227
Average CEE and Baltics	22643	24195	26062	28004	28409	26060	26632	27653	28086	28455	29392	30489	31357	32846	34296	35531	34472	36656	37431	37492
Region/CEE and Baltics	46,27%	45,40%	44,82%	44,45%	46,65%	50,02%	50,15%	49,58%	48,58%	49,44%	48,53%	48,32%	48,52%	47,75%	47,69%	47,76%	46,37%	47,36%	48,53%	49,97%
CEE and Baltics/Developed EU	48,16%	50,69%	53,00%	55,13%	55,37%	52,95%	52,97%	53,96%	54,94%	55,79%	57,07%	58,67%	59,68%	61,39%	63,24%	64,59%	66,18%	67,27%	66,72%	66,94%
Absolute Gap CEE and Baltics - Region	12167	13210	14382	15557	15157	13025	13276	13943	14441	14388	15127	15758	16144	17161	17939	18562	18486	19296	19266	18758
Absolute Gap Developed Europe - CEE and Baltics	24374	23533	23110	22793	22898	23156	23647	23599	23039	22545	22106	21477	21189	20655	19935	19482	17612	17838	18672	18513

Source: *World Economic Outlook Database*, October 2023, Author's calculation

NATIONAL COMPETITIVENESS AND ECOLOGICAL SUSTAINABILITY: CONNECTED OR NOT

Marko Đogo¹

Nenad Stanišić²

Pavle Lazarević³

Abstract

When considering the measurement of national competitiveness, three overarching approaches emerge: an inquiry into the impact of institutions on productivity in national resource utilization (Global Competitiveness Index), an evaluation of total factor productivity (TFP), and the utilization of output methods (such as the 6BiC - six fundamental macroeconomic indicators of competitiveness). This study aims to explore the implications of expanding the third method (output) by integrating criteria for ecological sustainability, employing the Environmental Performance Index (EPI). The objective is to address a fundamental theoretical question: Is there a discernible connection between national competitiveness and ecological sustainability in the short to medium term? Our research findings suggest a correlation, wherein a higher EPI score aligns with improved macroeconomic performance.

Key words: national competitiveness, ecological sustainability

JEL classification: O44, Q51

1. Introduction

The assessment of national competitiveness remains a contentious topic in contemporary economic discourse. Since the 1950s, methodologies for gauging macro-competitiveness have undergone significant evolution. Until the close of the Cold War (late 1980s), emphasis predominantly centered on gauging macroeconomic performances (such as trade surplus/deficit, indebtedness, industrial production) using the so-called output methods for assessing national competitiveness. From the mid-1990s, a predominant approach emerged, aligning national competitiveness with productivity in resource utilization—bringing it closer to the concept of living standards. This approach, pioneered by Harvard professor Michael Porter in “The Competitive Advantage of Nations” (1990), was later adopted by the World Economic Forum (WEF) in their publication, “The Global Competitiveness Report” (GCR). This report, based on twelve competitiveness pillars and approximately 150 different criteria (indicators), held sway among economists and the wider public until its last known edition in 2019, a consequence of the COVID-19 pandemic, leading to its discontinuation for reasons yet unknown to us.

¹ Associate Professor, Faculty of Economics, University of East Sarajevo, Alekse Šantića 3, 71420 East Sarajevo, Bosnia and Herzegovina. Scientific affiliation: international economy. Phone: +387 66 903 411. E-mail: marko.dogo@ekofis.ues.rs.ba, markodjogo@yahoo.com.

² Associate Professor, Faculty of Economics, University of Kragujevac, Đure Pucara Starog 3, 34000 Kragujevac, Serbia. Scientific affiliation: international economy. Phone: +381 64 662 6676. E-mail: nstanic@open.telekom.rs, nstanic@kg.ac.rs.

³ Assistant, Faculty of Economics, University of East Sarajevo, Alekse Šantića 3, 71420 East Sarajevo, Bosnia and Herzegovina. Scientific affiliation: Computer science. Phone: +387 66 777 443. E-mail: pavle.lazarevic@ekofis.ues.rs.ba,

Concurrently, alongside the GCR, the WEF, in collaboration with Yale and Columbia Universities and the European Commission, introduced the Environmental Performance Index (EPI) in 2002. This report assesses countries' performance regarding the fulfillment of eight UN Millennium Development Goals⁴ through 24 indicators related to air, water, and soil pollution, preservation of natural habitats and biodiversity, as well as greenhouse gas emissions.

Until 2019, it was feasible to compare country rankings between the GCR and EPI, allowing exploration of correlations between national competitiveness levels and environmental protection. However, given the current unavailability of the GCR, we decided to revisit our 2016 research, addressing identified shortcomings⁵ in the GCR. In that previous study, we presented our own definition of national competitiveness and a new method (composite index) for measuring national competitiveness levels derived from the proposed definition.

It's crucial to recall our 2016 definition of national competitiveness: “Macroeconomic competitiveness is the capability of a country, in free and fair market conditions, to maintain a balanced trade account, ensure dynamic economic growth that creates new jobs, increases real earnings, and enhances the standard of living, all achieved alongside a satisfactory investment rate, without increasing external public debt and without compromising the environment.”

The composite index we developed in the 2016 study for measuring national competitiveness levels relied on assessing six macroeconomic performances: 1) Level of income per capita, 2) (Un)employment rate, 3) GDP growth over a longer period, 4) Current Account Balance, 5) Level of public debt, and 6) Level of investment (GFCF), thus termed the 6BiC (six basic indicators of competitiveness).

An apparent flaw in our previous work was evident. While our definition of national competitiveness emphatically stressed the need for environmental protection, it wasn't integrated into the proposed method for measuring macro-competitiveness levels.

Precisely these two facts—the discontinuation of the GCR and the deficiency in our 6BiC regarding environmental sustainability—prompted us to replicate the 2016 study, rectify the identified shortfall, and utilize the obtained results (country rankings based on macro-competitiveness levels) for comparison with the latest editions of the EPI. This facilitated exploration of the existence of correlations between macroeconomic performances and environmental protection. It's important to highlight that this comparison (6BiC with EPI) holds a significant advantage over comparing the GCR with EPI. The GCR predominantly gazes into the future. Its fundamental assumption is that countries are more competitive if they efficiently utilize their available resources. Hence, the GCR attempts to measure the quality of institutions, infrastructure, macroeconomic stability, health and education systems, labor and commodity market efficiency, financial market development, etc. Although the correlation between all these competitiveness “pillars” and long-term macroeconomic performances is indisputable, their—even more significant—changes in the short term might not necessarily denote substantial improvements in terms of standard of living, employment, and the like.

⁴ The eight Millennium Development Goals (1. to eliminate extreme poverty and hunger; 2. to achieve global primary education; 3. to empower women and promote gender equality; 4. to reduce child mortality; 5. to promote maternal health; 6. to fight malaria, HIV/AIDS, and other diseases; 7. to promote environmental sustainability and 8. to develop a universal partnership for development) were accepted by 191 countries at the General Assembly meeting held on September 8, 2000, with 2015 as the targeted date to achieve them.

⁵ In the form of the rapid improvement of some countries on the list (e.g. North Macedonia and Serbia) without some noticeable improvement in their macroeconomic performance.

On the other hand, the 6BiC measures a country's macroeconomic performances in a precisely defined year. Similarly, the EPI, based on measuring the aforementioned indicators, also assesses their value in a specific year. Therefore, the 6BiC and EPI are more suitable reports for seeking correlations between their country rankings.

In this paper, we take a step further by incorporating ecological sustainability as the seventh criterion among the previously defined six basic competitiveness indicators (thus yielding 7BiC), aiming to refine our assessment of national competitiveness levels. Through comparing the 6BiC and 7BiC for a group of 41 European economies, we anticipate obtaining a more realistic indicator of national competitiveness levels.

The hypothesis we aim to demonstrate in this study is the existence of a strong and positive correlation between national competitiveness levels and environmental concern.

2. Literature review

In order to explore the viewpoints of other authors on whether ecological sustainability is relevant to the concept of national competitiveness, we present a concise overview of all definitions of national competitiveness that we have been able to identify, presented in chronological order. By doing so, we aim not only to pinpoint the moment when ecological sustainability is first incorporated into this concept but also to illustrate the evolution of the national competitiveness concept. This is the reason why definitions by the same authors, such as the renowned Austrian economist Karl Aiginger, who has been engaged with the issue of national competitiveness for over three decades, reappear multiple times with certain temporal shifts. Additionally, the desire to showcase the evolution of the national competitiveness concept is the rationale for listing some authors who have not explicitly provided their own definition of national competitiveness but have implicitly indicated what they believe this concept should encompass through their critiques of other definitions.

Furthermore, prior to citing various works on the topic of national competitiveness, we wish to emphasize that we have accepted the standpoint that terms such as national competitiveness, macro-competitiveness, and international competitiveness are essentially synonymous.

The oldest source we have identified explicitly mentioning the concept of national competitiveness is that of Uri, P, according to whom national competitiveness is defined as "...the ability to create the preconditions for high wages" [Uri, P. (1971) in Aiginger, K., Bärenthaler-Sieber, S. And Vogel, J. (2013: 69)].

In President Reagan's 1984 address, macro-competitiveness is equated with an economy capable of simultaneously achieving three goals: high productivity, trade equilibrium, and the creation of a job economy (President's commission, 1984. in Onuchuku, O., & Amaefule, C. 2020: 2).

The following year, authors B. Scott and G. Lodge presented a frequently cited definition of national competitiveness, stating that it is "...a nation state's ability to produce, distribute, and service goods in the international economy..., and to do so in a way that earns a rising standard of living" [Scott & Lodge (1985) in Aiginger, K., Bärenthaler-Sieber, S. And Vogel, J. (2013: 69)].

Similarly, the well-known definition of national competitiveness offered by Aiginger in 1987 reads: "Competitiveness of a nation is the ability to (i) sell enough products and services (to fulfil an external constraint); (ii) at factor incomes in line with the (current and changing) aspiration level of the country; and (iii) at macro-conditions of the economic, environmental, social system seen as satisfactory by the people." [Aiginger (1987) in Aiginger, K.,

Bärenthaler-Sieber, S. And Vogel, J. (2013: 69)]. This mention of satisfactory environmental protection in the definition of national competitiveness is the first we have been able to find.

Jan Fagerberg, one of the leading authorities in the field of competitiveness during the second part of the 20th century, defined competitiveness as: “the ability of a country to realize central economic policy goals, especially growth in income and employment, without running into balance of payment difficulties” [Fagerberg (1988) in Aiginger, K., Bärenthaler-Sieber, S. And Vogel, J. (2013: 69)].

Arguably, the most renowned definition of national competitiveness came to light in 1990 in the first edition of Michael Porter's book “The Competitive Advantage of Nations,” stating that “the only meaningful concept of competitiveness at the national level is national productivity” (Porter, 1998: 6).

From the early 1990s, the definition of international competitiveness put forth by Jodo Paulo dos Reis Velloso in a seminar at the World Bank remained memorable. According to this author (Velloso, 1991: 31), “... competitiveness can be viewed as the capacity to sustain and increase the country's participation in international markets, by being able to meet the standards of efficiency of the rest of the world as to the utilization of factors of production and the quality of the product.”

In 1994, one of the most renowned contemporary economists, Paul Krugman, described macro-competitiveness as a “dangerous obsession” (Krugman, 1994), and his opinion did not improve two years later when he argued that it was “a matter of time-honored fallacies about international trade being dressed up in a new and pretentious rhetoric” (Krugman, 1996: 18). In short, Krugman maintained the stance that competitiveness can and does make sense when measured at lower levels but not at the level of the state. In our opinion, this is generally true, especially when it comes to developed countries. Indeed, measuring national competitiveness can provoke state interventionism, which can be counterproductive in countries at similar levels of development. However, when it comes to countries whose level of development lags significantly, measuring national competitiveness can be of great importance if it reveals reasons (such as weak and unjust institutions) for this lag.

In the mid-1990s, the European Commission did not yet recognize the significance of environmental protection for the concept of national competitiveness. The Commission's definition of macro-competitiveness during that time was: “...the ability to increase or maintain the living standard relative to comparable economies (e.g., developed industrialized countries), without long-run deterioration of external balance” (European Commission, 1995 in Aiginger, K., Bärenthaler-Sieber, S. And Vogel, J. (2013: 69)).

Von Tunzelmann equated competitiveness with political, technical, and commercial leadership (Von Tunzelmann, 1995 in Aiginger, K., Bärenthaler-Sieber, S. And Vogel, J. (2013: 69)).

For Oughton - Whittam, national competitiveness was defined as: “long-run growth in productivity and hence rising living standards, consistent with increasing employment or the maintenance of near full employment” (Oughton, C., Whittam, G. (1997) in Aiginger, K., Bärenthaler-Sieber, S. And Vogel, J. (2013: 69)).

Leko and Šimić (1999) pointed out the need to differentiate between international competitiveness in broader and narrower senses. In the narrower sense, international competitiveness is traditionally perceived as relevant only to countries achieving a trade surplus. In the broader sense, it encompasses the need for a country to achieve a high living standard connected to productivity in the use of economic resources.

The European Commission's definition of national competitiveness in 2001 was: “The ability of an economy to provide its population with high and rising standards of living and high rates of employment on a sustainable basis.”

The significance of ecological sustainability was more clearly emphasized in Peneder's definition of competitiveness in 2001: “the ability... to create high factor incomes along a sustainable path, taking into consideration a society's social, ecological, and economic constraints with respect to long-term development.”

Even in the work of Vedriš (2005), the older understanding of international competitiveness, where this concept is aligned with the ability to generate a trade surplus, remains vital.

Aiginger (2006) proposed an approach very akin to ours (6BiC) by accepting Michael Porter's basic premise that a country's competitiveness is essentially its ability to create wealth. However, Aiginger (2006) also advocates that the way competitiveness is measured should encompass more indicators than just GDP per capita, suggesting inclusion of employment rates, wage levels, as well as indicators associated with process quality (institutions, technologies, etc.).

Bienkowski (2008) presented an intriguing definition of national competitiveness: “countries' ability to achieve economic growth faster than other countries and to increase prosperity in a way that its economic structure is changing and effectively adapts to the movement of international trade” (Bienkowski, 2008 in Šegota, Tomljanović, and Huđek, 2017: 123).

Lovrinčević, Mikulić, and Rajh (2008) cited numerous definitions of national competitiveness by other authors but refrained from offering an explicitly expressed definition themselves. However, they pointed out that “Competitiveness, by its definitional characteristic, increasingly demands the application of a global worldview, arising from the necessity to compete with competitors from any area in the world” (Lovrinčević, Mikulić, and Rajh, 2008: 604).

Similarly, Mladen Kovačević (2010: 9-11) did not provide an explicit definition of national competitiveness but raised objections directly to the absence of investment rate, trade deficit, and country's external debt in the WEF's Report.

A group led by Janger defined competitiveness as “the ability to raise standards of living and employment, while maintaining a sustainable environment and sustainable external balances” (Janger et al. (2011) in Aiginger, K., Bärenthaler-Sieber, S. And Vogel, J. (2013: 69)).

For Delgado et al. (2012), “Competitiveness is what underpins wealth creations and economic performance.”

Our familiar acquaintance Karl Aiginger, in his work from 2013 collaborated with Susanne Barenthaler-Sieber and Johanna Vogel and offered the following definition of national competitiveness: “ability of a country (region, location) to deliver the beyond-GDP goals for its citizens today and tomorrow” (Aiginger et al., 2013: 13).

For Adžić and Stojić (2013), competitiveness is determined as the ability of a state or a specific region to achieve long-term sustainable economic growth, thereby opening up perspectives for increasing the welfare of the population.

In 2015, even OECD provided its definition of national competitiveness as “an ability of the country to, in free and equal market conditions, produce goods and services that previously pass the test of international markets, ensuring retention and long-term increase in the real income of the population” (OECD, 2015 in Šegota, Tomljanović, and Huđek (2017)).

For Šegota, Tomljanović, and Huđek (2017), “The competitiveness in the long term implies an increase in the level of economic efficiency and quality of production and services, which is a key determinant of the long-term increase in living standards... In the short term, price trends, costs, wages, and exchange rates significantly affect the level of productivity.”

Filip Bugarčić (2019) implicitly considers that national competitiveness can be reduced to the level of development (measured GDP per capita), as seen from the hypothesis of this work.

According to Jelena Stanković, Marija Džunić, and Vesna Janković Milić (2019): “Competitiveness, therefore, is a multidimensional concept, which includes a range of factors, such as institutions, infrastructure, macroeconomic environment, market, human capital, and technological development.”

For Okechuku Onuchuku and Chukwuemeka Amaefule (2020), “Competitiveness, in this context, relates to a broad range of economic issues that essentially provide necessary and sufficient conditions that can impact the forces that result in achieving smart, inclusive and environmentally sustainable economic growth agenda for emerging and less developing countries (ELDCs).”

3. Methodology and method of analysis

The methodology for this research closely follows our work from 2016, employing a largely similar approach. To begin, we replicate the calculation of the 6BiC index using the same methodology as in 2016, albeit with more recent data.

This method enables the computation of an index when combining “apples and oranges.” These “apples and oranges” represent the following six indicators of a nation's competitiveness: balance of the current account, unemployment rate, gross national income per capita, public debt, economic growth rate, and investment rate.

Given the diverse measurement systems for these indicators, direct comparison of values across different variables becomes impossible, posing challenges in forming a composite index. To address this, we employed a transformation method, converting the original variable values into standardized or z-values.

The standardization process was executed using the following equation:

Where symbols represent:

- z_{ij} - standardized result of entity u to variable j
- x_{ij} - original value of entity u to variable j
- \bar{x}_j - arithmetic mean of variable j
- s_j - standard deviation of variable j

Based on the previous equation, it is evident that the standardized value results from assessing the deviation of entities from the arithmetic mean (centering of results), which is then divided by the standard deviation. Therefore, the standardized value represents a relative measure of standard variance expressed as a fraction of the standard deviation.

Of course, in comparison to the work conducted in 2016, the difference lies in the addition of a seventh indicator to derive the 7BiC index. This additional indicator is the rank of countries according to the EPI.

It's important to emphasize that the composite indexes 6BiC and 7BiC have been calculated as the non-weighted average of the standardized values of the six variables (with the unemployment rate and public debt indicated by negative numbers). These indexes were derived from secondary sources such as IMF, WB, and Yale University databases.

Apart from computing the 6BiC and 7BiC indexes, this study has also altered the Spearman's rank correlation coefficients to quantify the strength of the relationship between the indicators used to compute the 6BiC index, the 6BiC index itself, and the EPI index. If we manage to establish a consistent strong correlation between the 6BiC index and the EPI index, we believe it would validate the existence of a relationship between a country's macroeconomic performance and the level of environmental protection.

4. Empirical data and analysis

To enhance the clarity of our work, we have moved the data used to construct the 6BiC index to the Appendix in tabular form: Table 1 (GNI per capita measured as GNI per capita, PPP), Table No. 2 (Unemployment rate), Table No. 3 (GDP growth), Table No. 4 (Current Account Balance), Table No. 5 (Level of Central Government Debt), Table No. 6 (GFCF), and Table No. 7 (EPI).

However, in this section, we will briefly comment on the empirical data, specifically the ranking of European countries based on each of the selected seven competitiveness indicators.

Regarding the ranking of European countries by the level of GNI per capita (Table 1 in the Appendix), which, as observed in the literature review, serves as an indicator of macro-competitiveness emphasized by most contemporary economists, it brought no surprises. Even when adjusting the nominal income for purchasing power parity (PPP), the countries in Northwestern Europe, despite higher general price levels compared to Eastern and Southeastern European countries, remain at the top of the list, such as Luxembourg, Norway, and Ireland. Meanwhile, at the bottom are Balkan countries (BiH, Albania, Moldova) along with a few Eastern European countries (Ukraine). The income disparity between Norway and Ukraine stands at 6:1 in real terms, a substantial difference for a geographically not particularly extensive continent.

However, the situation changes considerably when comparing the ranking of European countries by the level of unemployment. Although Balkan and East European countries (Bosnia and Herzegovina, North Macedonia, Montenegro) remain at the bottom of the list, some Central and East European countries (Czech Republic, Moldova, Poland) persist at the top. This could serve as an example illustrating that statistics are accurate scores but based on essentially questionable data, as some countries at the top of the list (such as Moldova) owe their low unemployment rates to the tragically high emigration of their labor force. Nonetheless, it's crucial to note that unemployment rates across Europe have drastically decreased in the last seven to eight years. Less than a decade ago, as a consequence of the 2011-12 recession and debt crisis, even economies like France and Italy recorded double-digit unemployment rates, which are slightly lower compared to the levels currently witnessed in economies such as Bosnia and Herzegovina or North Macedonia.

Dynamic economic growth is one of the most contradictory criteria for evaluating an economy's competitiveness. While it's undeniable that an increase in the standard of living cannot occur, at least not in the long term, without overall economic growth, the problem arises in defining a satisfactory growth rate, which can vary for developed countries compared to developing ones. However, the data presented in Table No. 3 (in the Appendix) contradict the

previously stated argument. Over the past five years, the two countries with the highest GDP growth rates are those with already high income levels (Ireland and Malta).

The economic growth dynamics in Ireland are particularly impressive, with its economy expanding by as much as 50% during the period from 2017 to 2021. Following at a considerable distance is the economic growth of Malta (+28.65%), then the growth of economies in Turkey (+26.7%), Estonia (+22.3%), and Poland (+21.7%).

Moreover, a high level of development is hardly an explanation for practically no economic growth in the last five years, which is the case for Germany, Italy, Greece, the United Kingdom, and Spain. However, it's essential to note that this period coincides with the Covid-19 pandemic, and the results are strongly influenced by the depth of the decline in economic activities during 2020.

When discussing the current account surplus/deficit (Table No. 4 in the Appendix), once again, there is dominance by Northwestern European countries (such as Ireland with a current account surplus of 14.3% of GDP, Norway with a surplus of 13.5% of GDP), followed by Denmark, Germany, the Netherlands. Among the top ten European countries with the highest trade surplus, Russia (+6.7% of GDP) and Slovenia (+3.8% of GDP) are also present. At the opposite end of the spectrum are, once again, Balkan countries followed by Greece and Cyprus. On the other hand, Moldova's current account deficit stands at a substantial 12.4% of GDP, while Montenegro's deficit reaches 9.2% of GDP.

The data presented in Table No. 5 in the Appendix are intriguing. It's unsurprising that Switzerland and Norway rank as the least indebted countries. Switzerland's government debt amounts to a mere 13.75% of the country's GDP. However, among the countries with the lowest public debt are Bulgaria at the 7th place (public debt at 31.45% of GDP), Moldova at the 8th place (public debt at 32.15% of GDP), and Bosnia and Herzegovina at the 9th place (public debt at 34.4% of GDP). The extent to which this is a consequence of the low credit rating that makes borrowing expensive, and sometimes even impossible, is another question. Finally, the most indebted European country is Greece, whose government owes a staggering 213.75% of the country's GDP. Italy follows as the second most indebted country in Europe with public debt amounting to 145.6% of its GDP.

It's intriguing, but contrary to our expectations, we did not find any general principle indicating that residents of some regions in Europe are more inclined to save and invest than others. As depicted in Table No. 6 in the Appendix, investments as a proportion of GDP are highest in Estonia (GFCF 28.9% of GDP), followed by Turkey (GFCF 28.1% of GDP) and Hungary (GFCF 27.4% of GDP). Investments, as a proportion of GDP, are the smallest in Ukraine, Greece, and Bulgaria. In other words, the investment portion of the newly created value is about twice as high in Estonia compared to Ukraine.

From Table No. 7 in the Appendix, it is noticeable that the best-ranked countries according to the EPI are Denmark, the UK, Finland, Malta, and Sweden. The bottom of the list is occupied by Balkan Countries and Russia.

5. Results and discussion

By applying the previously explained methodology to the data provided in Tables No. 1, 2, 3, 4, 5, and 6 from the Appendix, we have obtained a “transitional” ranking of European countries based on their competitiveness level, following the 6BiC index (Table No. 1).

Table 1. European countries ranked by level of national competitiveness measured with 6BiC and 7BiC Indexes

Country	6BiC score	6BiC rank	Country	7BiC score	7BiC rank
Ireland	9,12	1	Ireland	9.1	1.
Norway	6,09	2	Switzerland	6.58	2.
Switzerland	5,84	3	Norway	6.23	3.
Estonia	4,04	4	Denmark	5.84	4.
Denmark	4,02	5	Malta	4.38	5.
Sweden	3,00	6	Estonia	4.38	6.
Luxembourg	2,98	7	Sweden	4.35	7.
Malta	2,81	8	Luxembourg	4.3	8.
Netherlands	2,68	9	Netherlands	3.12	9.
Germany	2,60	10	Germany	3.02	10.
Czech Republic	2,03	11	Austria	2.37	11.
Turkiye	1,78	12	Czech Republic	2.23	12.
Hungary	1,61	13	Finland	2.19	13.
Russian Federation	1,58	14	Slovenia	2.12	14.
Austria	1,57	15	Hungary	1.38	15.
Lithuania	1,38	16	Lithuania	1.22	16.
Slovenia	1,25	17	Belgium	0.48	17.
Belarus	0,69	18	Romania	0.46	18.
Romania	0,61	19	Iceland	0.34	19.
Poland	0,53	20	Poland	-0.11	20.
Finland	0,50	21	Belarus	-0.13	21.
Belgium	0,43	22	France	-0.18	22.
Iceland	-0,13	23	Russian Federation	-0.25	23.
Croatia	-0,55	24	Croatia	-0.33	24.
Moldova	-0,59	25	Latvia	-0.43	25.
France	-0,61	26	United Kingdom	-1.0	26.
Latvia	-0,74	27	Turkiye	-1.03	27.
Bulgaria	-1,30	28	Slovak Republic	-1.62	28.
Serbia	-1,48	29	Bulgaria	-1.81	29.
Slovak Republic	-1,83	30	Moldova	-1.93	30.
United Kingdom	-2,80	31	Serbia	-2.72	31.
Bosnia and Herzegovina	-2,94	32	Cyprus	-3.12	32.
Cyprus	-3,15	33	Italy	-3.65	33.
Portugal	-3,24	34	Portugal	-3.89	34.
Albania	-3,35	35	Albania	-4.3	35.
Italy	-3,65	36	North Macedonia	-4.54	36.
North Macedonia	-4,23	37	Bosnia and Herzegovina	-4.58	37.
Spain	-4,91	38	Spain	-5.0	38.
Ukraine	-4,99	39	Ukraine	-5.72	39.
Montenegro	-5,85	40	Montenegro	-6.82	40.
Greece	-10,81	41	Greece	-10.94	41.

Source: Author's own calculations based on data from the sources mentioned in Tables 1, 2, 3, 4, 5 and 6 iz Appendix-a.

From the preceding table (comparing the country rankings based on the 6BiC and 7BiC indices), it's evident that incorporating environmental sustainability into the criteria for assessing national competitiveness has minimal impact on the top ten positions of European countries. While there are slight positional variations within the same set of ten countries, they consistently maintain their positions within the European Top 10 in both the 6BiC and 7BiC rankings.

However, a significant drop in ranking by 7BiC compared to 6BiC is notable for two major European economies – Turkey and Russia, indicating a lower emphasis on environmental sustainability in these countries. Turkey, placed twelfth by 6BiC, descends to the twenty-seventh position by 7BiC, while Russia slips from the fourteenth position by 6BiC to the twenty-third by 7BiC.

On the contrary, three medium-sized European economies (Finland, Belgium, and Iceland) show a marked enhancement in their national competitiveness rankings when environmental sustainability is taken into account. For instance, Finland advances from the twenty-first position by 6BiC to a relatively higher thirteenth position by 7BiC.

We conducted a Spearman rank correlation analysis for all ranks. The Spearman's rank correlation coefficient or Spearman's ρ is a nonparametric measure of rank correlation that demonstrates statistical dependence between the rankings of two variables. The results are presented in the subsequent table.

Table 2. Spearman's rank correlation coefficients

	GNI per capita (PPP)	Current account balance	GDP growth	Unemployment	Central Government Debt	Gross Fixed Capital Formation	EPI score	6 BIK
GNI per capita (PPP)	1,000	.700**	-,278	-.362*	-,065	,182	.786**	.665**
Current account balance	.700**	1,000	-,211	-.320*	-,303	-,020	.439**	.641**
GDP growth	-,278	-,211	1,000	-,140	-.324*	,156	-,288	,297
Unemployment	-.362*	-.320*	-,140	1,000	,386*	-,041	-,274	-.620**
Central Government Debt	-,065	-,303	-.324*	,386*	1,000	-,217	,059	-.611**
Gross Fixed Capital Formation	,182	-,020	,156	-,041	-,217	1,000	,046	.452**
EPI score	.786**	.439**	-,288	-,274	,059	,046	1,000	.429**
6 BIK	.665**	.641**	,297	-.620**	-.611**	.452**	.429**	1,000

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

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

According to the findings presented in the previous table, the 6BiC composite index exhibits statistically significant strong and moderate correlations with 5 of its 6 components, specifically, GNI per capita, current account balance, unemployment (where the negative sign is expected and interpretable as preferable, consistent with public debt), public debt, gross fixed capital formation, and the EPI score. Thus, we can assert that the macroeconomic competitiveness of European countries is associated with their environmental performance. A higher ranking in the EPI score correlates with a superior ranking in macroeconomic competitiveness as measured by the 6BiC index.

Therefore, it is unsurprising that the inclusion of environmental sustainability in calculating the level of national competitiveness (7BiC) did not yield dramatically different results compared to those obtained using the 6BiC.

6. Conclusion

Upon review, we believe we have successfully demonstrated the hypothesis that a strong and positive correlation exists between the level of national competitiveness and environmental stewardship. This should encourage authorities across all European countries to more robustly pursue environmental protection, recognizing that it will not hinder but rather bolster the competitiveness of their economies. Environmental protection is not a cost but an investment in the future.

Nevertheless, we must acknowledge that certain results of this research have surprised us while others have highlighted weaknesses that should be addressed in future work.

Primarily, we were surprised by the weak link between the dynamics of economic growth and other indicators of national competitiveness (including environmental protection). This observation could be explained in two ways. Either the observation period of five years is too short, or the chosen period is atypical. Our opinion is that both are accurate. If one were to use economic growth rates as the primary indicator of economic competitiveness in the early 1930s or 1950s, it is likely they would conclude that the USSR's economy was among the most competitive in the world. However, sustainable economic growth based on a healthy model is what truly defines competitiveness, making a much longer observation period desirable for this indicator. Additionally, the observation period (2017-2021) coincided with the outbreak of the Covid-19 pandemic, where the severity of the GDP decline in 2020 was more a result of the stringency of health protection measures than it was associated with any long-term economic trends.

A fundamental weakness in calculating the 6BiC and 7BiC indexes that we observed could be articulated with a comment made by one of the authors, suggesting it is difficult to believe, and few would agree, that Moldova's economy is more competitive than Italy's. Indeed, the Italian economy is the second-largest in the EU, with a significantly higher standard of living compared to Moldova. Italy's economy (unlike Moldova's) generates a trade surplus. If standard of living and trade surplus are two fundamental indicators of national competitiveness, Italy's economy should be ranked significantly higher than Moldova's. However, in our research, we used an unweighted index, where all six or seven indicators hold equal weight. The fact that Moldova is ranked better on four out of seven indicators (faster economic growth, lower unemployment rate, lower public debt, and higher investment rate) led to the result that Moldova's economy is better ranked than Italy's. Hence, we have contemplated methods in future work to weight this index to obtain a more objective result.

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APPENDIX

Table 1. European countries ranked by level of national competitiveness measured with GNI per capita (PPP) in 2021

Country	GNI per capita (PPP) in 2021	Rank
Luxembourg	91.810	1.
Norway	83.750	2.
Ireland	80.870	3.
Switzerland	74.270	4.
Denmark	67.130	5.
Germany	60.880	6.
Austria	60.230	7.
Sweden	62.380	8.
Netherlands	61.950	9.
Belgium	59.360	10.
Finland	55.560	11.
Iceland	55.520	12.
France	52.880	13.
United Kingdom	49.980	14.
Italy	47.590	15.
Malta	45.370	16.
Czech Republic	43.760	17.
Slovenia	43.350	18.
Estonia	42.720	19.
Lithuania	42.130	20.
Spain	40.880	21.
Cyprus	40.650	22.
Poland	36.340	23.
Portugal	36.150	24.
Hungary	35.650	25.
Romania	35.550	26.
Croatia	35.030	27.
Latvia	34.480	28.
Slovak Republic	33.490	29.
Russian Federation	33.250	30.
Greece	31.160	31.
Turkiye	30.060	32.
Bulgaria	27.380	33.
Montenegro	23.920	34.
Belarus	21.130	35.
Serbia	20.810	36.
North Macedonia	17.530	37.
Bosnia and Herzegovina	17.450	38.
Albania	15.320	39.
Moldova	15.300	40.
Ukraine	13.950	41.

Source: <https://genderdata.worldbank.org/indicators/ny-gnp-pcap-pp-cd/?groups=ECS&view=correlation&year=2021>

Table 2. European countries ranked by level of national competitiveness measured with unemployment rate

Country	Unemployment, total (% of the total labor force), modeled ILO estimate, in 2021.	Rank
Czech Republic	2.8	1.
Moldova	3.2	2.
Poland	3.4	3.
Malta	3.5	4.
Germany	3.6	5.
Belarus	3.9	6.
Hungary	4.1	7.
Netherlands	4.2	8.
Norway	4.4	9.
Russian Federation	4.7	10.
Slovenia	4.7	11.
United Kingdom	4.8	12.
Denmark	5.1	13.
Switzerland	5.1	14.
Bulgaria	5.3	15.
Luxembourg	5.3	16.
Romania	5.6	17.
Iceland	6.0	18.
Austria	6.2	19.
Estonia	6.2	20.
Ireland	6.2	21.
Belgium	6.3	22.
Portugal	6.6	23.
Slovak Republic	6.8	24.
Lithuania	7.1	25.
Latvia	7.5	26.
Cyprus	7.5	27.
Finland	7.6	28.
Croatia	7.6	29.
France	7.9	30.
Sweden	8.7	31.
Italy	9.5	32.
Ukraine	9.8	33.
Serbia	10.1	34.
Turkiye	12.0	35.
Albania	12.7	36.
Greece	14.7	37.
Spain	14.8	38.
Bosnia and Herzegovina	14.9	39.
North Macedonia	15.8	40.
Montenegro	16.9	41.

Source: <https://databank.worldbank.org/source/world-development-indicators/Series/SL.UEM.TOTL.ZS>

Table 3. European countries ranked by level of national competitiveness measured with GDP growth in the last 5 years

Country	GDP growth in the last 5 years (2017-2021), 2016 base	Rank
Ireland	150,38	1.
Malta	128,65	2.
Turkiye	126,70	3.
Estonia	122,26	4.
Poland	121,73	5.
Romania	121,41	6.
Lithuania	120,27	7.
Cyprus	120,00	8.
Serbia	118,55	9.
Hungary	118,06	10.
Moldova	117,37	11.
Slovenia	117,37	12.
Albania	116,07	13.
Bosnia and Herzegovina	114,83	14.
Croatia	113,62	15.
Bulgaria	113,42	16.
Latvia	112,22	17.
Slovak Republic	110,94	18.
Sweden	110,03	19.
Russian Federation	109,89	20.
Montenegro	109,64	21.
Czech Republic	109,48	22.
Denmark	109,41	23.
Luxemburg	109,34	24.
Belarus	108,96	25.
Ukraine	108,69	26.
Netherlands	108,35	27.
Iceland	107,70	28.
Switzerland	107,28	29.
Norway	107,12	30.
North Macedonia	107,08	31.
Belgium	106,40	32.
Finland	106,14	33.
Portugal	105,71	34.
France	104,19	35.
Austria	103,99	36.
Germany	103,61	37.
Greece	103,35	38.
Italy	100,11	39.
United Kingdom	101,32	40.
Spain	100,57	41.

Source: <https://databank.worldbank.org/source/world-development-indicators/Series/NY.GDP.MKTP.KD.ZG>

Table 4. European countries ranked by level of national competitiveness measured with current account balance

Country	Current account balance (% of GDP) in 2021.	Rank
Ireland	14.3	1.
Norway	13.5	2.
Switzerland	10.1	3.
Denmark	9.0	4.
Germany	7.7	5.
Netherlands	7.3	6.
Russian Federation	6.7	7.
Sweden	6.5	8.
Luxembourg	4.6	9.
Slovenia	3.8	10.
Italy	3.1	11.
Belarus	3.1	12.
Croatia	3.0	13.
Lithuania	1.2	14.
Malta	1.2	15.
Spain	0.9	16.
Belgium	0.5	17.
Finland	0.5	18.
France	0.3	19.
Austria	0.3	20.
Turkiye	-0.9	21.
Portugal	-1.2	22.
Poland	-1.4	23.
United Kingdom	-1.5	24.
Bulgaria	-1.8	25.
Estonia	-1.9	26.
Ukraine	-1.9	27.
Slovak Republic	-2.4	28.
Bosnia and Herzegovina	-2.4	29.
Iceland	-2.4	30.
Czech Republic	-2.7	31.
North Macedonia	-3.0	32.
Hungary	-3.8	33.
Serbia	-4.2	34.
Latvia	-4.3	35.
Greece	-6.4	36.
Cyprus	-6.9	37.
Romania	-7.2	38.
Albania	-7.6	39.
Montenegro	-9.2	40.
Moldova	-12.4	41.

Source: <https://databank.worldbank.org/source/world-development-indicators/Series/BN.CAB.XOKA.GD.ZS>

Table 5. European countries ranked by level of national competitiveness measured with level of central government debt

Country	Central Government Debt (as % of GDP) in 2021.	Rank
Switzerland	13,75	1.
Norway	15,49	2.
Russian Federation	16,45	3.
Estonia	17,69	4.
Luxembourg	20,66	5.
Denmark	29,04	6.
Bulgaria	31,45	7.
Moldova	32,15	8.
Bosnia	34,40	9.
Turkiye	37,91	10.
Belarus	38,77	11.
Sweden	39,00	12.
Lithuania	42,77	13.
Poland	43,37	14.
Czech Republic	43,56	15.
Latvia	45,43	16.
Germany	46,64	17.
Ukraine	48,94	18.
Romania	49,09	19.
North Macedonia	51,85	20.
Netherlands	52,40	21.
Malta	53,98	22.
Serbia	56,51	23.
Finland	59,17	24.
Ireland	61,98	25.
Austria	62,43	26.
Slovak Republic	67,59	27.
Slovenia	68,72	28.
Iceland	72,43	29.
Albania	73,16	30.
Hungary	75,31	31.
Croatia	76,33	32.
Montenegro	82,54	33.
Belgium	91,41	34.
France	92,20	35.
United Kingdom	105,10	36.
Spain	106,06	37.
Portugal	129,81	38.
Cyprus	139,80	39.
Italy	145,60	40.
Greece	213,75	41.

Source: https://www.imf.org/external/datamapper/CG_DEBT_GDP@GDD/CHN/FRA/DEU/ITA/JPN/GBR/USA

Table 6. European countries ranked by level of national competitiveness measured with level of GFCF formation

Country	Gross Fixed Capital Formation (% of GDP), in 2021	Rank
Estonia	28,9	1.
Turkiye	28,1	2.
Hungary	27,4	3.
Switzerland	26,6	4.
Austria	26,5	5.
Czech Republik	26,0	6.
Sweden	25,4	7.
Albania	24,4	8.
France	24,2	9.
Belgium	24,2	10.
Moldova	24,1	11.
Romania	23,7	12.
Finland	23,6	13.
Ireland	23,3	14.
Norway	23,2	15.
Serbia	23,1	16.
Belarus	22,6	17.
Denmark	22,6	18.
North Macedonia	22,5	19.
Latvia	22,3	20.
Iceland	22,2	21.
Montenegro	22,1	22.
Germany	21,8	23.
Netherlands	21,4	24.
Bosnia and Herzegovina	21,4	25.
Lithuania	21,4	26.
Croatia	20,7	27.
Italy	20,4	28.
Portugal	20,3	29.
Malta	20,3	30.
Slovenia	20,3	31.
Spain	19,8	32.
Russian Federation	19,7	33.
Slovak Republik	19,2	34.
Cyprus	19,5	35.
Unite Kingdom	17,3	36.
Poland	17,0	37.
Luxembourg	16,5	38.
Bulgaria	16,3	39.
Greece	13,3	40.
Ukraine	13,2	41.

Source: <https://databank.worldbank.org/source/world-development-indicators/Series/NE.GDI.FTOT.ZS>

Table 7. European countries ranked by level of national competitiveness measured with Enviromental Performance Index 2022

Country	EPI score	Rank
Denmark	77.90	1.
United Kingdom	77.70	2.
Finland	76.50	3.
Malta	75.20	4.
Sweden	72.70	5.
Luxembourg	72.30	6.
Slovenia	67.30	7.
Austria	66.50	8.
Switzerland	65.90	9.
Iceland	62.80	10.
Netherland	62.60	11.
France	62.50	12.
Germany	62.40	13.
Estonia	61.40	14.
Latvia	61.10	15.
Croatia	60.20	16.
Slovak Republic	60.00	17.
Czech Republic	59.90	18.
Norway	59.30	19.
Belgium	58.20	20.
Cyprus	58.00	21.
Italy	57.70	22.
Ireland	57.40	23.
Spain	56.60	24.
Greece	56.20	25.
Romania	56.00	26.
Lithuania	55.90	27.
Hungary	55.10	28.
North Macedonia	54.30	29.
Bulgaria	51.90	30.
Poland	50.60	31.
Portugal	50.40	32.
Ukraine	49.60	33.
Belarus	48.50	34.
Albania	47.10	35.
Montenegro	46.90	36.
Serbia	43.90	37.
Moldova	42.70	38.
Bosnia and Herzegovina	39.40	39.
Russian Federation	37.50	40.
Turkey	26.30	41.

Source: Enviromental Performance Index 2022

DEVELOPMENT OF ENTREPRENEURIAL SKILLS AND TEAMWORK SKILLS OF STUDENTS OF THE UNIVERSITY OF BANJA LUKA

Goran Janjić¹
Danijela Kardaš Ančić²
Zorana Tanasić³
Petar Gvero⁴
Maja Vuković⁵

Abstract

Entrepreneurship is generally regarded as an engine of social development because it drives economic growth, innovation and job creation. Students who have received some training in entrepreneurship will more easily recognize new business opportunities and decide to start a new venture than other students. It is important to note that the methods used in our educational environment are generally not adapted to encourage the development of entrepreneurial thinking in students. Courses are taught using traditional methods, which predominantly focus on imparting knowledge. Team assignments are very rare and there are few opportunities for students to practice and develop entrepreneurial skills. The paper presents an approach that moves away from traditional lecture-based programs towards more practical scenarios, where university classrooms will reflect real-world work. The modern labor market needs employees who are able to work in a team to solve problems of a multidisciplinary nature using different communication possibilities and technologies. The introduction of the subject “Experts in teamwork” aimed at acquiring entrepreneurial skills and teamwork skills at the University of Banja Luka, through the transfer of knowledge, experience and technology from the Norwegian University of Science and Technology – NTNU, was analyzed.

Keywords: entrepreneurship, skills, teamwork, education, method, experiential learning

1. Introduction

Research has shown a strong relationship between entrepreneurship education and entrepreneurial intentions and business development, as well as a positive relationship between entrepreneurship education and sustainable development. Entrepreneurial skills are essential in business, regardless of career path or entrepreneurial self-identity. Several studies have suggested that entrepreneurial skills and activities can be fostered through entrepreneurial education and training at university.

It is important to note that the methods used in the educational environment in general, and also in entrepreneurial education, are mostly not adapted to encourage the development of the entrepreneurial mindset of students. Traditional methods are used in teaching, which mainly focus on imparting knowledge. Teamwork assignments, which have proven to be very important in entrepreneurship education, are rare and there are few opportunities for students to practice and develop entrepreneurial skills.

¹ University of Banja Luka, Bosnia and Herzegovina, goran.janjjic@mf.unibl.org

² University of Banja Luka, Bosnia and Herzegovina, danijela.kardas@mf.unibl.org

³ University of Banja Luka, Bosnia and Herzegovina, zorana.tanasic@mf.unibl.org

⁴ University of Banja Luka, Bosnia and Herzegovina, petar.gvero@mf.unibl.org

⁵ University of Banja Luka, Bosnia and Herzegovina, maja.vukovic@mf.unibl.org

2. Literature review

2.1 Entrepreneurial education

Entrepreneurship Education (EE) became popular in the 1970s by promoting an entrepreneurial culture and mindset through education and learning. Entrepreneurship requires teaching activities with a more practical approach that develop entrepreneurial spirit and seek greater interaction between students and real-world challenges (Motta & Galina, 2023). It implies a blended pedagogic approach in which students learn by doing, developing their specific skills in a real environment (Joensuu-Salo et al., 2023; Motta & Galina, 2023; Alcorta de Bronstein et al., 2023; Weng et al., 2022; Ratten & Usmanij, 2021; Neck & Greene, 2010). The theory of experiential learning was developed by Kolb, and it includes the process of building knowledge in which the student experiences, thinks and acts (Kolb, 2014; Kolb & Kolb, 2005). Theories about how skills affect entrepreneurship, in addition to the individual level, have recently been posited at the team level, reflecting the prevalence and importance of entrepreneurial teams (Warhuus, & Basaiawmoit, 2014, Premand et al., 2016; Hoogendoorn et al., 2017; Marvel et al., 2017). Evidence suggests that entrepreneurial teams may enjoy superior venture performance relative to solo efforts.

2.2 Teamwork

In modern society and working place, dispersed teams are increasingly common in both large and small organizations. Team work has become a central issue for many corporations (Kardaš et al., 2017). The increased pressure on professionals to perform their tasks with fewer employees, at faster speeds, and with more quality and customer responsiveness creates the need for teamwork. A team refers to two or more people assigned to particular roles in order to complete a common goal (Salas et al., 1992). Teamwork is a complex behavioral phenomenon that involves many factors (Mathieu et al., 2019). Effective teamwork is an expression, on the one hand, of the articulation of the actions of the various areas from the recognition of their interdependence and, on the other, of the indispensable complementarity between instrumental and communicative action. Research demonstrates that coordination is developed through shared mental models of situations and team member roles, and it can even occur without explicit verbal communication (Guastello & Guastello, 1998). Team-based learning (TBL) was firstly introduced in the literature in 1982 as a way to promote the benefits of small-group teaching in a large group setting, considerably enhancing students' engagement and their knowledge retention (Michaelsen et al., 1982). If used effectively, TBL helps improve communication, discussion, problem-solving, decision-making, and creativity skills, as well as increasing the ability to work with others, an essential part of being in a social community (Türel, 2016). TBL also provide a frame which can cultivate a classroom full of engaged critical thinkers (Sweet & Michaelsen, 2023).

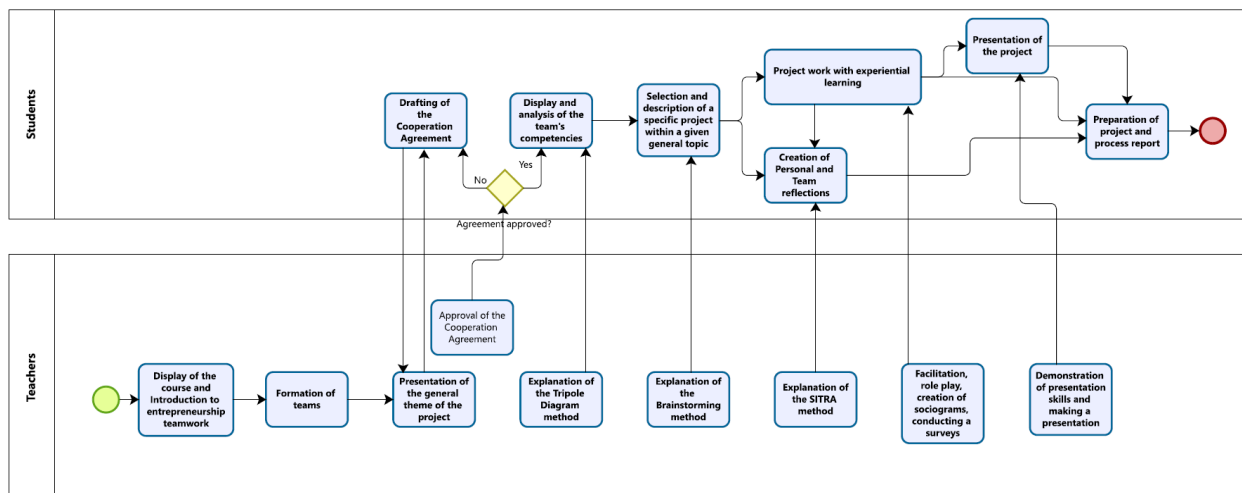
3. Methodology

In recent years, entrepreneurship in Bosnia and Herzegovina has gained more and more importance and there is an increasing interest in developing educational programs that encourage this competence. Education Development Strategy of Republic of Srpska emphasizes that the education system should develop awareness of entrepreneurship from early childhood, so that the components of entrepreneurial learning will be represented at all levels of education and be available to every individual. It was emphasized that entrepreneurial learning should be given a more significant place in the educational system due to the creation

of a driving force for the development of the economy and society (Education Development Strategy of the Republic of Srpska for the period 2016-2021, 2016). In its strategy, the University of Banja Luka linked one of its strategic goals to entrepreneurship: “The University develops an entrepreneurial culture and is a reliable partner to the economy” (Development strategy of the University of Banja Luka for the period 2017-2025, 2017). Due to the continuous demands coming from the economy for the development of strong teamwork skills and entrepreneurial thinking of graduated engineers who are increasingly expected to work in team projects of product and process design, the Faculty of Mechanical Engineering of the University of Banja Luka (UNIBL) established the course “Experts in team work – EiT” which was supposed to respond to the given requests. EiT came as a transfer of the knowledge, experience and technology from Norwegian University of Science and Technology (NTNU) within the project HERD QIMSEE related to Quality Improvement of Master Programs in Sustainable Energy and Environment (Kardaš et al., 2017).

The course Experts in teamwork - EiT, started to be implemented at the Faculty of Mechanical Engineering in the academic year 2017/2018 on the study programs of Thermotechnics, Mechatronics and Industrial Engineering and Management, and from the academic year 2019/2020 on the study program of Production Engineering. The course is attended by students of 7th semester of bachelor's studies. The study program was created on the basis of knowledge and experience gained from NTNU, requirements of business entities, access to existing technologies at UNIBL, taking into account the social and cultural environment. The desired learning outcomes of the EiT course are focused on improving the skills of identifying opportunities, creating project tasks, transforming ideas into concrete products, solving complex problems when working in interdisciplinary teams, communication and negotiation, resolving disputes and problems arising from professional and personal differences, initiating and stimulating cooperation or changing behavior patterns, cooperation with people from other scientific fields, presenting results, ideas and solutions to different target groups. The introduction of EiT represents a shift from conventional lecture-based courses to experiential and active learning, and also enables faculty and staff to advance professionally. The goal of the EiT course is to teach students to work together and to navigate effectively in interdisciplinary environments, to identify opportunities and to transform ideas into practical realizations. The methodology of realization of the EiT course is shown in Figure 1.

Figure 1. Methodology of realization of the course Experts in teamwork



Main phases of the methodology are: introduction to entrepreneurship and teamwork, formation of teams and presentation of the general theme, drafting of a cooperation agreement, competence triangle method and team's competencies, creating a project assignment, project work with experiential learning, creation of Personal and Team reflection and presentation of the project and preparation of reports.

4. Conclusion

The work shows a modern approach to education in which the learning process is largely based on experience, and which was created in response to the demands of today's society and economy. The methodology and experiences of the implementation of the course Experts in teamwork at the University of Banja Luka, which aims to develop competencies related to entrepreneurship and teamwork, are presented. Students had good experiences with the new learning concept and a high level of satisfaction with the development of the intended competencies. In the future, it is necessary to collect information from companies that employ engineers who have completed the course Experts in teamwork about the company's satisfaction with their entrepreneurial and teamwork skills.

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THE IMPACT OF DIGITAL TRANSFORMATION ON THE LABOR MARKET: ANALYSIS OF CHANGES IN REQUIRED SKILLS IN THE EMPLOYMENT PROCESS

Ljubiša Mičić¹

Stefan Tanović²

Abstract

The paper presents a systematic literature review and qualitative research with the aim of a deeper understanding of the impact of digital transformation on the labor market. A systematic literature review is performed according to the methodology defined by prof. Barbara Kirchenheim, and the Delphi technique is applied for qualitative research through the collection of opinions from a selected sample of experts from the relevant field.

In the initial part of the paper, a systematic literature review analyzes existing research, especially in reference bases and practices, as well as theories related to digital transformation and its connection with the labor market. This review provides a thorough initial analysis of the current state of the field, exploring how digital technologies are shaping skills, education, and employment requirements.

After that, the research moves to the qualitative part, where the methodology defined by the Delphi technique is used, applying individual interviews in order to gain a deeper understanding of the impact of digital transformation on the labor market. A precisely defined sample of experts provides their views, opinions and projections about future changes in skills, employee demands and implications for education, whose answers are analyzed by experts.

Through this combination of a systematic literature review and qualitative research, the paper brings a deeper understanding of the complex dynamics of digital transformation in the context of the labor market. The results of this research have the potential to develop policies, educational programs and employment practices to better adapt to the challenges of the digital age.

Keywords: digital transformation, digitization, labor marker, employment

Introduction

In the era of digital transformation, where technological progress is rapidly shaping society, economy, and lifestyle, one of the key areas significantly affected by these changes is the labor market. Digitalization, automation and the rise of new technologies such as artificial intelligence, machine learning, Big data, 3D printing and related technologies have penetrated deeply into everyday work practices, creating challenges but also providing new opportunities for workers, employers and the global economy. This paper explores the depth of the impact of digital transformation on the dynamics of employment, skills, and education through a combination of literature review and qualitative research. The starting point of this research lies in the analysis of previous research, practices and theories that connect digital

¹ PhD Assistant Professor, University of Banja Luka, Faculty of Economics

² University of Banja Luka, Faculty of Economics

transformation with the labor market, which provides a fundamental picture of the current situation.

Accordingly, the objectives of this research are twofold: to provide a comprehensive literature review to understand the current state and identify key themes, and to use a qualitative approach via the Delphi technique to delve deeper into the perspectives of experts. The work is based on the idea that the combination of these approaches will reveal not only existing trends but also future directions of development in the labor market following the process of digital transformation.

We distinguish three processes that can be associated with the changes that are a consequence of the technological progress we are witnessing: digitization, digitalization, and digital transformation. Bearing in mind, in simplified terms, that the first two terms are simpler, i.e. that digitization is the conversion of analog to digital data and digitalization is the improvement of a specific process using technology, in this paper we will focus only on the third, most complex concept, i.e. the concept of digital transformation. Digital transformation, as recorded in previous research, is not just a simple change in the technological environment but a comprehensive process of transformation under the influence of specific technologies; and at the macroeconomic level, it significantly influences the way jobs are performed, employees are sought, and educational systems are shaped. A deep understanding of these impacts is key to informing decision-makers, employers, educational institutions, and workers themselves in order to successfully adapt to the changes brought about by the digital age.

We expect that the results of this research will contribute to a better understanding of the complexity of the digital transformation, more precisely its impact on the job search and employment, providing relevant insights for the design of policies that support workers, the development of educational programs aimed at the needs of the labor market, and adjustments in employment practices. Through collaboration with experts in the field, the work contributes to the creation of a sustainable framework for a workforce that will successfully lead through the changes resulting from digital transformation.

Research methodology

Researching the impact of digital transformation on the labor market requires a careful approach in the analysis of materials and the application of appropriate methods. In this chapter, we will consider the key aspects of the materials used in the research, as well as the methodological framework that served as the basis for data collection and analysis.

The first part of the paper is devoted to a systematic literature review, based on the methodology of Professor Barbara Kirchenheim (2004). This overview reveals the key elements of the connection of digital transformation with skills development, education, and employment requirements. Analyzing reference bases and practices, the research reveals how digital technologies shape the labor market and the challenges faced by the modern worker as well as the employer. The methodology of the systematic literature review is based on the guidelines defined by Professor Barbara Kirchenheim. The first step includes the identification of relevant reference bases, and then we conduct a detailed analysis of existing research, practices, and theories. This allows us to create a basis for understanding the current state of digital transformation and its impact on skills, education and employment requirements.

The systematic review is particularly focused on analyzing the impact of digital transformation on key aspects of the labor market. We've paid attention to changes in skills that are increasingly in demand, the evolution of educational needs and the adaptation of employee

demands. This analysis provides insight into how digital technologies are shaping the workforce. Through a systematic review, a synthesis of the current state of research on the impact of digital transformation on the labor market was achieved. Gaps in the literature, unexplored areas and shortcomings were identified, which laid the foundation for the contribution of this research, where we included a qualitative part.

In the second part, the focus is transferred to qualitative research using the Delphi technique. This approach includes individual interviews with selected experts in the relevant field, whose opinions and projections provide a deeper understanding of the expert's perspective on changes in skills, workforce requirements and implications for education. Through the analysis of answers by experts, the work seeks to investigate not only the current situation but also the predicted future changes in the labor market.

We used the Delphi technique for the qualitative part of the research. The Delphi technique, as a method of qualitative research, provided a framework for obtaining professional opinions and projections from a selected group of experts. This process consisted of several iterations. The technique involves the collection of qualitative and quantitative data, which is complex and requires several stages until the experts have agreed on a certain question, at least 70%, or until one of the experts would change his position under any circumstances.

The process of selecting experts was carefully managed to ensure the representativeness of the sample. Experts were chosen based on their relevant experience in the field of human resources, especially for jobs that were created or significantly changed through digital transformation processes. The goal was to include different perspectives that will contribute to the quality of the information collected during the research.

We designed the survey using a combination of closed and open questions, as well as scaling to quantify responses. All responses were written and then content analyzed and transformed into a usable format. We used MS Excel and Nvivo as a tool for entering and evaluating the collected data.

The questions that were analyzed through expert interviews in the first phase are:

1. "Do you think that the digital transformation has significantly changed the labor market"?
2. "Which skills do you consider crucial in the context of digital transformation?"
3. "How do you assess the current level of adaptation of the education system to the requirements of digital transformation?"
4. "What do you consider to be the biggest challenges in adapting the workforce, individually and at the level of society, to the changes that arise through the process of digital transformations?"
5. "Which challenges would you particularly highlight in the recruitment process that have arisen as a result of digital transformation?"

Such questions allowed us to gain insight into anticipated changes in employment requirements, assess the adequacy of current educational programs, and evaluate cooperation between key actors in adapting education to the needs of the digital age. In this way, the interviews served as a tool to connect theoretical knowledge from the literature with the practical experiences of experts, thus contributing to a more complete understanding of the complexity of the impact of digital transformation on the labor market.

After the end of the interview, the collected answers were carefully analyzed through software, and the dominant answers were identified and sent back to the experts to harmonize their views. The analysis included the identification of key themes, patterns of opinion and potential

contradictions. This phase provided a deeper understanding of the different perspectives of experts regarding the impact of digital transformation on the required skills of employees, the demands and expectations of employers, and the implications for education. After the adaptation of the second and third steps, we successfully managed to get 90% agreement of the developed recommendation (20 out of 22 participants) which we propose in the research results.

The results

Summary results of a systematic literature review

A systematic review of the literature began with the identification of key topics and concepts related to digital transformation and the labor market. The search included relevant bibliographic databases, journals and conference papers using the key words “digital transformation” along with “and” and the words “employment”, “labor market” and “required skills”. In the following, we present a proposal of key theoretical works that have been identified on this topic.

According to the works of authors such as Brynjolfsson and McAfee (2014), who dealt with the analysis of global economic trends caused by digital transformation, and authors such as Susskind and Gratton (2019), who provided perspectives on the impact on work habits and the future of professions, technological changes are becoming key topic. Kumar (2020), focused on the information technology sector, contributed to the understanding of changes in the IT sector due to digital transformation.

The works of authors such as Martin Ford (2015) and Andrew Yang (2018), who investigated the impact of automation on employment and workers, contribute to the understanding of the social aspects of the digital transformation of the labor market.

Susskind (2015), in collaboration with his son Daniel, studied how technology is changing the nature of professional jobs, focusing specifically on sectors such as law and medicine. Mayer-Schönberger and Ramge (2018) analyzed the impact of big data and digital technologies on the economic overview, including changes in the workforce and business models.

John Seely Brown and Paul Duguid (2000) considered the social aspects of information in the work environment, exploring how digital transformation affects the way people exchange and use information in a professional context. The integration of different perspectives of these authors contributes to a deeper understanding of the complex changes that digital transformation brings to the labor market.

Barišić et al. (2021) state that the shift towards automation and digitization in modern companies is due to the need to be better prepared for competitive challenges, has put pressure on human resource management processes and is a challenge for HR leaders and professionals to change their skills and competencies as would drive future organizational performance. They further state that digital transformation, which represents the transformation of business functions and business models into a digital form, is a key aspect of the current radical changes in the modern economy and affects all processes in the organization. The critical components of a digital transformation strategy that can help achieve competitive advantage are human capital, intellectual capital and knowledge. They conclude that the role of HR in contributing to the digitization strategy is not emphasized enough, and the results of this research represent a valuable contribution to future research and can certainly be an important benchmark for organizations when preparing strategies to respond to the challenges of the digital age.

Zhang and Chen (2021) explore the digital transformation of human resource management in the context of the digital economy. They identify five factors driving this transformation and analyze the implementation of the digital workplace, digital HR processes and digital employee services. The study highlights the potential impacts and challenges of digital transformation, including the conversion of old and new HR systems. The current digital age and the role of technologies such as 5G, cloud computing and artificial intelligence are emphasized.

In summary, the literature indicates that the effects of digital transformation are present both in the domain of required skills for employees, but also in the domain of changes in the way of regurgitation, as well as the changes it causes in the education system and society in general.

Analysis of expert interviews

In the first iteration of the question, the experts all agree that technology has had a significant effect on the labor market and that all segments of the labor market have changed, from the process of advertising new jobs, through recruitment to employee training and motivation to stay in the company. Thus, experts state that jobs are now mostly advertised via web platforms, that artificial intelligence tools are widely used in larger recruitments, especially in the initial review of received applications, and that trainings are specially designed for employees to improve their digital skills.

As a result of the mentioned changes, experts believe that the read set of new skills appears as necessary, and on the other hand, the add set as desirable. For example, basic digital skills, such as basic computer literacy through the use of MS Office tools, email and web search, are considered a prerequisite for employment, but even though they are taken for granted, a large number of new employees do not even have this basic level of skills. On the other hand, skills such as data analytics, programming, design, and mobile application development are becoming necessary not only for technology companies, but also for traditional companies, as well as public institutions, companies and institutions.

The experts, some in the first iteration of the question and some later, were critical of the educational system and its degree of adaptation to the new reality created by the digital transformation. Thus, the majority states that the education system is chasing changes and does not follow them in a timely manner, especially in the domain of digital skills and modern technological tools. They also state that most of these additional qualifications are either acquired independently by employees or employers organize these specific training courses.

Among the challenges, the experts identify primarily the mismatch between the labor market and the educational system in the domain of acquiring knowledge in the sphere of digital skills, but also the problem of a high degree of labor turnover, frequent career changes, opportunities for remote work, often for foreign companies that can offer more wages and better conditions for local workers.

On the other hand, the challenge is accelerated technological progress, which forces even digitally educated workers to a continuous lifelong learning style, which is challenging in combination with work and private obligations. Also, work-life balance becomes very important for workers, sometimes crucial in the process of choosing a job, which to some extent forces employers to hire more labor and thus, in addition to the previously mentioned slow fluctuations, they often have a challenge in finding adequate labor.

Comparison of literature review and expert opinions

Based on the obtained results, we compared the results from the literature with the answers obtained from the Delphi technique in order to gain insight into the impact of digital transformation on the labor market. This analysis enables identification of key themes, comparisons with theoretical concepts and consideration of implications for education, employment policy and practice. The results of the systematic review point to the growing importance of data analysis skills. The Delphi technique confirms this tendency, with experts emphasizing the need for advanced data interpretation skills. This consistency supports the conclusion of a key focus on the development of analytical skills. The theoretical framework of the systematic review points to the evolution of the labor market due to digital transformation. When we see that experts in the Delphi technique have singled out analytical skills, it confirms the correlation between the theoretical assumptions and the real experiences of the experts.

Although the majority of Delphi experts emphasized the importance of analytical skills, some responses may point to specifics or new aspects that we may not have fully covered in a systematic literature review. For example, some experts may emphasize the need for data interpretation skills that may not have been discussed in depth in the literature. When we compare our findings with current industry trends, we see that organizations are increasingly looking for professionals with strong analytical skills. This confirms that our research reflects the real needs of the labor market and follows current practices.

Digital transformation has brought significant changes in the recruitment process, affecting both job seekers and employers. Here are some of the key impacts identified by experts:

- Increased reliance on technology in recruitment, such as AI for CV screening and video conferencing tools for interview purposes.
- Changing skills required, with a greater emphasis on digital literacy and soft skills such as adaptability and creativity.
- Flexible work arrangements, with an increase in telecommuting and jobs in the gig economy.

The impact on employers was also mentioned in the literature as well as by the experts themselves. Thus, they state the following:

- Increased competition for skilled workers with highly developed tech skills, specific to certain industries, leading to the need for more attractive compensation and benefits packages.
- The need for upskilling programs to keep up with changing technology and business needs.
- A greater focus on agility in employment, considering the high level of labor force turnover.

The general impacts on the labor market have been discussed more in the literature, but experts have pointed out the following:

- Increased need for digital literacy and soft skills such as communication and problem solving because the digital workplace also requires specific new skills in team management, collaborative work, and coordination of dislocated teams.
- Greater flexibility in working arrangements, allowing for a better work-life balance and more opportunities for remote work, which affects the expectations of both employers and workers.

- The need for constant training and improvement of skills in order to remain competitive in the labor market, but also very often motivated to stay in the company.

Analysis of experts' responses points to several key factors that will shape the future of the labor market. For example, most experts highlight the importance of technological innovation, especially in the field of artificial intelligence, as the main driver of changes in the skills needed in the workplace. Also, social and economic factors, such as demographic changes and global economic conditions, are often cited as important factors that will affect employment dynamics. Analyzing the projections of experts, one notices the consistency in the views on the growing need for skills related to data management and analysis. However, there are also certain differences in viewpoints. For example, while one section of experts sees an emphasis on programming skills, others insist on soft skills such as creativity and teamwork as key factors for future success.

Based on the projections of experts, we ask how educational institutions can adapt to these future challenges. For example, to meet the growing need for analytical skills, educational institutions may need to consider upgrading training programs to integrate training in data analysis. Also, public employment policies can be directed towards supporting the creation of an environment that encourages the development of skills needed for future jobs, in order to ensure that the workforce remains competitive in the market.

The conclusion even limits the research

This research paper provides a complex theoretical analysis of the impact of digital transformation on the labor market through a combination of systematic literature review and qualitative research using the Delphi technique. Based on the collected data, we can draw several key conclusions that contribute to understanding the dynamics of changes in skills, education, and employment requirements in the context of the digital era. A systematic literature review provides a deep insight into the current state of research on digital transformation and its impact on the labor market. The identification of key trends, practices and theories emphasizes the complexity of the impact of digital transformation on shaping the skills of the workforce and adapting educational programs to the needs that this transformation contributes to.

Through the application of the Delphi technique in qualitative research, we gained valuable insight from an expert's perspective. They believe that there is a need for lifelong learning and development of employees, which is good for both individuals and the company. Also, the future of the labor market will be even more affected by AI, remote work and further changes in the needs of the labor market. The ability to provide responsive training programs, either in-house or through external educational institutions, is critical to supporting a successful workforce transition. In addition, support for independent learning and flexible education models contributes not only to the personal development of employees but also to the long-term sustainability of the company.

This paper contributes to scholarly literature by providing a comprehensive insight into the interaction of digital transformation and the labor market. The integration of a systematic review and the Delphi technique provides an original approach to the investigation of this complex phenomenon, thus opening the door for further research in this area.

An objective limitation of the work is the limited sample in terms of the number and location of the experts who were interviewed. Thus, in future research of this type, the selected group

of experts could include those who come from outside Bosnia and Herzegovina, as well as those who come from several different industries.

In conclusion, this research represents a step forward in understanding the profound changes that digital transformation is bringing to the labor market, with the hope that its findings will inform policy and educational decisions related to the future of work.

Workers are facing profound changes in the labor market as a result of digital transformation. Automation and digitization not only transform existing jobs, but also create completely new occupations. However, this process often leads to the loss of traditional, routine jobs, often in sectors such as manufacturing, trade and administration. Workers are therefore in a situation where they must constantly improve their skills in order to remain competitive in the labor market. This requires adaptability and continuous learning, which can be challenging for workers who are already established in their careers. In addition, digital transformation can lead to the emergence of so-called the “gig economy”, where workers work as freelancers or temporary workers, which can lead to job insecurity and a lack of social protection.

On the other hand, employers face the need to adapt their business models and workforce management strategies. Investments in technology and digital tools are becoming necessary to remain competitive and increase efficiency, but at the same time there is increased complexity in managing these changes. Employers must ensure they have access to qualified digital staff, but at the same time must address issues related to data privacy, ethical use of technology and intellectual property protection. In addition, digital transformation can lead to the need to restructure organizational processes and culture, which can cause resistance and require long-term changes in the way of working and conducting business.

At the level of society, digital transformation has profound social, economic, and educational consequences. Technological progress can lead to increased productivity and economic growth, but it can also increase inequality and polarization of the workforce. In the context of the education system, digital transformation poses challenges related to adapting curricula and learning methods to ensure that students acquire the necessary digital skills and competencies for the future working world. This requires investment in infrastructure and technological resources in educational institutions, as well as ensuring training and support for teachers to enable them to effectively integrate technology into teaching. In addition, digital transformation can lead to the emergence of new learning models such as distance learning and e-learning, which requires the adaptability of the education system and the redefinition of the role of traditional classrooms and educational institutions. However, there are also challenges related to the digital divide, where unequal access to technology can deepen existing social differences in education. Therefore, the education system faces the challenge of ensuring inclusive access to digital technologies and developing digital literacy among all students, to ensure that everyone has equal opportunities to succeed in the digital era.

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Народна и универзитетска библиотека
Републике Српске, Бања Лука

338.246.88:316.42(082)(0.034.2)

RESEARCHING Economic Development and Entrepreneurship in
Transition Economies REDETE (10 ; 2023 ; Trebinje)

Researching economic development and entrepreneurship in
transition economies [Електронски извор] : confrence proceedings
/ 10th REDETE Conference, Trebinje, October 26-27, 2023 ;
[managing editors Jovo Ateljević, Donato Iacobucci and Vladana
Ritan]. - Onlajn. izd. - Banja Luka : Faculty od Economics,
University of Banja Luka, 2024

Sistemski zahtjevi: Nisu navedeni. - Način pristupa (URL):
<https://redete.org/assets/content/conf-prog/conf-proceedings-2023.pdf>. - El. zbornik. - El. publikacija u PDF formatu opsega 163 str. - Opis izvora dana 30.4.2024. - Bibliografija uz svaki rad.

ISBN 978-99976-57-24-4

COBISS.RS-ID 140437761

