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Prof. dr Mijat JOCOVIĆ, Dean

EDITOR

Dr Jovan ĐURAŠKOVIĆ

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FOREWORD

The **mission of the 1st MICEB conference** is to initiate an academic and professional debate on the most important topics in the field of sustainable development, economic growth, and green economy. The intention is to bring together renowned scientists and researchers, representatives of the business community, and creators of economic policies, with the aim of affirming the best practice for creating an optimal environment that encourages the application of the green economy concept.

With the adoption of the **Declaration on September 20, 1991, in Žabljak, Montenegro became the first ecological country in the world.** The declaration defines the country's strategic determination to adopt and apply the highest standards and norms in the field of environmental protection, nature conservation, and economic development based on the principles of an ecologically sustainable system.

When sustainable development is mentioned, the green economy concept is most often referred to as one of its key instruments. Sustainable development is a carefully planned development strategy that takes into account the efficient use of available resources, considering the provision of their long-term quality. Aware of the fact that the availability of resources, on the one hand, and environmental pollution on the other, have their limits, economic development must not damage the quality of the environment of future generations.

The conference brought together expert participants from academia, government, and business, who deal with sustainable development and green economy. The conference has hosted presentation of **80 papers**. **Nearly 170 co-authors from 15 countries participated in MICEB 2023**.

The organizers of the MICEB 2023 thank all the supporters of the conference, including sponsors, keynote speakers, authors, academic partners, media, and other institutions and individuals.

TABLE OF CONTENT

I GREEN ECONOMY

I GREEN ECONOMY

DIGITALIZATION IN ALBANIAN AGROTOURISM, NEW PATH TO FOLLOW

Irini Goga[1], Ana Kapaj[2]

([1]Management and Marketing Department, Faculty of Economy, Business and Development, European University of Tirana, irini.goga@uet.edu.al, [2]Department of Mathematics and Informatics, Faculty of Economy and Agribusiness, Agriculture University of Tirana, Albania, amane@ubt.edu.al)

Abstract: This research paper explores the potential of digitalization in the context of Albanian agrotourism and the opportunities it presents for the industry's development. Agrotourism, which combines agricultural activities with tourism experiences, has gained popularity in Albania due to its rich rural landscapes and cultural heritage. However, the industry faces various challenges in terms of marketing, operational efficiency, and connectivity. The development of digitalization in agrotourism has transformed the way that farmers and rural tourism operators interact with their customers. Using digital platforms and tools, agrotourism businesses can improve their marketing efforts, streamline their operations, and enhance the overall customer experience. This has led to increased revenues and improved sustainability for small-scale farms and rural communities. The adoption of digital technologies has also led to the creation of new business models, such as online marketplaces for locally produced food products and agritourism booking platforms. However, challenges remain, such as the digital divide in rural areas and the need for specialized training and support for farmers and rural tourism operators to effectively utilize digital tools. Overall, the digitalization of agrotourism presents both opportunities and challenges for rural communities and small-scale farmers as they adapt to the changing landscape of tourism and agriculture. Albania has been actively working towards the digitalization of agrotourism in recent years. The study investigates how digital technologies can address these challenges and propel Albanian agrotourism to new heights. Through a comprehensive literature review and analysis of case studies, the research highlights the benefits and best practices of digitalization in the agrotourism sector. The findings indicate that digitalization offers numerous advantages for agrotourism businesses in Albania. Online platforms and social media can be effective marketing tools to promote agrotourism offerings to a wider audience. Digital booking systems and payment gateways streamline processes, enhancing operational efficiency. Furthermore, digital technologies enable personalized and interactive experiences for visitors through mobile applications, websites, and virtual reality tours. However, limitations such as limited internet access and technological infrastructure pose challenges to the widespread adoption of digital technologies in rural areas. To overcome these barriers, the research emphasizes the need for collaboration among stakeholders, including government bodies, industry associations, and agrotourism businesses, to invest in infrastructure development, training, and support systems. The study concludes that embracing digitalization in Albanian agrotourism is a promising pathway for sustainable growth and competitiveness. By leveraging digital tools and platforms, agrotourism businesses can improve their visibility, enhance guest experiences, and foster collaboration within the industry. This research provides insights and recommendations to guide stakeholders in harnessing the potential of digitalization and ensuring the long-term success of Albanian agrotourism.

Keywords: digitalization; agrotourism businesses, new business model, rural communities, tourism.

Introduction

The integration of agriculture and tourism has the potential to create a mutually beneficial relationship. By offering unique experiences such as farm tours, cooking classes, and agritourism activities, farmers can diversify their revenue streams while providing visitors with an authentic taste of rural life. This can lead to increased tourism in rural areas, which in turn can boost local economies by creating jobs and stimulating local businesses. Additionally, by showcasing sustainable farming practices and highlighting the importance of preserving natural resources, this model can promote environmental awareness among visitors. By fostering a deeper connection between agriculture and tourism, we can create a sustainable model that benefits both industries while preserving our natural resources for future generations.

The rural development includes all rural activities (infrastructure, education, educational and scientific system, social protection, economy, tourism, etc.). Intensive cooperation with actors from other areas and localities,

group work and networking, can lead to a useful exchange of ideas and discoveries, which eventually take quality solutions and way out of the current situation (Pollermann et al., 2020).

Albania has a rich cultural heritage, unique nature, and a variety of agriculture products that attract tourists from around the world. Agrotourism, or rural tourism, is a growing industry in Albania, which allows tourists to experience the country's rural lifestyle, taste traditional foods, and learn about the customs of the local people. The COVID-19 pandemic has shifted the focus of the tourism industry towards nature-based and outdoor activities, which makes agrotourism an even more appealing option for travelers. In this article, we will discuss the benefits of digitalization in agrotourism in Albania and how it can help the industry grow.

According to 2018 data, 42.8% of the country territory represents agricultural land, but the share of arable land is twice as small, reaching about 22.3% of the country territory (World Bank Open Data 2021). Employment in agriculture is continuously diminishing. In 2019, 36% of total employment was in the agriculture sector. It is dominated by women, as the percentage of female employment is 42% while the male employment is only 33%, (World Bank Open Data). It is worth mentioning that 51% of women who are self-employed work in agriculture (Economic Reform program 2021-2023).

Albania has a lot of potential for the growth of agritourism. Although the industry has just recently begun to take off, in the short to medium term, fast growth is anticipated. The entire nation has unrealized agritourism development potential. The regions of Korça, Berat, Gjirokaster, Vlora, Shkoder, Kukes, and Dibra have the best potential for fusing agricultural with tourist attractions. The most prevalent agritourism models are farm-to-table eateries with a few limited lodging options (AASF, June 2019).

In Albania, the average specific expenditure by foreign tourists (non-residents) was 13.3% of GDP during 2013-2017, which clocked a 30% growth within the four-year duration. The number of foreign citizen arrivals in the first half of 2018 has seen an increase by 9.1%, as compared to the same period in 2017. 'Holiday' is the second most popular purpose of their visit reported after 'Others'. Tourism being the largest industry since 1990, with Europe representing 42% of its total share, there remain huge economic dividends to reap for the emerging tourism industry in Albania. Moreover, this sector can generate non-farm employment in the agriculture sector. The challenge then is it to understand what driving tourism growth in Albania is, and what binds Albania's tourism opportunities from growing faster (N. Besra, 2018).

According to the government's agenda, the agritourism industry is a high priority sector. Agritourism has been crucial for agriculture and rural diversification in most national and local level initiatives.

The UN World Tourism Organization (UNWTO) defines sustainable tourism as an enterprise that achieves a balance between the environmental, economic, and socio-cultural aspects of tourism development for long-term benefits to recipient communities. The Government of Albania has identified Agritourism as a particularly inclusive and sustainable tourism opportunity and prioritized its development as a rural economic diversification tool within the country's new "100+ villages Programme". Consistent with this program, the Ministry of Tourism and Environment (MoTE) has started certifying Agritourism businesses, while Ministry of Agriculture and Rural Development (MoARD) through the Albanian Rural Development Agency (ARDA) is in the process of funding Agritourism projects. It is essential to understand the emerging patterns within the sector to strategize appropriately supportive policies (N. Besra, Nov. 2018).

Literature Review

What is digitalization in agrotourism?

Digitalization in agrotourism refers to the integration of digital technologies and solutions in the agrotourism industry. It involves using digital platforms and tools to improve the visitor experience, increase efficiency in agricultural practices, and enhance the overall sustainability of agrotourism destinations. Digitalization in agrotourism includes a wide range of applications, such as digital marketing and promotion, precision agriculture, automated irrigation systems, online booking and payment systems, and data analytics. By embracing digitalization, agrotourism businesses can enhance their competitiveness and attractiveness in the global marketplace, while also contributing to the sustainable development of rural areas.

Based on FAO, 2021, sustainable rural tourism helps to strengthen rural economies and conserve ecosystems. Digitalization refers to the use of digital technologies to enhance or transform traditional practices. In agrotourism, digitalization can be applied to various aspects of the industry, such as marketing, booking,

payment, and communication. By adopting digital tools and platforms, agrotourism providers can reach a wider audience, improve their customer service, streamline their operations, and increase their revenue. Agriculture and rural life are becoming increasingly digitalized. Precision or smart farming technologies are gaining popularity and support, with the expectation that they will boost agricultural efficiency while also satisfying various environmental goals. For decades, digital advancements have been embedded in a productivism paradigm that views agriculture as basically farming and producing products such as food and fiber. Digitalization has received either enthusiastic support or fierce resistance within this paradigm.

On the one hand, supporters believe that digitalization would improve agricultural production efficiency and sustainability by modernizing farming methods and managing market externalities (e.g., carbon farming). Opponents, on the other hand, are concerned about how digitalization may increase existing concerns to sustainable agriculture, such as corporate farming, route dependency, workforce displacement, or agricultural alienation from rural life.

Digitalization in agrotourism has become increasingly important in recent years, as the industry faces a range of challenges and opportunities in a rapidly changing global landscape. In many parts of the world, agrotourism has emerged as a promising pathway for rural development and economic diversification, as well as a means to promote sustainable agricultural practices and preserve cultural heritage. However, the COVID-19 pandemic has also highlighted the vulnerabilities of the industry to sudden disruptions and the need for greater resilience and adaptability.

The integration of digital technology in the agrotourism industry can bring many benefits for both tourists and businesses. For tourists, digitalization can enhance their experience by providing them with more information, personalized recommendations, and a smoother booking process. For businesses, digitalization can help them streamline their operations, reach a wider audience, and improve their marketing and customer relationship management. Some of the benefits of digitalization in agrotourism in Albania can be listed as follows:

Increased visibility: Agritourism can be described as a broad set of activities that attracts tourists to a farm (McGehee, N.G.; Kim, K. 2004) and is considered as a form of commercial enterprise linking agriculture with tourism". Adopting agritourism activities on the farm can bring additional financial opportunities to a small farm, which include an increase in generated income and a greater return on farm assets (Kumar, P.; Kumar, S.2018). One of the main challenges of agrotourism in Albania is the lack of visibility in the global market. Many small agrotourism businesses rely on word-of-mouth and local networks to attract customers, which limits their potential reach. By using digital marketing tools such as search engine optimization (SEO), social media, and online travel agencies (OTAs), agrotourism providers can increase their visibility and attract customers from different countries and regions.

Improved customer experience: Digitalization can also improve the customer experience in agrotourism. By using online booking systems and payment gateways, customers can easily make reservations and payments from anywhere in the world. Digital communication tools such as chatbots, email, and messaging apps can also help agrotourism providers respond to customer inquiries and provide timely and personalized assistance.

Streamlined operations; Agrotourism providers can also benefit from digitalization by streamlining their operations. By using cloud-based software and mobile apps, providers can manage their bookings, inventory, and finances more efficiently. Digital tools can also help providers track their performance, analyze their data, and make data-driven decisions.

Sustainable tourism: Digitalization can also contribute to sustainable tourism in agrotourism. By using digital technologies to reduce paper waste, optimize energy use, and monitor resource consumption, agrotourism providers can minimize their environmental impact. Digital tools can also help providers promote responsible tourism practices, such as waste reduction, local sourcing, and eco-friendly activities.

Despite the benefits of digitalization, there are also challenges that need to be addressed. Some of the main challenges of digitalization in agrotourism in Albania are:

Lack of digital infrastructure; A part of rural areas in Albania have lack access to reliable internet connectivity and digital infrastructure, which limits the adoption of digital technologies in agrotourism. The government and private sector need to invest in digital infrastructure and provide training and support to agrotourism providers to overcome this challenge. Efforts should be made to address these infrastructure limitations to ensure the secure and effective use of digital technologies.

Limited digital skills: agrotourism providers in Albania have limited digital skills and knowledge, which makes it difficult for them to adopt and use digital technologies effectively. The government and private sector can provide training and education programs to improve the digital skills of agrotourism providers and promote digital literacy. Privacy and security concerns in digitalization require awareness and education among agritourism businesses and stakeholders. Training programs and resources should be provided to enhance understanding of privacy regulations, cybersecurity best practices, and data protection measures.

Privacy and security concerns; In the context of digitalization in Albanian agritourism, there are specific privacy and security concerns that need to be considered and addressed. As the industry adopts digital technologies to enhance operations and guest experiences, it is important to safeguard the privacy of individuals and ensure the security of data in the Albanian context.

1. Data Protection: The collection and storage of personal data, such as names, contact details, and financial information, raise concerns about data protection. Agritourism businesses in Albania should comply with relevant privacy regulations, such as the Law on Personal Data Protection, and implement appropriate measures to secure personal data from unauthorized access or breaches.

2. Cybersecurity Risks: The increased reliance on online platforms and digital systems introduces cybersecurity risks. Businesses should implement strong cybersecurity measures, including secure website protocols, encryption, regular software updates, and employee training to mitigate the risk of hacking, data breaches, and other cyber threats.

3. Third-Party Service Providers: Collaborating with external service providers, such as online booking platforms or marketing agencies, may involve sharing data with third parties. It is crucial for agritourism businesses to assess the privacy and data handling practices of these providers to ensure that visitor data is not misused or shared without proper consent.

To address these concerns, agritourism businesses in Albania should develop comprehensive privacy and security policies. These policies should outline how personal data is collected, stored, and used, as well as the security measures in place to protect against breaches. Additionally, raising awareness among employees and visitors about privacy practices and cybersecurity can contribute to a more secure digital environment.

Collaboration with relevant authorities, industry associations, and experts in privacy and cybersecurity can also provide guidance and support to ensure compliance with regulations and best practices.

By addressing privacy and security concerns, Albanian agritourism businesses can embrace digitalization while safeguarding the privacy of visitors and ensuring the security of their data.

Methods and Study results

In this study we have approached the actual studies in other countries and what is their experience in digitalization in agrotourism. Also, we have conducted a short interview with 100 agrotouristic providers in Albania, in the areas of Shkoder, Korce, Tirane and Gjirokaster.

Table 1: Distribution of targeted group

Shkoder	Korce	Tirane	Gjirokaster
20	25	35	20

The level of digital communication technology availability has sub-variables, but only to influence the capacity using digital communication technology, namely the infrastructure and communication costs. Agrotourism owners are accessing the internet using cellular-based broadband connection. The fee they pay for internet access is affordable for young farmers who use various features within WhatsApp application. Farmers who use digital communication technology can access information from diverse sources. It results in farmers' awareness of established tourist destinations and the services provided as a reference for their own agritourism development. Farmers are also increasingly open to visitors' requests and desires. Regarding the facilities, our results pointed out the fact that they use online booking through Booking.com or Tripadvisor.

Table 2: Use of online platforms

Booking	Tripadvisor	Others	Total
55	36	9	100

Source: Goga, 2022

Based on the literature and other studies we have evaluated in the selected facilities some factors that are supposed to affect the digitalization in agroutourism. The targeted group was asked about the factors that they believe influence the most the use of digitalization. And according to the responses the most rated factor was the Cost of Internet access and Targeted groups (national/international).

Table 3: Ranking of factors that affect digitalization.

Factors that influence digitalization	**Rank**	**Percentage of businesses**
Cost of internet access	1	43
Targeted group (national/international)	2	20
Level of education of the owner/manager	3	18
Age of the owner/manager	4	15
Gender of the owner/manager	5	4

Source: Goga, 2022

All the factors are tested at the significance level 0.05 and the results are shown in the table below:

Table 4: Factors that influence digitalization in Agrotourism.

Factors that influence digitalization	**p-value**	**Conclusion**
Age of the owner/manager	0.00056	Significant
Gender of the owner/manager	0.98860	Not significant
Level of education of the owner/manager	0.00204	Significant
Cost of internet access	0.00030	Significant
Targeted group (national/international)	0.00150	Significant

Source: Goga, 2022

Most of the factors that we have analyzed have turned out to be significant for the level of 0.05. Only Gender has turned out to be non-significant. While, Age, Level of education, Cost of internet access and Targeted groups are factors that have resulted to significantly influence the digitalization in agroutourism in the targeted group.

Conclusion

In conclusion, digitalization in Albanian agrotourism presents a new path to follow for the industry's development and growth. This paper research has highlighted the potential benefits and opportunities that digital technologies can offer to agrotourism businesses in Albania. By embracing digitalization, agrotourism establishments can enhance their operational efficiency, reach a wider audience, and improve the overall guest experience.

The findings of this research indicate that digitalization can streamline various aspects of agrotourism, such as marketing, bookings, communication, and payment processes. Online platforms and social media can serve as powerful tools for promoting agrotourism offerings to potential visitors, allowing businesses to showcase their unique features and attract a larger customer base.

Based on the analysis of the selected targeted group we reached the conclusion that some of the factors that influence the use of digitalization in agrotourism are Cost of internet access, profile of Targeted group (national/international), Level of education and Age of the owner/manager.

Furthermore, the integration of digital technologies can enable agrotourism businesses to provide personalized and interactive experiences for their guests. Through mobile applications, websites, or virtual reality tours,

visitors can explore and engage with the agricultural and rural aspects of the destination, enhancing their overall satisfaction and creating lasting memories.

Moreover, digitalization can facilitate better connectivity and communication between agrotourism businesses, local communities, and tourists. Collaborative online platforms can foster networking and knowledge exchange, leading to increased cooperation and the development of innovative ideas and practices within the industry.

However, it is important to acknowledge the challenges and limitations associated with digitalization in Albanian agrotourism. Limited internet access and technological infrastructure in some rural areas may hinder the widespread adoption of digital technologies. Additionally, there may be a learning curve for agrotourism businesses to effectively utilize digital tools and platforms.

To fully leverage the benefits of digitalization, it is crucial for stakeholders, including government bodies, industry associations, and agrotourism businesses, to collaborate and invest in the necessary infrastructure, training, and support systems. This will ensure that all stakeholders can embrace and adapt to the digital transformation, fostering sustainable growth and competitiveness in the Albanian agrotourism sector.

In conclusion, digitalization offers immense potential for the future of Albanian agrotourism. By harnessing the power of digital technologies, agrotourism businesses can enhance their visibility, improve operational efficiency, and provide unique and interactive experiences to visitors. Embracing digitalization is a critical step in unlocking the industry's growth and ensuring its long-term sustainability in the evolving tourism landscape.

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SIGNIFICANCE AND PERSPECTIVES OF CIRCULAR ECONOMY DEVELOPMENT IN BOSNIA AND HERZEGOVINA

Predrag Mlinarević, Nemanja Šarenac, University of East Sarajevo, Faculty of Economics Pale,
predrag.mlinarevic@ekofis.ues.rs.ba, nemanja.sarenac@ekofis.ues.rs.ba

Abstract: Climatic changes and the unavailability of natural resources, together with the resulting increase in their prices, represent crucial challenges for the global ecosystem, striving to be factors in slowing down the further growth of the world economy and, at the same time, pushing it out of sustainable trajectories. Therefore, it is not surprising that the key global economic entities embodied in the European Union, the USA and other most important economies of the world recognized in their strategic development plans the danger of the existing linear economic model becoming unviable and the need for a transition towards a green and circular economy. On the other hand, small countries like Bosnia and Herzegovina, with a resource-intensive production base that dominantly shapes their economic structure, must timely anticipate the upcoming changes and position themselves in global production chains in a way that would enable them to accelerate the development transition. The changes associated with the circular economy orientation imply a corresponding structural shift from goods production to the provision of appropriate services. The current climate change imperative leads to carbon-neutral production technologies, which most directly raises the question of the competitiveness of individual economies. For all the above reasons, it is necessary for small economies, such as Bosnia and Herzegovina, to take an active approach through their economic policy to the described economic trends. It becomes rather significant if it is taken into account that the European Union, as one of the most important carriers of the development of the circular economy, is the largest trade partner and the desired final destination of the political and economic integration of Bosnia and Herzegovina. In addition to getting to know the concept and working model of the circular economy, this paper aims to analyze the economic implications of its application to structural economic changes, both in developed economies and in small open economies such as the economy of Bosnia and Herzegovina. The focus is also on opportunities and barriers to the circular economy development in Bosnia and Herzegovina.
Keywords: circular economy, linear economy, functional specialization, business models, sustainable development

INTRODUCTION

Scientific considerations that an economic system functioning based on a linear economy began to appear in the middle of the last century. Many scientists pointed out the harmful effects of such a system on natural resources and the environment. Climatic changes and the unavailability of natural resources, together with the resulting increase in their prices, represent key challenges for the global ecosystem, pretending to be factors in slowing down the further growth of the world economy and, at the same time driving it out of sustainable trajectories. Therefore, it is not surprising that the key global economic entities embodied in the European Union, the USA and other most important economies of the world recognized in their strategic development plans the danger of the existing linear economic model becoming unviable and the need for a transition towards a green and circular economy. On the other hand, small countries like Bosnia and Herzegovina, with a resource-intensive production base that dominantly shapes their economic structure, must timely anticipate the upcoming changes and position themselves in global production chains to enable them to accelerate the development transition.

The concept of circular economy was created within the discipline of environmental economics as a combination of welfare economics and the theory of economic growth with elements of sustainable development. If we take into account the definition of sustainable development given in 1987 by the World Commission on Environment and Development at the United Nations (the so-called Brundtland Commission) in its report entitled "Our Common Future", which reads: "Sustainable development is a development that meets the needs present, without questioning the ability of future generations to meet their own needs", it can be seen that there is a need to transform the traditional model of economic development into a model that takes more care of natural resources to meet the future on the most sustainable footing.

The changes associated with the orientation to the circular economy imply a corresponding structural shift from the production of goods to the provision of appropriate services. The current climate change imperative leads to carbon-neutral production technologies, which most directly raises the question of the competitiveness of individual economies. For all the above reasons, it is necessary for small economies, such as Bosnia and

Herzegovina, to take an active approach through their economic policy to the described economic trends. It becomes particularly significant considering that the European Union, as one of the most important carriers of the development of the circular economy, is the largest trade partner and the desired final destination of the political and economic integration of Bosnia and Herzegovina.

In addition to introducing the concept and working model of the circular economy, this paper aims to analyze the economic implications of its application to structural economic changes, both in developed economies and in small open economies such as the economy of Bosnia and Herzegovina. The focus will also be on opportunities and barriers to developing the circular economy in Bosnia and Herzegovina.

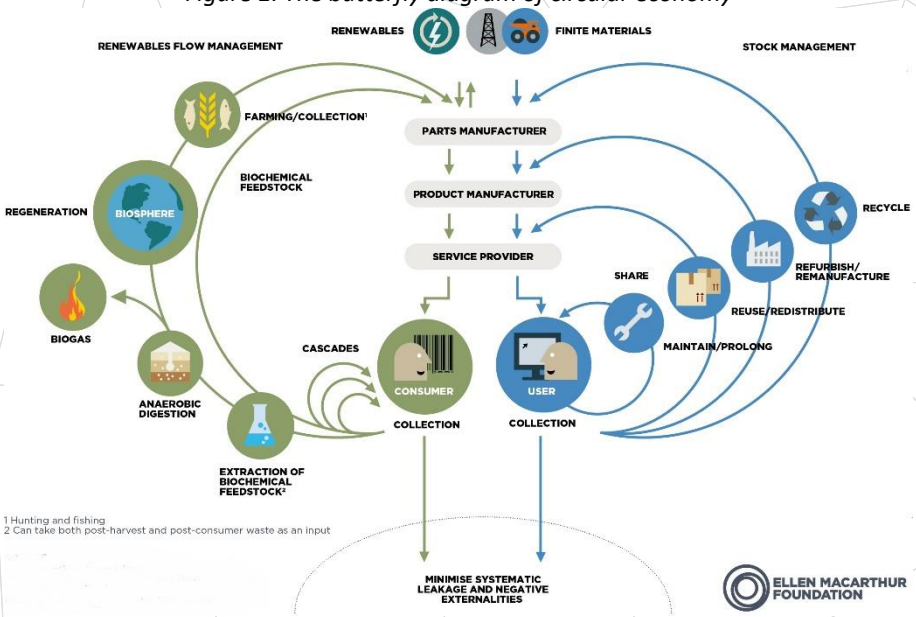
1. EVOLUTION OF THE CIRCULAR ECONOMY CONCEPT

The origin of the circular economy concept cannot be linked to one author or a specific period. The first mention of the circular economy began in the second half of the 20th century by ageing scientists and experts from various fields that rely on the economy. The idea of circular materials as a model of the economy was presented in 1966 by K. E. Boulding in his work: The Economics of the Pearce Coming Spaceship (Boulding, 1966). At that time, the scientific contributions of others such as Stahel, Lyle, Braungart, and Daly were particularly significant. One of the pioneers of defining the term circular economy was W.R. Stahel, whose main concern was research into extending the life of products, recycling and waste reduction. Stahel emphasizes the importance of providing services instead of producing products, which is encountered as an idea called a "functional service economy" (Stahel 1982). In their report for the European Commission: The Potential for Substituting Manpower for Energy, in 1976, Stahel and Reday conceived the vision of a closed-loop economy and its impact on the creation of new jobs, economic competitiveness, saving resources and preventing waste (Stahel and Ready 1976). The further development of such an economy was influenced by the German chemist M. Braungart and the American architect B. McDonough, who continued the development of the Cradle to Cradle concept and developed the product certification procedure. In their work, they talk about two types of metabolism: biological (biodegradable substances) and technological (technological materials). For these two metabolisms to remain healthy, they must remain separate and not contaminate each other. Biological substances enter natural cycles where they will be food for microorganisms, and technological elements circulate through several industrial cycles (McDonough and Braungart 2002). A new look at the concept of circular economy was given by the British economists D. W. Pearce and R. K. Turner, who presented a circular economy based on the research of feedback (non-linear) living systems (Pearce and Turner 1989) in a 1989 paper "Economics of Natural Resources and the Environment". Gottsching (1996) studied the development path of Germany from an importer to an exporter of paper waste in the 1970s and 1990s. Schwartz and Steininger (1997) studied the functioning of a network of enterprises in which each enterprise uses the waste created by the previous enterprise as input, representing a continuation and further development of the idea of industrial ecosystems.

A vital role in the development of the circular economy is played by the Ellen MacArthur Foundation, an independent humanitarian organization founded in 2010, aiming to accelerate the transition to a circular economy. The foundation has created a global platform for information, research and application of the circular economy. It also collaborates with the public and private sectors, including scientists, in boosting the empowerment of business innovations that apply this concept of economy. The foundation also cooperates with multinational companies, of which Danone, Google, H & M, Intesa Sanpaolo, NIKE Inc., Philips, Renault, and Unilever stand out. It provides quantified evidence about the potential and benefits of the circular economy for the economy, society and the environment through its information system. The Ellen MacArthur Foundation's innovative definition of circular economy reads:

"The circular economy strives to gradually separate economic activity from the consumption of limited resources, with the ultimate goal of achieving an economy that generates "zero waste". Unlike the extractive industrial model of "take-use-throw", the circular economy is based on the model of "reduce-repair-reuse-recycle". The circular economy model contributes to developing economic, natural and human capital and is supported by the transition to renewable energy sources. It is based on the principles: design without waste and pollution, preservation of products and materials in use, as well as regeneration of natural systems.'' (Ellen MacArthur Foundation, 2023).

Figure 1. The butterfly diagram of circular economy



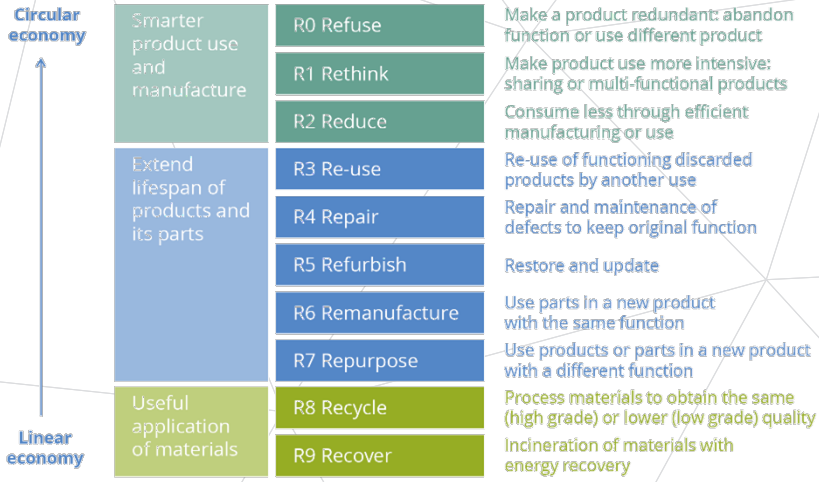
Source: Ellen MacArthur Foundation 2023

In recent times, the concept of the circular economy has attracted the attention of many scientists and researchers because it is this concept that personifies the implementation of the goals of sustainable development. Geng and Doberstein focus on its application in China, describing the circular economy as realizing a closed circulation of materials in the economic system. (Geng and Dobersteinn 2008). A significant difference between the concept of circular and linear economy is the application of the sustainable development concept. Sustainability becomes a goal that can be defined at the macro level, and includes environmental, economic and social goals. The concept of circular economy is defined at the micro level through the model of production and consumption (Bartelemus 2013). If the application of the circular economy leads to better results related to sustainability, then that concept becomes a tool for achieving sustainable development. It has been estimated that eco-design of products, waste prevention and reuse can bring net savings to companies in the EU of up to 600 billion euros while at the same time reducing gas emissions (MacArthur 2017). The concept of a circular economy originated in eco-industrial development, which relies on the idea that a healthy economy and environmental health could coexist. Eco-industrial development offers a precise way of integrating environmental management and coexists with the sustainable development goals of a community (Chertov 2000). This model provides strategies for greater efficiency through "economies of system integration," whereby partnerships between businesses meet shared service, transportation, and infrastructure needs, and the concept adds value to businesses and communities by optimizing the use of energy, materials, and community resources (Ayres 1994; Levine 2006).

The circular economy is often mistakenly identified with waste management, i.e. recycling, which is only the last stage in the product life cycle, while the goal of the circular economy is to prevent the generation of waste and pollution in all life cycle stages. Waste irretrievably disposed of in landfills is a valuable raw material, although it should not exist in an ideal circular economy model. In countries in the initial stages of transition to a green and circular economy, efficient waste management and increasing recycling rates are essential elements of those processes. The following illustrations show the circular economy model through the product life cycle and the difference between recycling and the circular economy.

Several analytical frameworks conceptualize the elements or processes within the circular economy. The often-used 9R approach provides a comprehensive framework of circularity strategies within production chains, where elements are ranked by priority importance in the context of the level of circularity.

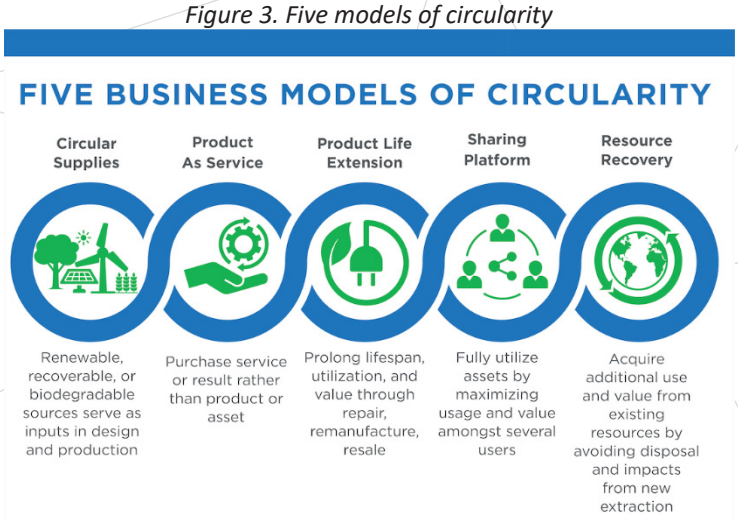
Figure 2 Framework of the 9Rs of the circular economy model



Source: Potting al. 2017

In the 9Rs model, a higher level of circularity has a more positive impact on the environment. The material should remain in circulation as long as possible and be used again when the product is no longer usable, and if possible, maintain the same level of quality and usability. Sustainable product manufacturing and smart use (including product sharing) impact circularity more than extending product life. The next option is to extend the service life, and the next option is to recycle the material through refurbishing. Burning material for production/energy recovery is the last on the priority list because the material ceases to be available for return to the production process. There are exceptions to this rule if increasing circularity leads to increased consumption of resources and energy, especially fossil fuels (Potting al. 2017).

Figure 3. Five models of circularity



Source: WRW Canada 2023

In the Circular Economy Handbook, "Achieving Circular Advantage", five business models for creating circular value are defined, which are not mutually exclusive (Lacy et al. 2020). From a theoretical point of view, the circular economy model may seem perfect. However, the practice has shown that not all types of waste can be easily recycled or cost-effectively reused as input raw materials for new production cycles. Therefore, the circular economy model should be seen first as the possibility of reducing the use of natural resources for those materials and products for which it is possible and cost-effective to achieve reuse.

It is estimated that the circular economy model can bring about 4500 billion US dollars in economic savings by 2030 (WEF 2023). The circular economy balances economic and environmental needs, creates new jobs, promotes innovation and protects the environment. At the same time, the ecological benefit tells us that this model will contribute to the restoration of natural resources in the long term and help solve the coming climate crises. Linear production has become unsustainable in the 21st century due to the irrational extraction of natural

resources and consumption of fossil fuels. According to Eurostat reports, only 12% of materials used in the EU come from recycling (EUROSTAT 2023). Thus, as expected, the consumption of materials such as biomass, fossil fuels, metals and minerals will double in the next 40 years, while at the same time, the annual waste production is predicted to decrease by 70% by 2050 (Kaza et al. 2021). Despite increasing recycling rates, the impact of certain waste materials such as metals, plastics, textiles, food, electrical and electronic equipment, batteries, and more harms the environment and human health. In 2019, over 92 billion tons of material were extracted and processed, which is equivalent to half of the total global CO2 emissions. For our planet to be a suitable place to live, world circularity should double from 8.6% to 17% (Circle Economy 2021).

2. IMPLICATIONS OF APPLYING THE CIRCULAR ECONOMY CONCEPT TO THE ECONOMIC STRUCTURE

The implications of applying the circular economy concept, apart from the driving forces that shaped it, embodied in resource exhaustion and environmental protection, have the most significant impact on structural changes. Namely, the role and importance of particular industrial sectors that were the carriers of growth and economic activity in the linear economy model will experience significant changes with the shift towards the circular economy. Specific industrial sectors based on mass production that drew profitable benefits from the economy of scale with an orientation to the circular economy will experience a significant reduction in their market share and participation in the total income. Models arising from the circular economy, such as the sharing economy, product recovery, product repair and maintenance, including product reuse, reduce the demand for new industrial products while simultaneously creating demand for activities related to the previously mentioned circular economy models. Bearing in mind that these models assume the prevalence of services concerning the production aspect, and these activities are knowledge and technology-intensive rather than resources, the influence of the circular economy on the development of new activities within the service sector is studied. The reduction of the industrial sector due to the decline in demand for resource-intensive products, and the parallel growth in demand for new service activities, represents a crucial structural change induced by the transition to a circular economy.

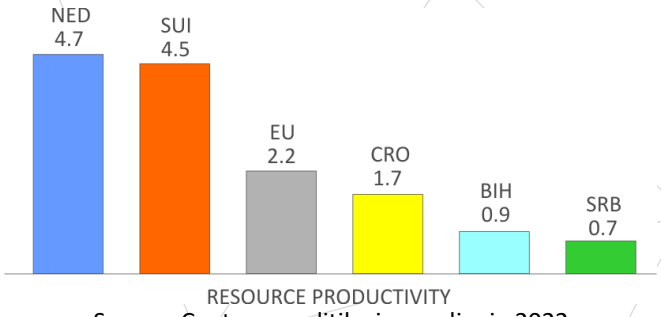
The global character of the circular economy concept is a guarantee of tectonic changes in production and service structures, as well as in the employment structure. In other words, the nature of the circular economy importance will be reflected in its dominant influence on economic growth and employment. For these reasons, the ability to adapt to this global trend and to position one's economy in the desired place in the global production chain reshaped by the application of the circular economy concept will have a crucial impact on the prospects of the future development of the economy. Therefore, anticipating these changes that the circular economy brings, the economic policy must be designed to ensure the achievement of development goals embodied in the sustainable growth of the standards of its citizens.

3. THE IMPORTANCE OF THE CIRCULAR ECONOMY FOR THE STRUCTURAL TRANSFORMATION OF BOSNIA AND HERZEGOVINA

According to the World Bank's classification, Bosnia and Herzegovina belongs to the countries with a medium income level. Resource-intensive activities dominate the production base of the Bosnian economy. From the economic convergence point of view, Bosnia and Herzegovina experienced falling into the middle-income trap, a common phenomenon in many transition countries. The transition process had negative repercussions manifested in the abundance of assertive deindustrialization of the economy of Bosnia and Herzegovina. According to the theory of structural transformation confirmed by experience, the dynamization of growth in Bosnia and Herzegovina was related to the industrial sector growth. However, the potential of the industrial sector to ensure convergence to the desired income levels directly depends on its very structure. The high participation of activities with lower added value in the industrial sector structure was a key obstacle to faster economic growth and avoiding falling into the middle-income trap. The analysis of the industrial structure of Bosnia and Herzegovina revealed the cause-and-effect relationship between the level of resource intensity of production, on the one hand, and the level of the added value of the respective industrial branches, on the other. The resource-intensive production base, which ensured its competitiveness at the lower price of natural resources, could not and cannot guarantee the desired transition in Bosnia and Herzegovina. Data on the resource productivity of Bosnia and Herzegovina testify in support of this thesis. Namely, according to data for 2019, resource productivity, which represents the ratio of GDP and domestic consumption of materials, was 0.9.

In the same period in the EU, the average value of this indicator was 2.2. It means that Bosnia and Herzegovina has a low level of added value of its production, thus inhibiting the possibility of higher economic growth rates.

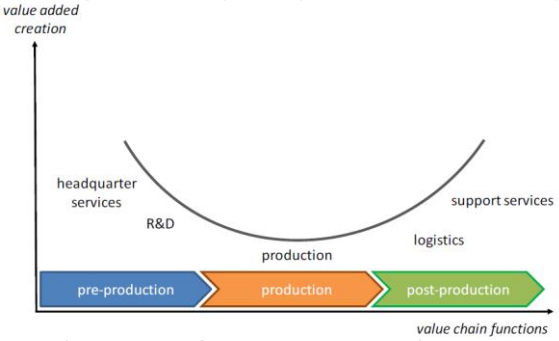
Figure 4 Productivity of resources - the ratio of GDP to domestic consumption



Source: Centar za politike i upravljanje 2022

With the implementation of the circular economy concept in the EU as the most important trade partner of Bosnia and Herzegovina, there will be a decrease in the demand for resource-intensive products exported from Bosnia and Herzegovina to the European market, so in addition to the drop in production, the implications for economic growth in Bosnia and Herzegovina will be visible and through the channel of price reduction of these export products caused by the decrease in demand. On the other hand, in the fight against climate change, the EU plans to introduce a carbon tax as a classic import tax based on the "Green Deal" from 2021, the amount of which will depend on the amount of carbon dioxide emitted in the entire production process and will apply to all products imported into the EU from third countries (Mirović and Pešalj 2022). In this sense, Bosnia and Herzegovina has to implement a circular economy to maintain a price competitiveness level and preserve its fundamental export market. From a long-term point of view, of vital importance for the development transition of Bosnia and Herzegovina is the composition of the economic structure from activities of a higher level of added value. The latent demand generated by business models of the circular economy represents a chance for a successful structural transformation of the economy of Bosnia and Herzegovina, which would allow it to converge to the European level of income and consumption. Restructuring the economy requires significant investments that have a greater impact on income convergence through the structure than the volume of the investments themselves. Namely, research on foreign direct investments' impact on economic convergence has shown that the type of investments attracted to the country is crucial. The nature of foreign direct investments determines the functional specialization of the country, while functional specialization, on the other hand, affects the level of added value, i.e. economic growth. It turns out that a higher level of added value is generated in pre-production and post-production activities, making activities intensive in knowledge and primarily service oriented.

Figure 5 The smile curve (schematic representation)



Source: Stolinger 2021 according to Mudambi 2008

These findings point to the necessity of focusing on the economic policy of Bosnia and Herzegovina that would enable factor availability to attract investments in knowledge-based service activities that will catch the wave of latent demand resulting from the affirmation of circular economy business models. All of the above implies that the development transition of Bosnia and Herzegovina depends on the success of the structural transformation of its economy and the success of the structural transformation on the adaptation to the vectors of economic changes brought about by the circular economy into service activities based on the knowledge that will capture the wave of latent demand resulting from the affirmation of circular economy business models.

3. ACHIEVED LEVEL AND OBSTACLES FOR THE DEVELOPMENT OF THE CIRCULAR ECONOMY

Bosnia and Herzegovina is at the beginning of the process of applying the circular economy concept and, as such, is faced with numerous institutional and infrastructural barriers. The current level of the circular economy in Bosnia and Herzegovina can be seen through the data on the existence and size of the corresponding circular economy models . One of the key indicators is the degree of waste recycling. According to data from 2019, Bosnia and Herzegovina consumed 40 million tons of natural resources and 1.2 million tons of municipal waste. Of that, 84% was permanently disposed of in Bosnia and Herzegovina, while only 2.2% was recycled. It is far below the European average of 48%. In 2020, 812,323 tons of non-hazardous waste were exported from Bosnia and Herzegovina, while 29,029 tons were imported.

The absence of strategic acts on the circular economy and the fact that the road map has only recently been adopted can be observed from the institutional point of view. The currently valid legislation recognizes and affirms the circular economy in a fragmented way. Certain existing parts of the law and by-laws treat the elements of the circular economy, especially in the waste management domain. The Law on Waste Management of the Republic of Srpska introduced new concepts such as product reuse, green yards, extended responsibility, recycling yard and waste management center. The law defines duties and obligations that are in line with the circular economy, such as the development of a separate waste collection system, regulation of the collection methods of all types of waste, determining locations for recycling yards, and dumps, covering the costs of cleaning and rehabilitating illegal landfills, organizing educational and public awareness campaigns on proper waste management. In the Federation of Bosnia and Herzegovina, more than 20 acts treat eight waste components in terms of recycling (glass, metal, paper, plastic, wood, multilayer materials, packaging and e-waste). In the Law on Waste Management of FB&H, the relevant determinants related to the concept of circular economy are the responsibility of waste producers.

There are 72 examples of companies that carry out some form of circular activities in Bosnia and Herzegovina. Most companies apply a resource recovery model in which waste is the primary resource for developing or producing a new product. Most often, it is about managing and treating different types of waste, recycling and use of waste. More advanced circular economy models are not significantly present in Bosnia and Herzegovina.

The most significant obstacles to the expansion of circular activities from the point of view of companies in Bosnia and Herzegovina are lack of financial resources, and incentives, ignorance of the concept of circular economy, lack of internal capacities, complex administrative and legal procedures, difficulties in securing raw materials, as well as complex import procedures. If we recall the implications of the circular economy on the sustainability and competitiveness of the economy of Bosnia and Herzegovina and the need to harmonize the development model with the trends that the circular economy brings, removing barriers to the planned and directed development of the circular economy becomes one of the primary priorities of the development policy in Bosnia and Herzegovina.

Opportunities for the implementation of the circular economy in the waste management sector in Bosnia and Herzegovina are in the increase of processing and recycling of waste, the use of innovative technologies and raising the degree of processing, as well as the establishment of a model of industrial connection for the use of by-products of one industry as a resource in another. The fashion industry in Bosnia and Herzegovina could apply the circular economy by using circular materials that use waste as raw material, establishing a circular economy cluster of textile production and changing the consumers' focus. In the consumer goods sector in Bosnia and Herzegovina, the application of eco-design of products, maximum utilization and creation of packaging recycling opportunities, and efficient use of energy and water in the production process are needed. The sector of household products in Bosnia and Herzegovina can apply the circular economy by extending the life of products, ensuring product warranty and service, and organizing the recovery of resources from discarded products. The construction sector can apply the circular economy by improving energy efficiency and green construction, recycling and reusing construction waste. In addition to investing in information, education and technology, strong promotion of entrepreneurship that applies the circular economy concept should also be developed.

CONCLUSION

The development of a circular economy in the future is crucial for the protection of the environment and a better quality of life, bearing in mind the irrational use of resources and the negative impacts on the environment that

result from the functioning of the linear economy. Establishing and maintaining a circular economy model greatly benefits current and future generations. Adapting the economic system and moving from a linear to a circular economy is an obligation of all countries to contribute to the sustainable development that the European Union insists on. Certain obstacles arising from insufficiently harmonized legislative framework and policies for the promotion of the circular economy, missing infrastructure for greater use of secondary raw materials and reduction of waste disposal, as well as insufficient public information on the advantages of the circular economy, must be overcome on this trajectory of sustainable development and the circular economy.

The transition to a circular economy can succeed in countries at various stages of development and with different economic profiles. Bosnia and Herzegovina intends to be a part of the EU in the future, which is the global leader in the circular economy. In this regard, the adopted road map of the circular economy for Bosnia and Herzegovina defines which economic sectors should be prioritized in the transition to a green economy. It is a suitable basis for identifying concrete methods and resources needed for implementation. Bosnia and Herzegovina can become completely circular if society accepts this transition, including users and producers. In practice, Bosnia and Herzegovina is in the early stages of transitioning to a circular economy, and institutions must plan and act based on the circular economy map. The principles of green and digital transition are the focus of international credit institutions, and it is particularly vital to highlight the Green agenda of the European Union in 2020, accepted by the Western Balkans countries in 2020 at the summit in Sofia. By accepting the document, they committed themselves to completely phasing out coal by 2050. It implies an increase in the share of renewable energy sources in total production and the introduction of taxation on the emission of greenhouse gases. The Green Agenda is part of the European Green Plan, according to which the EU should become climate neutral by 2050, and the EU foresees an aid package worth nine billion euros to help the Western Balkans countries achieve the goals of the Green Agenda.

The direct question is whether Bosnia and Herzegovina is ready and capable of transitioning to a circular economy. The answer is not simple at all. Only time will tell. The energy transition has already gripped the world, and the circular economy is already imperative, whether the institutions of Bosnia and Herzegovina are ready or not. Although this entire region of the Western Balkans faces additional challenges in research, technologies and infrastructure, some few individual examples in Bosnia and Herzegovina show us that there are innovators, scientists and entrepreneurs who could make Bosnia and Herzegovina take a step towards that transition. The potential for the circular economy in Bosnia and Herzegovina is particularly pronounced in waste management, the fashion industry, consumer goods and household products, and construction. In addition to investing in information, education and technology, strong promotion of entrepreneurship that applies the circular economy concept should also be developed.

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IMPACT OF SUSTAINABLE URBAN MOBILITY ON THE DEVELOPMENT OF ELECTROMOBILITY IN CITIES

Agnieszka Pokorska, agnieszka.pokorska@usz.edu.pl, Katedra Logistyki, Uniwersytet Szczeciński, Polska

Abstract: A city that develops in a sustainable way strives to maintain the right relationship between economic growth, care for the environment and the quality of life of its inhabitants. All components of the functioning of cities, such as education, culture, transport, housing, urban infrastructure, as well as the natural environment, are under constant pressure due to the needs and growing expectations of residents, as well as increasing requirements resulting from national regulations and international standards. Cities on the way to sustainable development will have to face various barriers and emerging challenges. One way to achieve sustainability, although fraught with many risks, is electromobility. Based on the review of the literature on the subject, indicators of sustainable urban mobility were defined, from which, based on expert research conducted among specialists in the field of electromobility, both practitioners and theoreticians, a set of those that affect the development of electromobility in cities was selected. Based on the conducted research, the following directions of changes in mobility behavior in urban and metropolitan areas in terms of the development of electromobility have been proposed:

- the key instrument for mobility management in cities, and especially in metropolises, is and will be public transport, therefore the development of low-emission public transport should be treated as a key area of activity in the development of the electromobility strategy,
- a zero-emission bicycle is primarily of sport and recreational importance, its role in urban, intermodal mobility chains boils down to servicing the so-called last mile, the development of bicycle infrastructure and bikesharing should take into account these conditions,
- the development of individual electromobility in the near future will significantly affect transport models in the city. Cities should take this into account in their strategies and plans in order to meet EU requirements and the needs of residents.

Undoubtedly, the subject of electromobility is extremely interesting in terms of the potential of scientific exploration and practical implementations. At the same time, it is a very complex issue, up-to-date and multidimensional. The pro-environmental approach to city management redefines the traditional approach, forcing the implementation and support of solutions that reduce external costs, especially carbon dioxide emissions. Such a solution seems to be electromobility in a comprehensive approach, taking into account a set of indicators of sustainable urban mobility.

Keywords: electromobility strategy, sustainable development in cities, urban mobility

Introduction

Electromobility is one of the cornerstones of the modern city and an important element of the Smart City strategy. Ongoing activities and investments in the area of electromobility have the potential not only to reduce emissions, but to support other smart city opportunities for new solutions for [1]: mobility, energy consumption, public services, residential and commercial buildings, wider urban systems, citizen engagement and behavioural change, including the creation of new attitudes.

Cities occupy only 3% of the Earth's surface, while generating more than 70% of carbon emissions and consuming 75% of global energy [2]. The data indicated clearly show that only the use of sustainable mobility, including transport, is key to preserving the quality of life on the planet. The ever-increasing number of vehicles using only low-emission fuels (in 2022, electric cars sold about 7.8 million units worldwide, roughly 10 percent of the total new car market [3]), as well as the age of the fleet, the noise it causes and the intrusion of land are all worsening the quality of the environment. This is due to the unsustainable mobility policy pursued to date. Private cars are the most environmentally unsustainable, with 85% of energy consumption in the entire transport sector being generated by road transport [4].

City managers are developing and implementing various strategies, including, in order to mitigate the problems identified. Changing the mix of vehicles in use and switching from traditionally powered to electric vehicles is becoming extremely helpful in this context. By definition, electric vehicles are more environmentally friendly, especially considering urban areas, and thus support sustainable mobility. Selecting and adapting a mobility

strategy is not easy. It must be a well-thought-out concept tailored to the specific characteristics, level of development and nature of the city, as well as its economic situation and the wealth of its inhabitants and their level of environmental awareness and need to implement sustainable development. The existence of many types and kinds of electric vehicles on the market and the degree to which the smart city concept is being implemented in a given city are also important.

Sustainable mobility in cities should be understood as a way of traveling shaped by the spatial and transport structure in such a way that individual transport does not degrade public and non-motorized transport, the length of the route is rationalized, and the transport system functions in a way that maintains harmony with the natural, civilizational and cultural environment. Sustainable mobility is one of the most important trends in the development of European cities. Achieving sustainable urban mobility is closely linked to economic growth and reducing environmental pollution. This involves developing strategies that stimulate a shift to greener and more sustainable modes of transport, such as walking, cycling and public transport, and adopting new patterns of vehicle use and ownership .

When defining sustainable urban mobility, one should look holistically at the growing needs of cities and the equivalent increase in the quality of life of their inhabitants in the context of the functioning of the national economy, but also the implementation of European goals related to climate protection and energy efficiency, as well as the involvement of individual stakeholder groups and the coordination of identified areas of its occurrence. Sustainable urban mobility management is therefore aimed at increasing the accessibility of the entire urban area for residents and ensuring high-quality sustainable mobility within the urban area.

Electromobility is a relatively new term, the explanation of which has now been undertaken by many authors, which has resulted in a large discrepancy in its interpretation. Although it is often defined, it is not fully defined. Both narrow and broad approaches to defining electromobility can be noticed. One of the concepts, according to M. Mataczyński [5], defines electromobility as transport carried out by electric wheeled vehicles, powered by electricity stored in the battery. It applies to both public transport (electric buses) and individual transport (electric cars). J. Janczewski [6] recognizes electromobility as a concept that assumes the use of ecological, zero-emission electric cars instead of cars powered by fossil fuels. In turn, A. Grauers, S. Sarsini, and M. Karlstrom [7] define electromobility as a road transport system based on electric vehicles, some of which are capable of self-generation of energy, and others of using an external source of energy, usually from the grid. According to the Ministry of State Assets[8], electromobility involves the use of vehicles with electric drive units, which can include: cars, scooters, motorcycles, bicycles, trams, trolleybuses, trains and buses. A broad approach can be seen when analyzing strategic documents for the development of cities, e.g. Poznań, where electromobility should be understood [9] as a coherent infrastructure that will facilitate the movement of low-emission vehicles, convenient transport connections and related improvements (bicycle paths, parking spaces, stops, bus lanes).
One of the main determinants of the development of electromobility are systematically lowering exhaust gas standards, permanently increasing oil prices and limited availability of this raw material. Moreover, a large proportion of natural deposits occur in politically unstable areas. In addition, the growing social environmental awareness, additionally supported by widely understood environmental organizations, is very important. Another message of the development of electromobility is the increasing availability of electric car models and the gradual leveling of their prices compared to traditional vehicles.

Therefore, analyses should be carried out, including assessments of actions taken and the scope of proposed electromobility strategies - using among others indicators of sustainable urban mobility**.** The aim of the work is to develop a set of sustainable urban mobility indicators that may affect the development of electromobility strategies in cities, i.e. the development of low-emission transport and support for sustainable development in cities.

Identification of sustainable urban mobility indicators

The literature search provided knowledge about a wide set of 201 indicators and measures of sustainable transport and urban mobility that have been accepted by international organizations to assess the implemented policy. In order to shorten and specify the set for further analysis, a procedure for selecting indicators was developed. In the first place (stage 1), repetitions and non-measurable indicators, difficult to determine and those that were not specified by the authors of the studies were eliminated.

Table 1 presents the database of sustainable urban mobility indicators, verified on the basis of literature research, after the elimination procedure, which was sent to experts.

Table 1 Catalog of sustainable urban mobility indicators

Indicators subject to expert examination
1. Ratio of the population of an urban agglomeration to its urbanized area
2. GDP per capita
3. Monthly salary
4. Disposable income per capita
5. Registered unemployment rate
6. Structure of fuel prices by type of fuel
7. Ratio of the cost of travel over a distance of 100 km by private means of transport to the price of a monthly ticket for travel by public transport in the area of an agglomeration
8. The average cost of a taxi per 1 inhabitant
9. Energy price per capita
10. Annual energy consumption in passenger transport per capita
11. Energy consumption per passenger-km in public transport
12. Investment outlays on transport per capita
13. Expenditure on public roads per capita
14. Average annual value of PM2.5 concentration
15. Average annual PM10 concentration
16. Average annual value of CO2 concentration
17. Average annual value of NOx concentration
18. Total expenditure on pollution prevention and treatment per capita
19. Share of green areas in the total area
20. Percentage of residents exposed to excessive noise
21. Congestion level (%)
22. Noise and vibration reduction inputs
23. Number of traffic-related fatalities per population
24. The ratio of the total number of cars in car-sharing systems in the area of the urban agglomeration to the number of inhabitants of this area
25. Ratio of the total number of bikes in public bike systems in the area of the urban agglomeration to the number of inhabitants of this area
26. Number of Internet or mobile services enabling car sharing in a given city per number of inhabitants
27. Taxis and shared taxis per capita
28. Increase in the percentage share of all journeys made by people on bicycle and on foot every day in the last available measurement in relation to its share in the penultimate measurement
29. Increase in the percentage of all trips made by public transport on a daily basis in the last available measurement compared to its share in the penultimate measurement.
30. Percentage of population living within walking distance of public transport (stop or station) or shared mobility system (car or bike).
31. Percentage share of people traveling by public transport in the total number of trips
32. The frequency of the busiest public transport line in the urban agglomeration
33. Total public transport vehicles per number of inhabitants
34. Buses per million inhabitants
35. Number of passenger transport per 1 inhabitant of urban areas
36. Average duration of the combined outward and return journey to work or educational institution in minutes per person per day.
37. Average waiting time for public transport (in minutes)
38. Number of low-emission buses per capita
39. Public bikes per area
40. Length of roads in the city per number of inhabitants
41. Park and ride facilities per number of inhabitants
42. Number of stops per number of inhabitants
43. The ratio of the total length of roads in the agglomeration to the area of the urbanized area
44. Parking lots for bicycles with equipment up to the surface of the urbanized area

45. Length of roads and streets with side sidewalks and bicycle lanes as well as 30 km/h (20 mph) and pedestrian zones in relation to the total length of the city's road network (excluding motorways).
46. Dedicated bus lane in km to the city area
47. Number of charging stations per number of inhabitants
48. Fuel consumption by fuel type per vehicle-km
49. Structure of the road vehicle fleet by type of fuel used for all vehicles
50. Average total travel time to work
51. New cars up to 1 year for all vehicles registered in a given city
52. Number of electric cars per capita
53. Number of hybrid cars per capita

Source: *own study.*

A review of the literature, conducted considerations and an expert study made it possible to specify the scope of the empirical study. Therefore, the electromobility strategy examined in the work concerns the market of low-emission cars (electric and hybrid), low-emission buses and public bicycles. The study omitted other elements of micromobility in cities, such as scooters or scooters, because these solutions are relatively new, their beginnings in cities in Poland can be said in 2019.

Therefore, the urban electromobility strategy studied in the paper is based on the following transport subsystems:

- low-emission public transport (buses),
- cars with electric and hybrid drive,
- means of micromobility transport (public bicycles).

On the basis of literature research, a database of sustainable urban mobility indicators was prepared, which was sent to experts in the form of an expert research questionnaire. The prepared questionnaire of expert research concerned the separation of indicators of sustainable urban mobility from the indicated database, those that affect the development of electromobility strategies in cities. The questionnaire was sent to 15 experts in the field of electromobility, both practitioners - car manufacturers, authorities of the surveyed cities, electricity distributors in Poland, as well as theoreticians publishing in the field of electromobility, in order to have a broad view of the problem under study. The task of the experts was to indicate the variables from the database of sustainable urban mobility indicators that, in their opinion, have a significant impact on the possibility of developing an electromobility strategy.

The catalog of sustainable urban mobility indicators, created on the basis of experts' answers, is presented in Table 2.

Table 2 Catalog of sustainable urban mobility indicators affecting the development of electromobility strategies

The rules of sustainable development	**Indicators**
Social	Ratio of the total number of cars in car-sharing systems in the area of an urban agglomeration to the number of inhabitants of this area
	Number of stops per 1 inhabitant
	Dedicated bus lane in km in relation to the city area
	Bicycle paths in relation to the city area
	Public transport lines per 1000 inhabitants
	Number of charging stations in relation to the area of the city
	The ratio of the population of an urban agglomeration to its urbanized area

	Number of public bicycles per 1 inhabitant
	Number of low-emission buses per capita
	Number of low-emission cars per capita
Economic	Monthly salary per 1 inhabitant
	Ratio of the cost of travel over a distance of 100 km by private means of transport to the price of a monthly ticket for travel by public transport in the area of an agglomeration
	Disposable income per capita
	GDP per capita
	Diesel fuel price
	Energy price per capita
	The price of gasoline
	Registered unemployment rate
Environmental	Emissions related to NOx transport activities
	Average annual value of PM10 concentration
	Average annual value of PM2.5 concentration
	Congestion level
	Percentage of inhabitants exposed to excessive noise

Source: *own study based on expert research*.

23 indicators of sustainable urban mobility have been identified by electromobility experts as key to the development of the electromobility strategy. By analyzing the results of the research, conclusions can be drawn regarding the attributes necessary for the development of electromobility strategies. Looking at the electromobility strategy in a comprehensive approach, one can see a balance in the hierarchy of the orders of sustainable urban mobility. In order to support the development of electromobility strategies in cities, indicators assigned to the social, economic and environmental order should be taken into account. All these elements considered together are able to support city authorities and direct the construction of strategies for the coming years to develop sustainable mobility, and thus electromobility.

Conclussions

A comprehensive set of sustainable urban mobility indicators aimed at the development of the electromobility strategy shows a holistic approach to the strategy, taking into account all aspects (orders) of sustainable development. The proposed directions of changes in mobility behavior in urban and metropolitan areas in terms of the development of the electromobility strategy are as follows:

- the key instrument for managing mobility in cities, and especially in metropolises, is and will be public transport, therefore the development of low-emission public transport should be treated as a key area of activity in the development of the electromobility strategy,
- a zero-emission bicycle is primarily of sport and recreational importance, its role in urban, intermodal mobility chains boils down to servicing the so-called last mile, the development of bicycle infrastructure and bikesharing should take into account these conditions,
- the development of individual electromobility in the near future will significantly affect transport models in the city.

Cities should take this into account in their strategies and plans in order to meet EU requirements and the needs of residents. Undoubtedly, the subject of electromobility is extremely interesting in terms of the potential of

scientific exploration and practical implementations. At the same time, it is a very complex issue, up-to-date and multidimensional. The pro-environmental approach to city management redefines the traditional approach, forcing the implementation and support of solutions that reduce external costs, especially carbon dioxide emissions. Such a solution seems to be the concept of electromobility in a comprehensive approach, taking into account its own set of indicators of sustainable urban mobility and factors from its own closer and further environment.

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THE INFLUENCE OF CIRCULAR ECONOMY ON SUSTAINABLE DEVELOPMENT: EUROPEAN AND SERBIAN EXPERIENCE

Aleksandar Vićentijević, Miloš Parežanin, Dragana Kragulj, Faculty of Organizational Sciences, University of Belgrade, Belgrade, Serbia aleksandar.vicentijevic@fon.bg.ac.rs, milos.parezanin@fon.bg.ac.rs, dragana.kragulj@fon.bg.ac.rs

Abstract: The paper analyzes the potential of sustainable economic growth based on the implementation of circular economy principles. In the last decade, the circular economy has received rising attention worldwide as a way to replace the current production and consumption model based on a linear economy. By promoting closing the loop by applying the 6 R's (rethink, refuse, reduce, reuse, recycle, and repair) with a particular emphasis on municipal waste, sustainable development aims to achieve better harmony between the environment, economy and well-being of society. EU member states have implemented various policies and initiatives, such as the new Circular Economy Action Plan, which aims to increase recycling rates, reduce landfilling and promote eco-design. Additionally, the circular economy plays a central role in the new European Green Deal in its aim to tackle climate change. The Republic of Serbia has also recognized the importance of sustainable development and has developed its National Circular Economy Strategy, which aims to promote economic, social and environmental sustainability. Using European Statistical Office data from 27 European countries pertaining to the years between 2014 and 2021, this paper aims to examine the relationship between the circular economy, economic growth. Based on the cluster analysis, EU members are divided into two groups. Also, the results obtained from the regression analysis for EU member states were compared with the current state of application of the circular economy in Serbia, using comparable available data. Although the implementation of the circular economy in Serbia lags behind the EU average, there has been some progress in this period, with untapped potential for further growth. The results suggest that a circular economy provides opportunities to create competitive advantages and promote sustainable economic growth, which can be beneficial to decision-makers.

Keywords: circular economy, economic growth, cluster analysis, regression analysis, European Union, Serbia.

1 Introduction

In the last few decades, the circular economy has received more and more attention. In the light of rising awareness of the negative effects of emissions of greenhouse gases and global warming, the circular economy has become a crucial part of the green transition. Linear economy traditionally follows the "take-make-dispose" step-by-step plan. This means that raw materials are collected, then transformed into products that are used until they are finally discarded as waste. In this economic system, value is created by producing and selling as many products as possible without considering their durability.

The Ellen McArthur Foundation, leading circular economy think tank, defines circular economy as “as system that is restorative or regenerative by intention and design that can be achieved by eliminating waste through the superior design of materials, products, systems and, within this, business models.” (The Ellen McArthur Foundation, 2013: 7). The main alternative to traditional linear models of production and consumption is the circular economy. The circular economy tries to close the loop by applying the 6 R’s: 1) Rethink - Refers to rethinking the way we design and produce products, and questioning the current linear model; 2) Redesign - This means designing products and services with circularity in mind, considering factors such as durability, reparability, recyclability, and ease of disassembly; 3) Reduce - This involves reducing the amount of resources used in production and consumption; 4) Reuse - This refers to finding ways to extend the life of products by reusing them; 5) Repair - This involves repairing products that are broken or damaged rather than disposing of them and buying new ones; and 6) Recycle - This means recycling materials and turning them into new products, keeping them in use, and reducing the need for virgin materials (Kirchherr, Reike and Hekkert, 2017).

The EU has made the transition to a circular economy a key priority, as evidenced by recent EU policy (European Commission, 2020). Many national governments also adopted laws and strategies regarding the implementation of the circular economy. Serbia, as an EU candidate country, adopted some legislation in 2020, such as the

National Circular Economy Strategy, which sets out a roadmap for transitioning to a circular economy (Ministry of Environmental Protection of the Republic of Serbia, 2020).

The main benefit of the transition to a circular economy, according to Taranic, Behrens and Topi (2016) can be summarized in three pillars. Firstly, it creates environmental benefits through reduced impacts and reduced resource usage. Secondly, it provides cost savings, particularly in terms of reducing natural resource needs. And thirdly, it creates new markets; the implementation of the circular economy provides economic benefits in terms of jobs and wealth creation.

2 Theoretical background

In recent years, there has been much research regarding the relationship between the circular economy and macroeconomic growth. In their paper, Busu and Trica (2019) validate that the circular economy has a positive impact on economic growth using panel data for the period of 2010 to 2017. Trica, Banacu and Busu (2019) concluded that resource productivity, environmental employment, the recycling rate of e-products, and environmental innovation have a positive effect on GDP growth based on panel data analysis from 2007 to 2016. Shpak et al. (2021) showed that recycling rates have a major influence on the trade in recyclable raw materials throughout the EU and that the circular economy may support sustainable development and minimize waste. Recycling has been the most popular circular approach for feeding materials back into the system, according to Mhatre et al. (2021) which indicated that the circular economy has gained traction in the EU. Due to government laws and regulations, the adoption of the CE action plan, which was suggested in 2015, has allowed circular processes in several industries. A number of policy proposals made by Hartley, van Santen and Kirchherr (2020) like the growth of circular procurement, tax breaks for circular goods, and assistance for eco-industrial parks, may hasten the transition to a circular economy. Gregson et al. (2015) emphasizes the difficulties in creating circular economies in the EU, demonstrating that they arise from a triad of politically shaped markets, material characteristics, and ethically constrained material circuits. Teekasap (2018) concluded that economies in nations without resource constraint issues can profit over time from reduced raw material costs and larger sales volumes. Practices in the circular economy, according to Ferrante and Germani(2020), can directly boost economic expansion. Hysa et al. (2020) showed a significant and favorable association between economic growth and the circular economy, stressing the critical importance of sustainability, innovation, and financial investment in zero-waste projects for the advancement of wealth. According to Vuță et al. (2018), the rate at which municipal garbage is recycled, as well as other aspects like research and innovation, and patents pertaining to recycling, all have a favorable impact on resource productivity and economic growth.

The motivation for this article is to estimate the potential for economic growth in Serbia based on the implementation of the circular economy. There has been much research regarding the implementation of the circular economy in Serbia. According to Vukadinović et al. (2018), the circular economy is a relatively new idea in Serbia, but it is being implemented on a practical and institutional level, and there is potential for further growth. In the previous period, significant funds from EU funds for member countries and Serbia were used to finance development projects (Kragulj and Parežanin, 2011). Mihajlov, Mladenović and Jovanović (2021), in their paper, focus on waste management as the first step towards the implementation of the circular economy, while Ilić and Nikoli (2016) analyze waste management in cities in Serbia, comparing it to Ljubljana as an example of good practice. According to Kragulj, Parežanin and Jednak (2020), the application of digital technologies and services can significantly help the implementation of the circular economy in Serbia.Bucea-Manea-Țoniş et al. (2021) researched innovation and competitiveness and their relationship to the circular economy, ecoinnovation, and social inclusion, with a focus on Serbia and Romania. However, there is a need to estimate whether the circular economy can be a driver of economic growth in Serbia.

3 Regulatory framework

From an unknown marginal concept created in the 1970s, the circular economy has become an essential strategy in the ambition of the European Green Deal (European Commission, 2020). Until 2019, there have been 7 Directives and 8 Regulations on European level, creating a legal framework for passing out of linear model of production (Friant, Vermeulen and Salomone, 2021).

The European Union's circular economy policy aims to promote the sustainable use of resources by reducing waste, improving the efficiency of resource use, and creating new business opportunities and jobs (European Commission, 2020). Key elements of the policy include:

- Waste reduction and recycling targets: The European Union has set targets to increase the recycling and reuse of waste, reduce landfilling, and increase the use of recycled materials in products.
- Resource efficiency: The European Union promotes the efficient use of resources, with special emphasis on sectors with great circularity potential like ICT and electronics, batteries and vehicles, plastic, textile and construction section.
- Research and innovation: The European union supports research and innovation in the circular economy. For this purpose, which aims to provide consumers with options for reusable packaging and lower the usage of unnecessary packaging.

Many new regulations are planned or being introduced with the aim of achieve green and circular transition. For instance, in order to provide clear labels about environmental effect of product and end *greenwashing*, the process of providing misleading information by companies about their products environmental effect, European Commission has proposed Green Claims Directive in 2023 (European Commission, 2023).

Serbia, as European union candidate state, is in the process of developing its circular economy legislation, and there have been several actions taken towards this goal. In 2020, the Serbian government adopted a National Circular Economy Strategy, which sets out a roadmap for transitioning from linear to more circular production model. The strategy focuses on waste management, resource efficiency, and eco-design, among other areas. (Ministry of Environmental Protection of Republic Serbia, 2020).

There has been a significant increase in circular approach to waste management. Serbia has adopted a Law on Waste Management in 2009 and amended it in 2016, 2018 and 2023 partially aligning its waste management legislation with the EU's Waste Framework Directive and other relevant directives. The law sets out rules for waste collection, transport, treatment, and disposal, as well as requirements for waste prevention and recycling (Ministry of Environmental Protection of Republic Serbia, 2023).

In Industrial policy strategy of the Republic of Serbia from 2021 to 2030, the government addresses the fact that due to linear production is dominating business model, considerable waste in materials and products emerges, leading to the irrational use of resources. In the same strategy, there is a specific objective. *5. Industry transformation from linear to circular model* in which, as key priorities are seen, education of communities and further harmonizing legislation framework regrading the impletion of circular economy. (Ministry of Economy of Republic of Serbia, 2020)

4 Methodology

In order to estimate whether there is a potential for economic growth by implementing a circular economy in Serbia, several research questions were formulated that were attempted to be answered in this paper:

- What is the state of implementing the circular economy in Serbia and how does it compare to EU countries?
- Is it possible to group countries in Europe regarding the level of implementation of the circular economy, and in which group would Serbia belong?
- What is the relationship between economic growth and the circular economy?

This should provide the answer to our main question: can the circular economy be a driver for economic growth in Serbia?

For this research, circular economy indicators for 27 European Union countries and Serbia were obtained from Eurostat for the period 2014–2021. The circular economy indicators are: recycling rate of municipal waste, circular material use rate, trade in recycling materials, persons employed in circular economy sectors as percentage of total employment, patents related to recycling and secondary raw materials per million people and resource productivity. All of these indicators were used in TwoStep cluster analysis, which was done in SPSS. Also, waste generation per capita was used to see change in waste generation in Europe. Additionally, investment in circular economy was tested but was not significant for cluster analysis. Finally, macroeconomic variables GDP per capita and labour productivity were obtained from this same source.

In order to estimate the economic relationship between GDP growth and indicators of the circular economy, panel data analysis was done in Stata 17.0. Panel data was strongly balanced, which is suitable for panel regression. Three potential models were considered: pooled OLS, fixed effects panel regression and random effects panel regression. For panel regression, three of indicators were used as independent variables: resource productivity (*ResProd*), recycling rate of municipal waste (*RRMW*) and investments in circular economy (*CEInvest*). Also, as independent variable, labour productivity (LabProd) was used, as has been documented in paper by Busu and Trica (2019). After using the Hausman test and Lagrangian test, the conclusion was that fixed effects panel regression is the optimal model (Asteriou and Hall, 2011).

5 Results

5.1. Variables

Although the legal framework regarding circular economy has been drastically improved in the last decade, waste generation is still on the rise in the majority of European Union countries. The generation of waste per capita has increased in the European Union from 2014 to 2020 by 9%, as described in Figure 1. The biggest growth has been recorded in the Czech Republic, Belgium, the Slovak Republic, and Austria. Only three countries recorded moderate declines in waste generation: Italy, Sweden, and Bulgaria. Serbia also recorded strong growth in waste generation (42%).

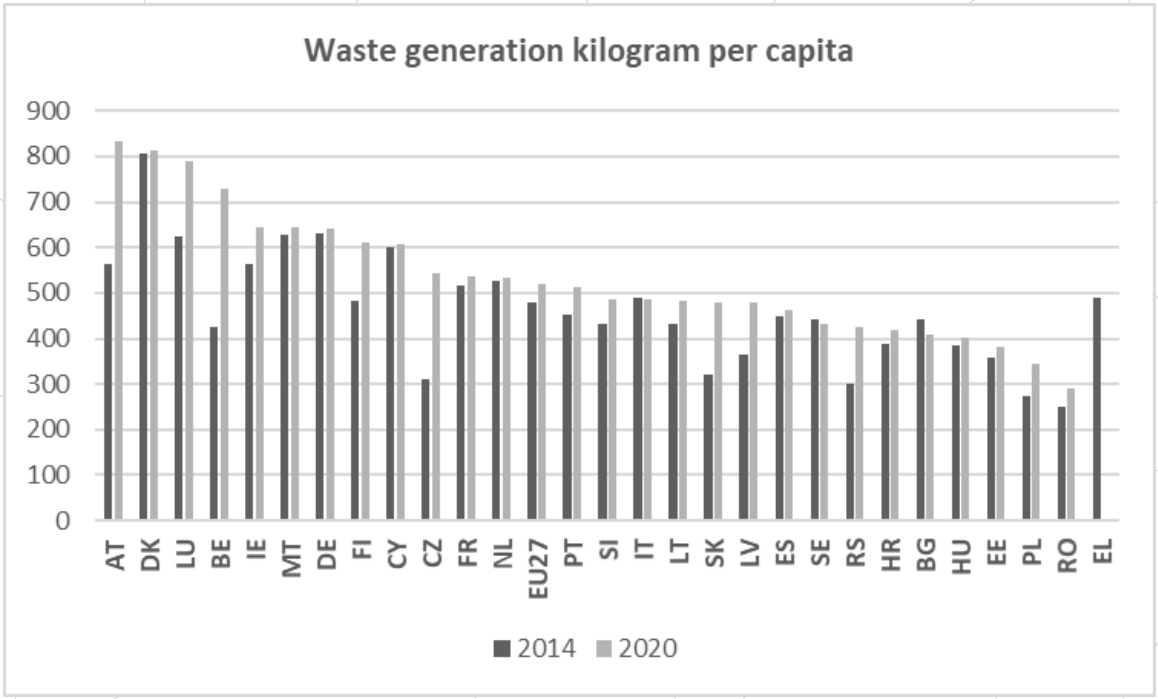

Figure 1. Waste generation per capita, Source: Eurostat (2020)

The circular use of materials rate is calculated as the quotient between the circular use of materials and the total material used. The average European Union circular use of materials rate in 2020 was 11,7% and has increased around 0,5 percentage points from 2014. From Figure 2, it can be seen that in 2020, the EU member states with the highest rates of circular use of materials were the Netherlands (30%), Belgium (21,5%) and Italy (20,6%), while states with the lowest rates were Portugal (2,3%), Ireland (1.7%) and Romania (1.5%). However, some Southern and Eastern European countries have achieved substantial growth, mostly Malta (6,9 p.p.), the Slovak Republic (5,7 p.p.), the Czech Republic (4,8 p.p.) and Estonia (4,7 p.p.). However, nine countries in the EU saw a modest decline, while Poland is an outliner with 5,1 p.p. decrease. Data for Serbia is not available.

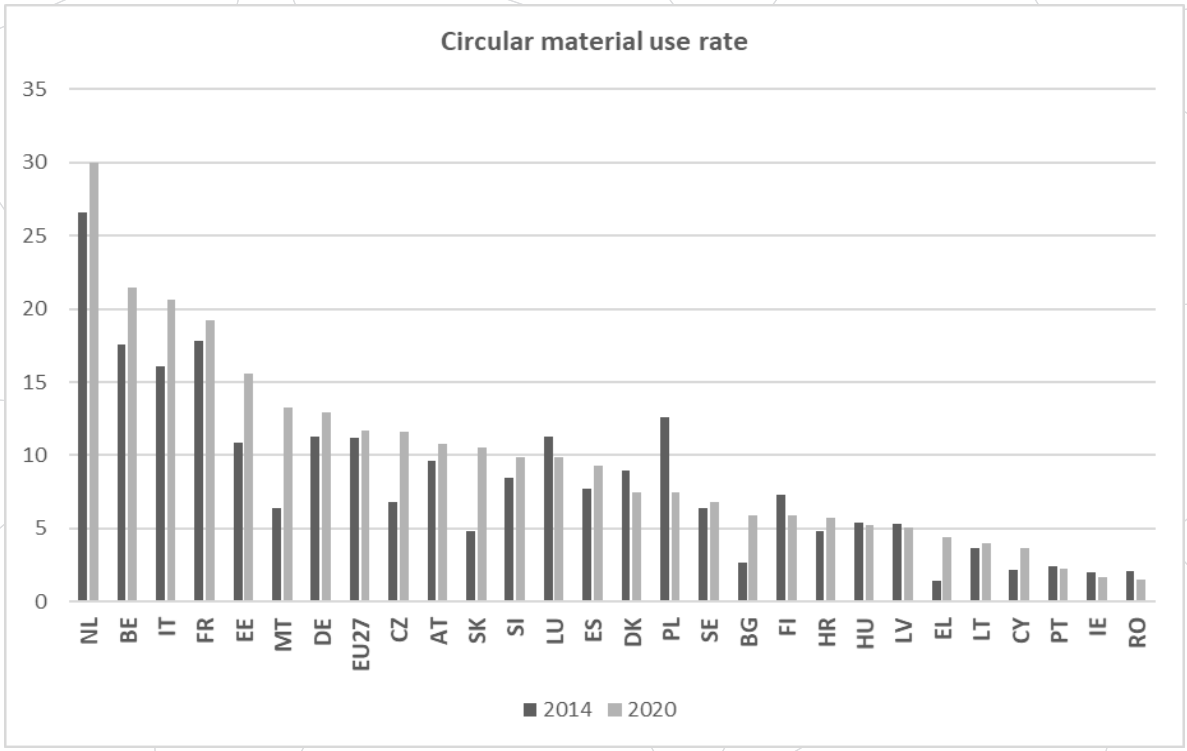

Figure 2. Circular material use, Source: Eurostat (2020)

The recycling rate of municipal waste (RRMW) is defined as municipal waste recycled from total municipal waste generated. The European Union average rate in 2020 was 49.2%, an increase from 5.8 p.p. in 2014. As can be seen from Figure 3, the top-ranked countries by RRMW indicator in 2020 were Germany (70,3%), Bulgaria (65,5%) and Austria (62,3%). Bulgaria and the Slovak Republic have achieved strong growth, 42 and 32 p.p., respectively. Serbia's RRMW was 15,4 in 2020, a major increase from 2014 when the rate was below 1%. Both Romania (11,9%) and Malta (10,9%) ranked lower than Serbia regarding RRMW. Data for 2020 for Greece was not available.

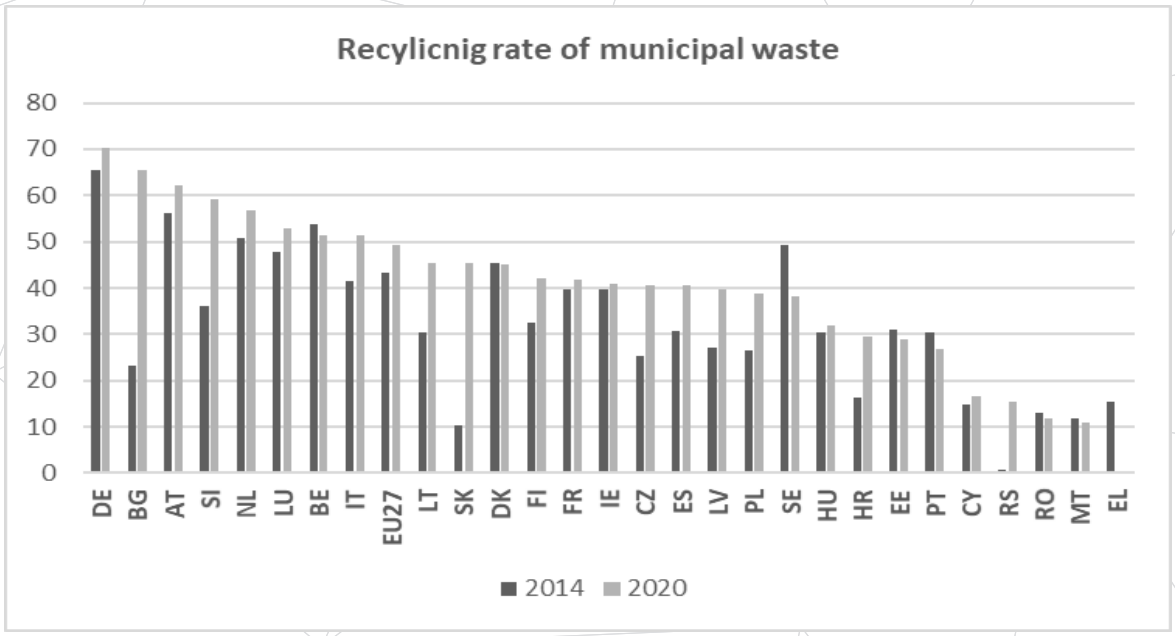

Figure 3. Recycling rate of municipal waste, Source: Eurostat (2020)

Figure 4 gives a description of the number of people employed in circular economy sectors as a percentage of total employment. The European Union average rate was 2.1%, a 0.1 p.p. increase from 2014, while growth in the absolute number of green jobs was 9%. It can be seen that in 2020, Croatia ranks first (3%), followed by Lithuania (2,8%), Latvia and Poland (2,7%), while Luxembourg (0,4%) is in last place.

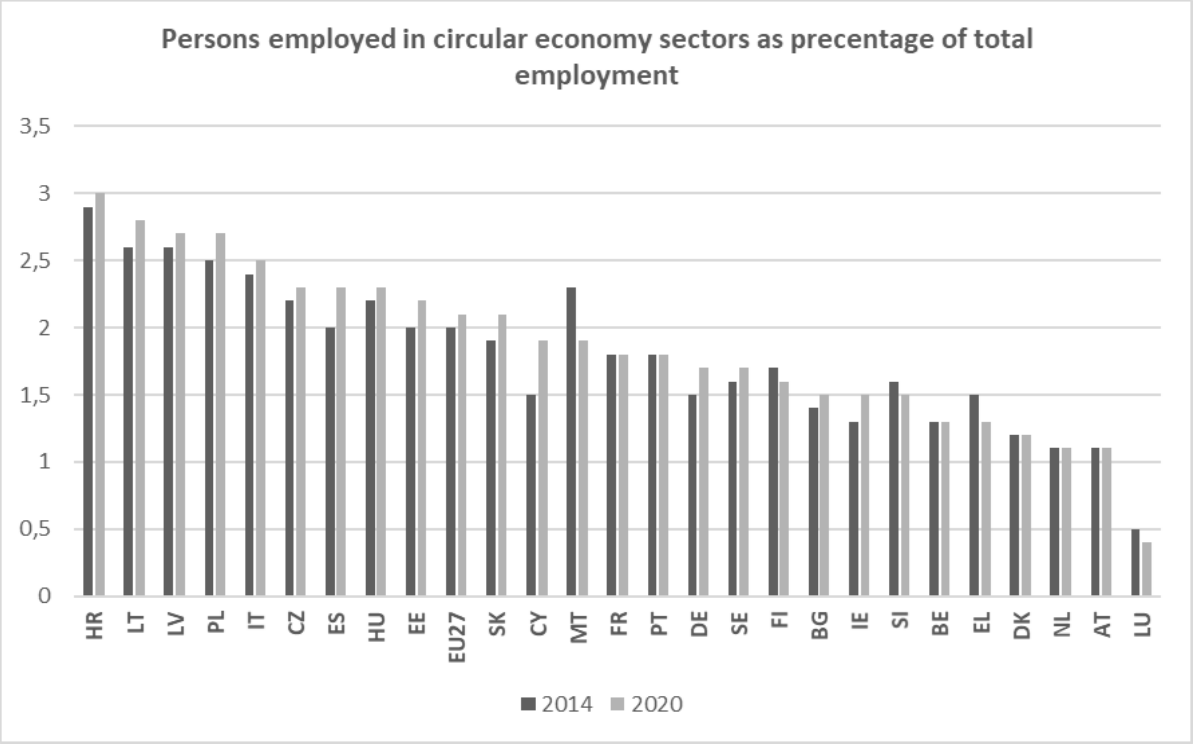

Figure 4. Persons employed in circular economy sectors as percentage of total employment, Source: Eurostat (2020)

Resource productivity is a measure of the total amount of materials directly used by an economy in relation to GDP. The European Union's average resource productivity was constant in this period—around 2 euros per kg. From Figure 5, it can be seen that the EU states with the highest resource productivity were the Netherlands (4.9), Luxembourg (4.3) and Italy (3.4), while the countries with the lowest values of this indicator were the Balkan states: Romania (3.3) and Bulgaria (3.5). Serbia's resource productivity (0.31 euro per kg) is comparable to other Balkan countries that are members of the EU, even though it is lower.

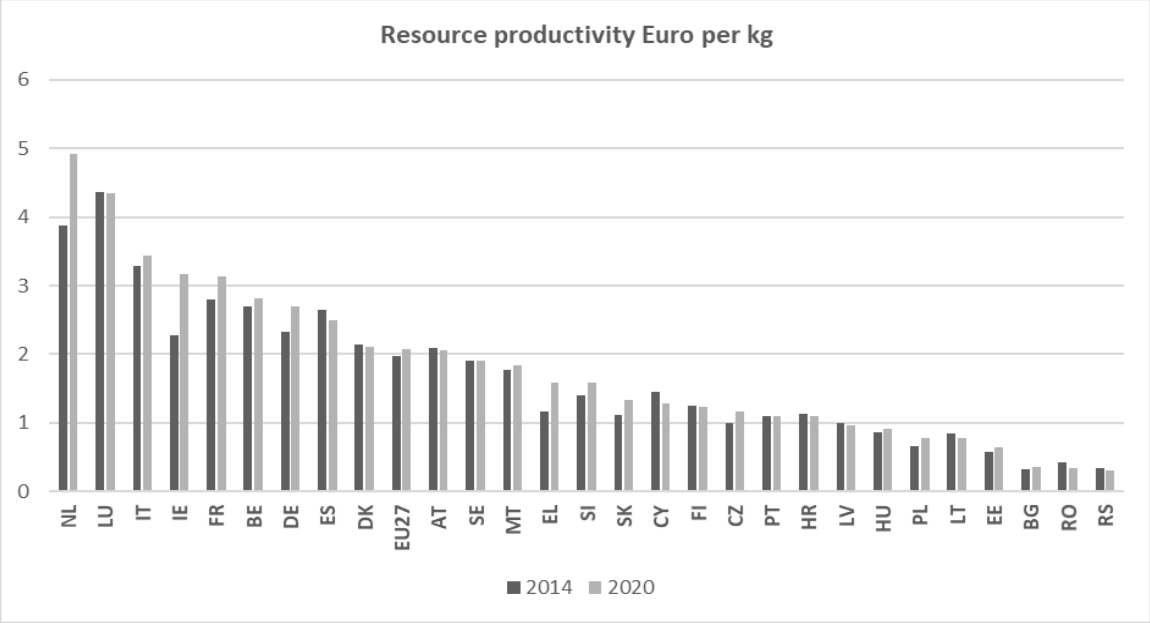

Figure 5. Resource productivity, Source: Eurostat (2020)

Patents related to recycling and secondary raw materials per million people are a circular economy indicator, which represents circular economy innovation capacity in one country. As can be seen in Figure 6, in 2019, Finland was leading in green innovation according to this indicator with 3 patents per million people, followed by Luxembourg and Ireland. A specific issue with the indicator is that for countries with a smaller population, it

is very variable, as can be seen in Figure 6 for Estonia, Luxembourg and Malta in 2014. Only one patetnt can greatly increase the value of this indicator and give the wrong perception of the innovation capacity of that economy.

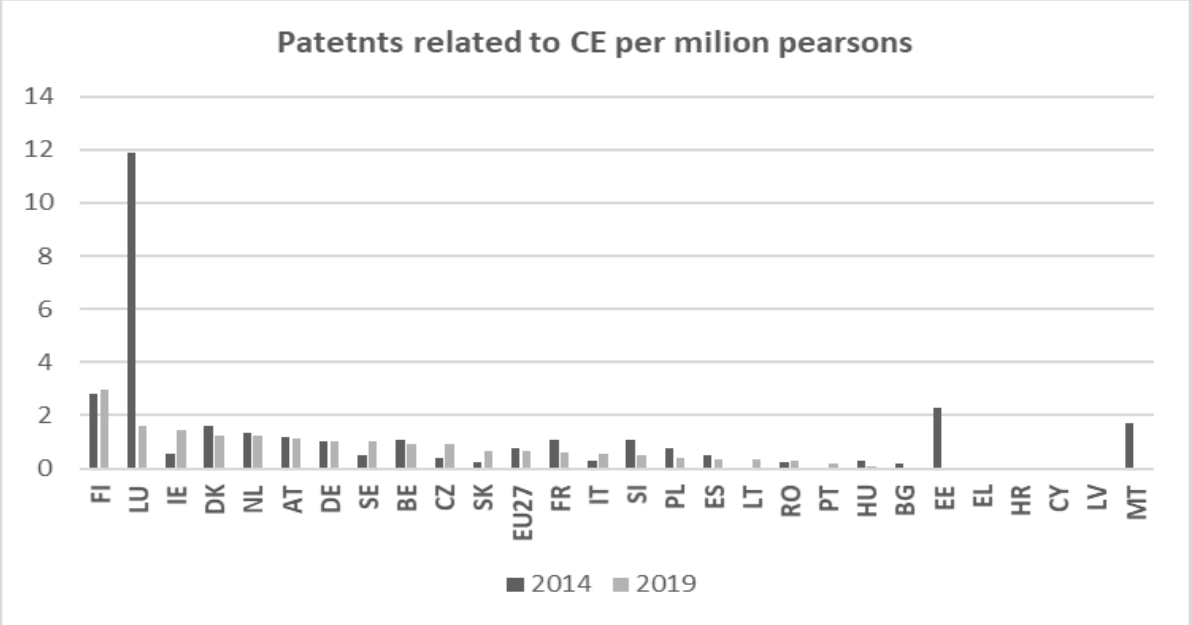

Figure 6. Patterns related to circular economy, Source: Eurostat (2020)

5.2 Cluster analysis

For TwoStep Cluster Analysis, six circular economic indicators have been used as continuous variables: recycling rate of municipal waste, circular material use rate, trade in recycling materials, persons employed in circular economy sectors as percentage of total employment, patents related to recycling and secondary raw materials per million people, and resource productivity. The year 2019 was used as the benchmark year due to the fact that there has not been available data for 2020 and 2021 for all 27 EU countries. According to Akaike's Information Criteria, the optimal number of clusters is two, and they are of similar size. Both clusters are statistically significant.

The first cluster (represented by square points in Figure 7) is made up of the following countries: Belgium, Denmark, Germany, Spain, France, Italy, Luxembourg, the Netherlands, Austria, Finland, Sweden and Slovenia. The following were placed in the second cluster (on Figure 7, represented by round points): Bulgaria, the Czech Republic, Estonia, Ireland, Greece, Croatia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Portugal, Romania and Slovakia. As can be seen on Figure 7, cluster one mostly consists of countries from Western and Northern Europe with exception of Spain and Slovenia, while cluster two from countries of Eastern and Southern Europe.

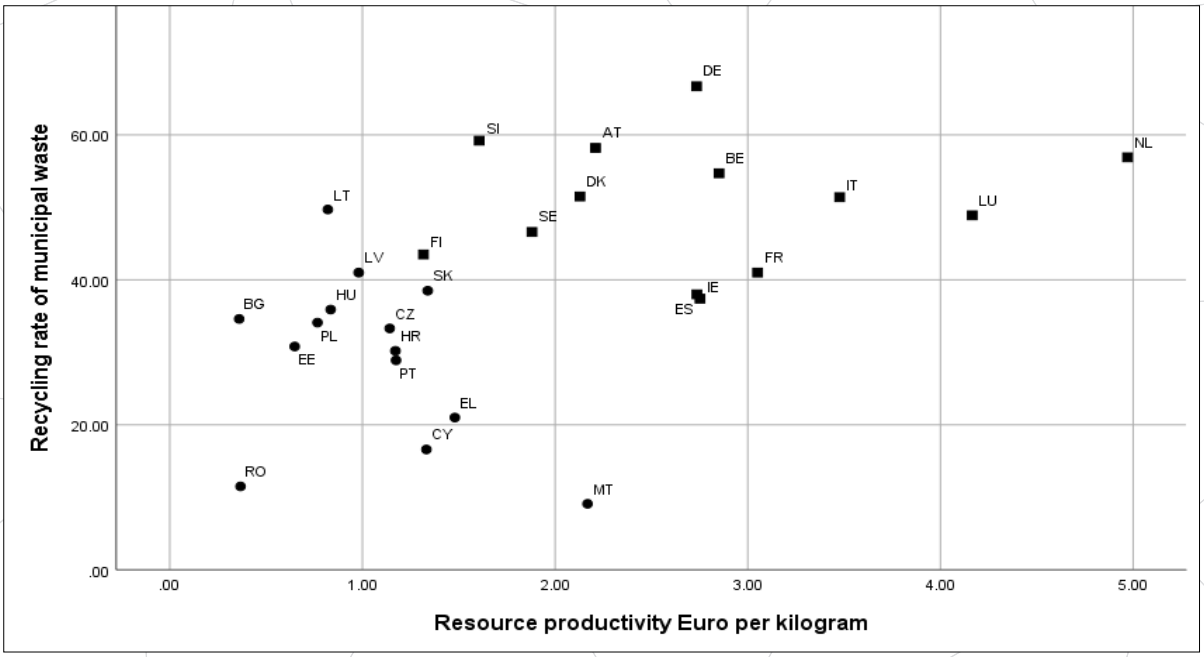

Figure 7. Cluster analysis of countries of the European Union based on circular economic indicators, Eurostat
Source: Data analysis was performed by the authors in SPSS.

As shown in Table 1. countries in cluster 1 a have higher mean value of all circular economic indicators than cluster 2, with the notable exception of persons employed in circular economy sectors as a percentage of total employment.

Table 1. Mean values of two clusters

Mean values	Cluster 1	Cluster 2
Recycling rate of municipal waste	50,31	29,66
Trade in recyclable raw materials Imports intra-EU27 Thousand euro	2.236.588	351.476
Patents related to recycling and secondary raw materials per millions person	1,11	0,21
Circular material use rate	13,15	6,06
Resource productivity Euro per kilogram, chain linked volumes (2015)	2,76	1,04
Percentage of total employment - numerator in full-time equivalent (FTE)	1,54	2,11

Source: Data analysis was performed by the authors in SPSS.

Due to the lack of circular economic indicators for Serbia, it was not included in the cluster analysis. However, according to two circular economic indicators available for Serbia (recycling rate of municipal waste and resource productivity), as well as Eastern European countries, it can be assumed that it is much more similar to countries in cluster 2, especially other Balkan states.

5.3 Regression analysis

As a dependent variable, gross domestic product per capita was used, and investment in circular economy, resource productivity and recycling rate of municipal waste, three widely used circular economy indicators were used as independent variables. Other circular economy indicators, mentioned in methodology section, were tested, however, these three proved most statistically significant. Also, labor productivity was used as an

independent variable, similarly to Busu and Trica (2019) study. According to the unit root test, all five logarithmic values of variables used in the model are stationary and therefore suitable for regression analysis.

Three models were considered in this analysis: fixed effect panel regression, random panel regression and pooled ordinary least squares model (POLS). In order to see if fixed effect or random effect panel regression is more suitable, the Hausman test was used (Figure 8.).

	(1) FixedEf~s	(2) RandomE~s
LabProd	1.087***	1.056***
	(0.0460)	(0.0511)
ResProd	0.0579	0.129***
	(0.0318)	(0.0339)
CEInvest	0.0523***	0.0530***
	(0.00872)	(0.00958)
RRMW	0.0442***	0.0414**
	(0.0122)	(0.0136)
_cons	4.418***	4.542***
	(0.193)	(0.225)
N	209	209
r2	0.860	
r2_o	0.247	0.442
r2_b	0.273	0.473
r2_w	0.860	0.856
sigma_u	0.569	0.317
sigma_e	0.0255	0.0255
rho	0.998	0.994

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Figure 8. Fixed and Random effect panel regresion used for Hausman test
Source: Data analysis was performed by the authors in Stata 17.0.

Because the probability of Chi-squared is less than 0.05%, it can be concluded that the fixed effect model of panel regression is more appropriate for this data set. Results are shown in Figure 9.

	Coefficients (b) FixedEffects	(B) RandomEffe~s	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
LabProd	1.087131	1.056032	.0310991	.0070165
ResProd	.0579408	.1288367	-.070896	.0108908
CEInvest	.0522856	.0530341	-.0007485	.0018985
RRMW	.0441552	.0413734	.0027818	.0011093

b = Consistent under H0 and Ha; obtained from **xtreg**.
B = Inconsistent under Ha, efficient under H0; obtained from **xtreg**.

Test of H0: Difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 44.56
Prob > chi2 = 0.0000

Figure 9. Hausman test
Source: Data analysis was performed by the authors in Stata 17.0.

Secondly, random effects were tested by the Langrangian multiplier. Results are shown in Figure 10, because of which we reject the POLS model. After rejecting POLS and random effect panel regression, analysis shows that fixed effect panel regression is most suitable.

Breusch and Pagan Lagrangian multiplier test for random effects

GDP[c_number,t] = Xb + u[c_number] + e[c_number,t]

Estimated results:

	Var	SD = sqrt(Var)
GDP	.3700778	.6083402
e	.0006511	.0255164
u	.1005413	.3170825

Test: Var(u) = 0

chibar2(01) = 654.77
Prob > chibar2 = 0.0000

Figure 10. Lagrangian test
Source: Data analysis was performed by the authors in Stata 17.0.

The next step was to test heteroscedasticity in fixed effect panel regression with Modified Wald test for groupwise heteroscedasticity. According to the results of Modified Wald test, the probability of Chi-squared is less than 0.05%. Because of that, we reject H_0 and conclude that there is heteroscedasticity problem. In order to deal with these issues, robust standard errors were used to see if the parameters were statistically significant.

As demonstrated in Figure 11, the greatest effect on the rate of economic growth was that of the rate of growth of real labour productivity (beta = 1,08), then the rate of growth of circular economic investment (beta = 0.05), and at the end, the rate of growth of RRMW (beta = 0,04). Resource productivity according the results is not statistical significant. Since the value of R-squared is 0.2472, we emphasize that 24.72% of the variability of the growth GDP p.c. variable is determined by the exogenous factors of the model.

Fixed-effects (within) regression — Number of obs = 209
Group variable: c_number — Number of groups = 27

R-squared:
Within = 0.8603
Between = 0.2726
Overall = 0.2472

Obs per group:
min = 6
avg = 7.7
max = 8

F(4,26) = 184.28
corr(u_i, Xb) = 0.3214 — Prob > F = 0.0000

(Std. err. adjusted for 27 clusters in c_number)

GDP	Coefficient	Robust std. err.	t	P>|t|	[95% conf.	interval]
LabProd	1.087131	.0560268	19.40	0.000	.9719661	1.202296
ResProd	.0579408	.0592539	0.98	0.337	-.0638573	.1797389
CEInvest	.0522856	.0164494	3.18	0.004	.0184735	.0860977
RRMW	.0441552	.0205636	2.15	0.041	.0018861	.0864243
_cons	4.417841	.2620078	16.86	0.000	3.879276	4.956406
sigma_u	.5693441					
sigma_e	.02551636					
rho	.99799545	(fraction of variance due to u_i)				

Figure 11. Fixed effect panel regression
Source: Data analysis was performed by the author in Stata 17.0.

$$GDP = 4{,}41 + 1{,}08\ LabProd + 0{,}05\ CEInvest + 0{,}04\ RRMW$$

Where is *GDP* – Gross domestic product per capita, *LabProd* – Labour productivity, *CEInvest* – Investment in circular economy and *RRMW* – rate of recycling of municipal waste.

The beta parameters show that both increases in the rate of recycling municipal waste and investment in a circular economy have positive effects on GDP growth, although the value of the beta parameter for labor productivity is much higher than for CE indicators. According to panel regression from this analysis, a 1 p.p. increase in labour productivity will increase GDP growth by 1,08 p.p., much higher than an increase in investment in a circular economy and RRMW.

6 Conclusion

The findings correspond with the study by Busu and Trica (2019), which indicate that the implementation of the circular economy in the European Union had a positive effect on economic growth in the period from 2010 to 2017. Also, these results build on existing evidence from this research that, specifically, the rate of recycling of municipal waste and investments in the circular economy have increased economic growth. Contrary to the same research and paper by Trica, Banacu and Busu (2019), this analysis does not provide evidence that resource productivity has a positive effect on GDP growth.

The main issue for these papers is the lack of comparable data for Serbia, which is an obstacle in estimating Serbia's position in how Serbia ranks alongside European Union countries and cannot be included in the panel regression. Furthermore, the predictive function of the model is also limited due to the use of robust standard errors. Further research on this topic should include a dynamic perspective on analysis, which could be more suitable for econometric problems. Also, using national statistical datasets can provide further insight into the relationship between economic growth and the circular economy.

Although the implementation of a circular economy is high on the policy agenda in the European Union, waste generation per capita has increased from 2014 to 2021. There is also a difference between the level of implementation of the circular economy in Western and Northern European countries on the one hand and Eastern and Southern European countries on the other, with the latter lagging behind in the transition to the circular economy. Due to a lack of comparable data, it is not feasible to estimate which group Serbia belongs to. However, with few available indicators and owing to Serbia’s geographic position, it can be assumed that Serbia has many more similarities with Eastern and Southern countries.

According to panel data analysis, there is evidence that increases in circular economy investments and RRMW will have a positive effect on GDP growth. However, according to the analysis, the coefficients for circular economy indicators are much smaller than labor productivity. The implementation of the circular economy has the potential to accelerate economic growth; however, there is not enough evidence to claim that it can be the main driver of economic growth in Serbia.

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STRENGTHENING CAPACITIES FOR THE EFFICIENT IMPLEMENTATION OF THE ESG AND SUSTAINABLE FINANCE POLICIES

Sladjana Sredojevic, PhD, Association of Serbian Banks (Belgrade, Serbia), Head of Bank Training Centre and Specialist for International Cooperation, IFIs and Education; Vice President, European Association for Training in Banking EBTN (Brussels, Belgium) sladjana.sredojevic@ubs-asb.com

Abstract: The paradigm of sustainable development has become the new standard in both public and private sectors worldwide. International practice and achieved consensus confirmed common values framework – from CSR approaches and Principles for responsible investments to Paris Agreement, UN Agenda 2030, and other international agreements that introduced commitments and specified targets. In addition to agreed values and growing development needs globally, regionally, and locally, financing these needs of the economies and societies expressed in those goals of green transformation and sustainable development became a necessity where public sector funds alone would not be enough to complete the mission and targets set. Phenomenon of sustainable finance has put significant importance to the private sector finance worldwide – there is a need to provide strong financial support to the green transformation of the economies. However, efficient implementation of environmental, social or governance (ESG) considerations in financial decision making, requires a whole new spectrum of capabilities and organizational capacities needed. Therefore, while supporting green transition of the economies banking sector is experiencing the same transformation itself in many ways since policies and practices of ESG and sustainable finance has become a cross-cutting issue affecting whole bank. By combining empirical and desk research, comparative analysis of the banking sector of Serbia and selected European practice has been conducted. Paper has an aim to analyse selected aspects of the capacity for the efficient implementation of the ESG and sustainable finance policies: Strategy and governance, policies and procedures, organizational structure and capacity, and demand for skills (human capital capacities (expertise)). Findings of the research show that banks allocate lending to various sectors with strong green impact and are active in building and strengthening capacities, including reliance on partnerships and collaborations with other partner institutions, such as international financial institutions and national banking associations. As ESG considerations are increasingly being integrated in strategic and investment decision making processes of companies, financial institutions and their advisors, the most common contemporary forms of support for capacity building (e.g. various types of education), partnerships and other ways of strengthening capacities are analyzed and recommended.

Keywords: sustainable finance, ESG, education, skills, capacity building.

1. Introduction

1.1. Why is strengthening capacity related to sustainability?

In supporting green transition of the economies, financial institutions are experiencing the same transformation itself in many ways - since policies and practices of environmental, social or governance (ESG) criteria and sustainable finance has become a cross-cutting issue affecting whole organization (bank). In addition, efficient implementation of environmental, social or governance (ESG) considerations in financial decision making process, requires a whole new spectrum of capabilities and organizational capacities needed. They are needed in all areas where ESG and sustainable finance opportunities are applicable for business expansions, such as:

- Business development in sustainable areas
- Providing loans for environmental projects
- Improving access to finance from IFIs, including private financial institutions
- Providing advisory services-loans
- Gaining access to new markets.

Adequate skills and capacities are needed also in the areas of sustainable financing in banking sector related to various financial products, such as:

- Financing renewable energy
- Environmental credit cards

- Environmental venture capital i.e. financing green buildings
- Loans for clean manufacturing technology
- Sustainable leasing
- Green mortgage loans
- Green bonds
- Insurance of liability for environmental damage
- Environmental loans for small and medium-sized businesses.

1.2. Methodology

After a theoretical overview of sustainability and sustainable banking, but also importance of capacity building, the chapter discusses the business practice of sustainability in the banking sector.

First part of the paper is dedicated to the analysis of international best practices - forms and approaches in strengthening capacities for successful implementation of ESG and sustainable finance.

Second par of the paper is focused on the importance of understanding of the local conditions and situation in ESG implementation by analysis the case study of the local market in the banking sector of Serbia. Based on the identified situation of the local market, application of appropriate forms of strengthening capacity that is tailor made and locally needed is recommendable.

2. Literature review and overview of the practices in sustainable finance

2.1. Literature review

Sustainable finance is related to the consideration of the environmental, social and governance (ESG) factors in the financing process, i.e., during the (investment) decision making process in the financial sector, which eventually will lead to higher level of longer-term investments into sustainable economic activities and projects (European Commission, 2018, pp. 2). As Jeucken defines in his book on Sustainable Finance and Banking, Sustainable finance is "… a concept referring to financial services aimed at combining ecological, social and managerial aspects of business decision-making in terms of long-terms effects" (Jeucken, 2001). Sustainable finance may also be considered as the policy arm of the paradigm of financing growth, as a part of the Capital Markets contribution to public sector efforts, by channelling private investments in a way which would take into consideration environmental, social and governance issues (Sredojevic, Sredojevic, 2021, pp.138).

There are more and more various studies on sustainable finance and connection between sustainability and capacity building and capacity strengthening factors for its successful implementation, which this paper will also focus on. One of these studies is realized by the OECD in 2022, titled "Strengthening capacity for climate action in developing countries: Overview and recommendations"; its authors argue that "Despite years of donor country engagement, developing countries' efforts to fight climate change and its consequences remain stifled by important capacity gaps" (Casado Asensio, J. et all, 2022). Capacity-building is defined as the process of developing and strengthening the skills, instincts, abilities, processes and resources that organizations and communities need to survive, adapt, and thrive in a fast-changing world (UN, 2023).

2.2. Practices in sustainable finance market at the EU and international level

Many drivers positively affect growing good practices in sustainable finance market at the EU and international level. In the recent period, regulatory framework at the EU level is developing rapidly with the aim to enable environment for sustainable financing development. Some of these international initiatives are: Action Plan on Financing Sustainable Growth, A Roadmap For Recovery: Towards a more resilient, sustainable and fair Europe, Establishment of an EU classification system for sustainable activities, i.e. an EU taxonomy, EU climate benchmarks and benchmarks' ESG disclosures, Corporate disclosure of climate-related information, EU Green Bond Standards, Renewed Sustainable Financing Strategy (Sredojevic, 2020, 146). Although they are in nature voluntary and based on recommendations, there is a growing trend in application of compulsory requirements in ESG and sustainable finance practice in EU and international level.

At the EU level, in September 2022, the European Securities and Markets Authority (ESMA), the EU's Securities Markets Regulator, has published its Final Report on Guidelines on certain aspects of the MiFID II suitability requirements which defines that firms providing investment advice or discretionary portfolio management services will need to add an ESG aspect to their existing sustainability assessment, i.e. they must collect and document specific information about their clients' and potential clients' *sustainability preferences.* That may represent a challenge, as financial advisors will now also have to be able to inform and educate their customers in a non-technical manner on what ESG and sustainable finance means, allowing these customers freedom to decide on their preferred sustainable finance investment strategy, such as: a) Investments complying with the Taxonomy Regulation, which focuses on the environment; b) Investments complying with the Sustainable Finance Disclosure Regulation (SFDR), which focuses on the bigger ESG picture; c) Investments that consider adverse impacts on sustainability factors. Among main amendments introduced to the MIFID II Delegated Regulation and reflected in the guidelines on the topic of sustainability are also *Organizational requirements* – Firms will need to give staff appropriate training on sustainability topics and keep appropriate records of the sustainability preferences of the client (if any) and of any updates of these preferences (ESMA, 2023).

At the international level, the adoption of the 2030 Agenda for Sustainable Development has put into the focus also the need to strengthen the statistical capacity to measure, monitor and report on the Sustainable Development Goals, including numerous related indicators. On the occasion of the first United Nations World Data Forum in January 2017, the Cape Town Global Action Plan (CTGAP) for Sustainable Development Data has been launched based on identified gaps in national statistics programmes and statistical coordination in response to the 2030 Agenda for Sustainable Development. Therefore, the Action Plan serves as a road map for the capacity development efforts of the Statistics Division of the Department of Economic and Social Affairs of the Secretariat and other international, regional and national agencies involved in the production of official statistics. The Statistics Division organizes capacity-building events and manages a number of larger-scale capacity-building projects and capacity-development projects and activities of a different nature, such as: Workshops, Study visits, Direct country assistance, Inter-country coordination efforts, Development of training or guidance materials, Establishing of specialized networks (United Nations Academic Impact, 2023).

3. Strengthening capacity for the efficient implementation of the ESG and sustainable finance policies

As ESG considerations are increasingly being integrated in strategic and investment decision making processes of companies, financial institutions and their advisors, the most common contemporary forms of support for capacity building and strengthening capacities are analyzed and recommended: education, partnerships and network, guidelines, tailor made technical assistance etc.

3.1. Education

Development towards a more sustainable society must begin with education. When education is done systematically, right and timely, it not only teaches people about the principle and science of climate change and inequality and the reasons we must take action, it also engages, empowers and promotes a more environmentally friendly, community-based way of life. Education analyzed in this part refer to formal education, vocational (professional) education and education aimed to strengthen capacity of users of financial services (financial education).

3.1.1. Formal Education

The need for education for ESG and sustainable finance successful implementation is growing. Also, programs of formal education in the field of ESG and sustainable finance are growing all over the world. They exist at all levels of formal university education, including Master and PhD level of education. Such an example is E.g. Master of Science Sustainable Finance (Norwegian Business School). Formal education is an excellent way to prepare current and future generations with adequate set of knowledge, competences and skills needed for their future and professional challenges at the (sustainable) markets.

3.1.2. Vocational Education

Beside formal education, some of the most effective ways for capacity strengthening is training, education and knowledge transfer. However, some authors argue that in practice, the knowledge and skills transferred to participants or recipient through (short-term) training are not sufficient to ensure effectiveness (Grossman and

Salas, 2011, 130). So, training in capacity development projects may sometimes be subject to criticism (Alpízar et al., 2019, 128); Lubell and Niles, 2019, 129); execution of training programmes can have challenges because the majority of trainings are designed in a workshop set-up (Cundill et al., 2014, 131). Therefore, in practice, training programmes should use more active methods of learning, such as mentoring; on-the job training with expert placements; and follow-up with training through action plans, internships and residencies (Jones et al., 2018[133]), as well as a combination of training approaches – such as presentations, discussions, field practice, field visits, documentaries of best practices and expert talks with emphasis on tailored examples, use of free-to-use online platforms, self-driven learning tools (e.g. massive open online courses), etc.

Today, at the EU and international level, there are numerous VET programs in this field. The programs may be both with and without certification, online and onsite, different duration (6 weeks, 6 months, etc). Some of the examples are:

- E.g. European Association for Training in Banking and Financial Services EBTN, Brussels – within network of institutes for banking there are lot of VET programs in various countries such as Certificate in Green and Sustainable finance (Chartered Banker Scotland).
- ESG Certificate (CFA Institute),
- Sustainable Investing (Harvard Business School),
- Circular Economy and Sustainability Strategies Program (University of Cambridge).

It is also important to complement that International organizations, too, are introducing high level quality programs of education for ESG and sustainable finance. Some examples include UNESCO - UNESCO's Education for Sustainable Development, IFC – First for Sustainability.

3.1.3. Education of clients (financial education)

Besides education of employees in banks, it is very important to have informed, financially literate and financially resilient client/investor. Therefore, it is important strengthen the relationship with clients/investors and their level of financial literacy. That continuous process, known as financial education, is being empowered with various programs, approaches, and forms. In that respect, it is important enriching the curriculum of financial education topics with the necessary set of issues related to ESG and sustainable finance, so that current and future users of financial services are adequately and timely provided necessary knowledge and equipped for future financial decisions. One of the examples in this respect is the project aimed to education of young people through the Erasmus + Project - Sustainable Financial Literacy Project - Strategic Partnerships for School Education (2020 – 2022).

3.2. Guidelines and Principles

Guidelines and principles are another relevant form of capacity building and capacity fostering. Although they represent in most of the cases voluntary list of activities, principles and values, they are effective tool for the financial institutions in introducing new culture and new activities particularly at the sectorial level. National banking associations, as the professional associations, together with their member banks usually work together on the development of such a document. One of the successful examples is e.g. Sustainability Guidelines for the Banking Sector issued by the Banks Association of Turkey for the purpose of overseeing economic, environmental and social aspects of development in banking and finance sector issued in 2014 and updated in 2021 (Banks Association of Turkey, 2021).

3.3. Learning, creating and networking through partnerships

Partnerships created in networks that are based on membership in organizations or on bilateral and multilateral international cooperation are also additional effective way for capacity building and capacity fostering. Networks and partnerships are very powerful platforms for developing knowledge, exchange of best practices, learning and developing new initiatives relevant for local conditions. In the field of sustainable finance, there are many international platforms such as Sustainable Banking and Finance Network SBFN, as the network in banking and financial sector coordinated by the International Finance Corporation IFC as the part of the World Bank Group.

In addition, in 2017, central banks and supervisors all over the world have initiated establishment of The Network of Central Banks and Supervisors for Greening the Financial System (NGFS) which contributes significantly to global promotion of the values of the circular and green economies. The Network's purpose is to help strengthening the global response required to meet the goals of the Paris agreement and to enhance the role of the financial system to manage risks and to mobilize capital for green and low-carbon investments in the broader context of environmentally sustainable development.

3.4 Tailor made approaches - technical assistance for energy transition and sustainability

Beside general and above mentioned methods of applicable good practice in fostering capacity building for ESG and sustainable finance, technical assistance is another effective way for capacity building and capacity fostering, and it particularly brings benefit if it is tailor made and aimed to the needs of the local market. One of the projects that illustrate tailor made approach is EU HORIZON 2020 funded project – New Energy Solutions Optimized for Islands (2019-2023) known as NESOI.

NESOI project has been awarded by the European Commission in 2019 within a Horizon 2020 Programme Grant of € 10 million, out of which € 6,2 million are meant to directly support islands in their energy transition process. It kicked off in 2019 by the European Consortium of 10 organizations led by Sinloc Spa[1] and is now entering into its final year and its final phase. The NESOI European Island Facility facilitate the clean energy transition on EU islands from the bottom up and has three key objectives:

- Promote investments for energy transition in the islands
- Facilitate the decentralization of energy systems
- Contribute to EU policies and the achievement of 2030 targets

New Energy Solutions Optimised for Islands
NESOI
EUROPEAN ISLANDS FACILITY

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 864266

Picture 3. Logo of the NESOI Project funded by the EU HORIZON 2020 program

NESOI Project has been implemented through the following three phases.

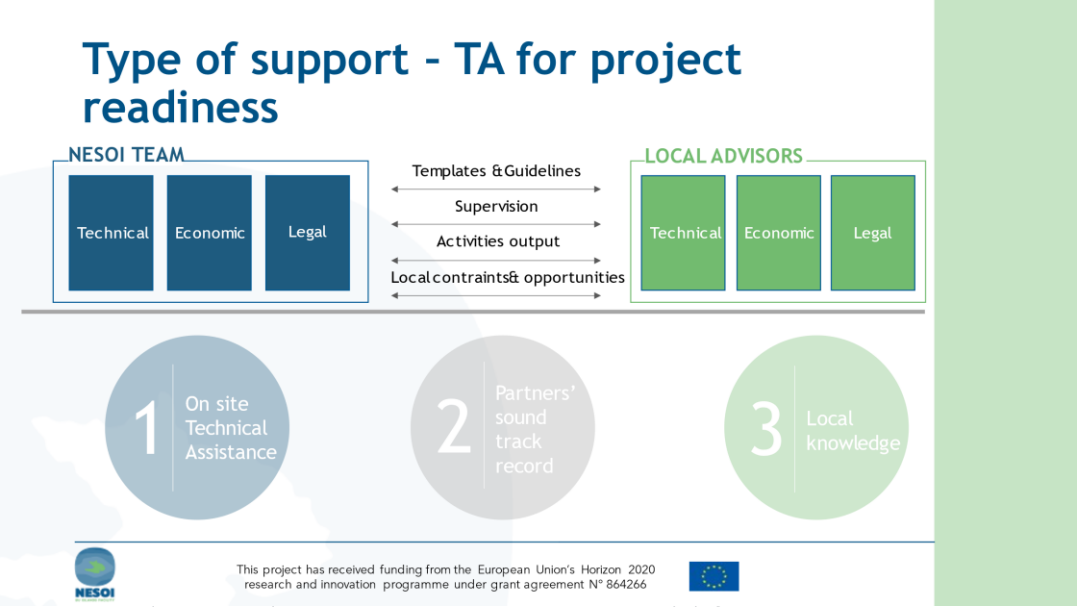
I phase – Call for proposals through local entities participation and selection of beneficiaries.

Within two public calls open in October 2020 and October 2021, expression of interests came from the local level of 63 islands and archipelagos all over Europe, in a form of project idea, concept note or more mature stage of the project proposal (bottom up approach). Projects contributing to islands' decarbonisation were taken into account - namely renewables, energy efficiency (buildings, industry, public lighting), energy storage, smart grids, etc. As a result of a thorough selection process, around 60 project proposals have been selected and benefited directly from the assistance and the resources of NESOI. Projects belong to various categories and technologies: from Energy Planning, Sustainable Mobility, Energy Community, Renewable Energy Generation to Energy Efficiency.

[1] SINLOC SpA is the coordinator of the European consortium, with the participation of 10 organisations in 7 countries. The participating institutions partners have a solid experience in promoting and shaping energy transition projects all over Europe.

II – Technical Assistance through provision of free of charge financial sources and technical support.

After the phase of Public Calls and selection of project ideas, TA has been granted to each project idea through provision of techical, economic and legal technical assistance both from the NESOI consortium and expertise network and locally activated.



Picture 1. Scheme of the Tailor Made Technical Assistance in NESOI Project

Beside provided direct Technical Assistance, fostering capacity in case of this project reflected also in the following forms:

- NESOI enabled to islands training,
- technical support,
- cooperation opportunities
- robust funding opportunities to concretely convert Island Sustainable Energy Action Plans into Renewable Energy Sources (RES) plants, building and energy infrastructure retrofitting, energy bills reduction, local job creation and more benefits to local communities.
- Help desk, webinars, videos
- Digital platform able not only to provide first-step funding for islands energy transitions plans, but also a one-stop-shop for islands where to find ideas and effective organizational, technical, and financial instruments for the whole value chain of a project. Platform is a connection point for promoters/local authorities, technology, and financial providers.

III – Implementation phase – carrying our planning and project implementation and activate additional investments. After its completion, it is expected that the project will have activated more than 100 M€ of investments in sustainable energy projects (NESOI, 2023).

Within the last phase of the project, Roadshow and Fund matching, NESOI is currently looking to involve relevant financial institutions, with the goal to match the supported projects at islands (that are in the stage of completed Technical Assistance and Completed project documentation) with available public and private funds aimed in energy transition.

4. Partnership and institutional collaboration for the strengthening capacities – case of banking sector of Serbia

Previous chapters analyzed best practices at the EU and international level as forms and methods for capacity building and capacity strengthening in ESG and sustainable finance successful implementation. This chapter has an aim to analyze case study of Partnership and institutional collaboration for the strengthening capacities – at the level of banking sector of Serbia.

4.1.1. Membership in the Sustainable Banking and Finance Network SBFN

The Association of Banks of Serbia (ASB), as the national banking association, is the organization that brings together all banks operating in Serbia, as well as the Belgrade Stock Exchange in its membership, on the voluntary basis since its establishment in 1921. At the end of 2020, ASB joined the *Sustainable Banking and Finance Network (SBFN)* that is coordinated by the International Finance Corporation (IFC). With this membership, the financial sector of Serbia has taken another step in accepting best practices, which is the long-term goal of the Association of Banks of Serbia - moving towards reducing environmental, social and management risks, which will bring better results for companies and the development of the private sector in the long term. The SBFN network brings together many central banks, financial sector regulators, capital market regulators, as well as national bank associations around the world, among which is the Association of Serbian Banks. Continuous work and engagement within the SBFN working bodies at the international level, helps participation in the development of guidelines, instructions and other guides for banks and represent the voice of the industry that has an extremely important role in achieving the goals of sustainable development, green transition, and circular economy.

Picture 2. Logo of the SBFN

Entering membership into SBFN, it enabled ASB to embark as an organization into the field of strengthening capacity for ESG and sustainable finance.

4.1.2. Agreement on Cooperation with International Finance Corporation IFC

At the end of 2021, the Association of Serbian Banks signed an Agreement with the International Finance Corporation IFC to support the strengthening of banks' capacities through education and other initiatives that encourage the application of ESG and sustainable financing practices. As part of this cooperation, ASB and its member banks have obtained access to regular education through several forms:

1. online education on a global level (on a regular monthly basis)

2. the use of a digital platform from the field of sustainable financing (First Sustainability)

3. Training of Trainers program, in order to enable IFC partner institutions to prepare further training programs in the field of sustainable financing adapted to local conditions.

In order to monitor the implementation of the signed Agreement, in cooperation with ASB, IFC initiated the establishment of the Joint Working Group of IFC and ASB in 2022 to strengthen capacities for the application of ESG and sustainable banking. The Working group with the support of the IFC Program aims to work on strengthening the capacity of banks for the implementation of sustainable financing policies, identification of existing practice and guidelines in the application of ESG, preparation and distribution of education, exchange of experience and examples of good practice and definition of possible priorities for future needs activities.

Picture 3. Logo of the Integrated ESG program, supported by the IFC and Swiss Confederation and implemented in the Association of Serbian Banks as one of the partners in the Republic of Serbia

Both platforms, SBFN membership and Agreement with IFC positively impact the orientation of the ASB for capacity strengthening in ESG and sustainable finance and create effects of synergy.

4.1.3. Analysis of selected aspects of the capacity for the efficient implementation of the ESG and sustainable finance policies

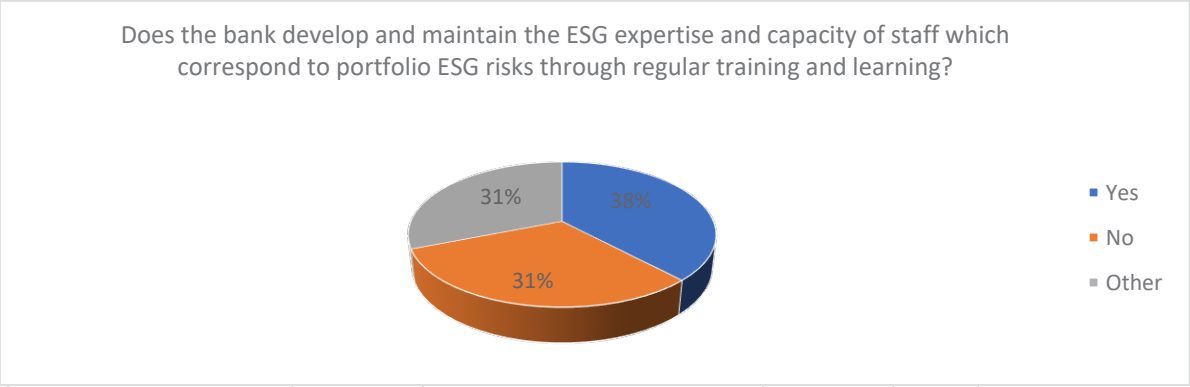
Within a need for regular reporting based on SBFN membership, a survey has been conducted through a questionnaire among ASB member banks on existing sustainable finance and ESG practices. The questionnaire has had a standardized form at the global level, based on the long-standing practice of the SBFN. The findings of the survey aim to measure the level of understanding of ESG principles by banks in Serbia and their applicability in the practice and operations of banks.

Creation of a qualitative research on sustainable financing for banks and financial institutions is one of the recommended tools in the preparatory phase of institutions, specialy banking associations or central banks, to help them and other interested parties gain insight into sustainable financing practices, capacity, appetite and expectations related to sustainable financing and ESG. Several SBFN countries have started their national journey of sustainable finance policy development with just this kind of research, and it is in line with the approach followed by other SBFN member countries.

For the purpose of the survey, relevant trends and level of various aspects of the capacity for the efficient implementation of the ESG and sustainable finance policies have been analysed: Strategy and governance, policies and procedures, organizational structure and capacity, and demand for skills (human capital capacities (expertise)). Survey has been conducted during 2022 and 2023, and all banks operating in Serbia participating in it. Findings of the research show that banks allocate lending to various sectors with strong green impact and are active in building and strengthening capacities, including reliance on partnerships and collaborations with other partner institutions, such as international financial institutions and national banking associations.

Among questions of the survey, group of questions related to the Organizational structure and capacity has been introduced, too. This chapter will disclose particularly findings of two questions from this group of questions.

- Q1. Does the bank develop and maintain the ESG expertise and capacity of staff which correspond to portfolio ESG risks through regular training and learning? - Findings is shown in Picture 4.



Picture 4. Graph on the results on question related to ESG expertise and capacity

As shown, 31% of the banks do have and maintain ESG expertise and capacity, while 38% did not have such a capacity and expertise. Based on such an outcome and understanding of the local market and needs (together with other questions and outcomes), an appropriate set of tools and forms for capacity strengthening will be developed such as education program, guidelines, etc.

- Q2. What technical assistance and consulting services does your organization need to implement ESG principles?

Technical assistance that has been selected as needed has following forms: Training for boards in ESG risk strategy, policy and governance; Training for personnel in ESG risk management and sustainability opportunities; Organization of workshops and training to implement a results-oriented social and environmental management system; Consulting services for identifying risks and determining what insurance is required; Consulting services for sustainable business development; Technical assistance to implement new sustainable finance products; Training of local consultants to assist the clients; Internal support for the implementation of a social and environmental management system; Advice/assistance on the inclusion of insurance requirements in the financing agreements.

Both questions which findings are disclosed above, indicate the need for further work on improvement and strengthening capacity for ESG and sustainable finance, most of which may take a form of education with adequate programs and approaches.

The survey results can be a further basis for highlighting important areas, directions of development, guidelines, but also as an informative and educational tool that can encourage respondents to plan appropriate activities.

5. Conclusions

A sustainable future can't be achieved in separated and isolated actions, so it is essential to collaborate and to partner with every stakeholder involved. Analysed case study of collaboration of the Association of Serbian Banks with International Financial Institutions and international platforms such as SBFN, evidence power of international cooperation and synergy of partnership, with multiplied benefits for banking sector of Serbia. Identification of selected international practices that best fit local needs and understanding local markets, are precondition for the synergy of such a cooperation.

The new developments in regulation, including MiFID II amendments, aim to ensure more transparency and improve investors' better understanding of how they can contribute to a better future. New skills and capacities will be needed in that respect. There are many forms, ways and principles of ESG and sustainable finance capacity building and strengthening, such as:

I - Understanding the situation of the local market in ESG implementation

II - Implementation of the general international best practices and-or

III - Application of a tailor made approach – specific adaptation of the international best practices, as Project NESOI Technical Assistance for Energy transition on Islands showed.

IV - Education and training, both of employees in banks and their customers. It is important to include in future work education of bankers on explaining sustainable finance to their customers in an understandable way and to guide them to an investment portfolio aligned with their ethics.

V - Partnership with other institutions/stakeholders

VI - Ensuring Institutionalization and continuity - Organizational aspect, within the organization and among many organizations (coordination and synchronization of actions).

This Paper findings may provide a framework and key elements to assess and further improve banks' internal policies and procedures in terms of sustainable financing.

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CORPORATE GOVERNANCE AND SUSTAINABILITY: THEORETICAL APPROACH AND CONSTRAINTS FOR THEIR IMPLEMENTATION IN THE WESTERN BALKAN COUNTRIES

Mijat Jocovic1, Ivana Ljutic2
(Full Professor of Corporate Law, Ph.D., The University of Montenegro - Faculty of Economics, Podgorica, Montenegro, mijatj@ac.me, 2 Associate Professor of Corporate Law, Ph.D., The Union University - Belgrade Banking Academy, Belgrade, Serbia, ivana.ljutic@bba.edu.rs)

Abstract: *"We all need sustainability. "because there are no jobs on a dead planet; there is no equity without rights to decent work and social protection, no social justice without a shift in governance and ambition, and, ultimately, no peace for the peoples of the world without the guarantees of sustainability."* Sharan Burrow

The corporate law and governance regulatory framework is changing quickly and profoundly in the OECD countries, the European Union (EU), and, to a lesser extent, in the rest of the world. The changes are primarily driven by the public debate and policy orientation of the developed economies, and also by a desire to expedite the timely sustainable transition of the EU economy and society. Since the Western Balkans countries (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia) are recognized candidates by the EU for membership of the EU, these regulatory changes stand to have significant implications. Indeed, these candidate countries are strongly motivated to converge their corporate law and governance frameworks with the relevant EU to promote their candidacy and facilitate the integration of their economies into the EU single market. Arguably the most important next step for the Western Balkan EU accession candidates is that of adopting and implementing new EU regulations on corporate sustainability governance and reporting, in particular the Corporate Sustainability Due Diligence Directive ('CSDDD' or 'CS3D'), still in development, and Corporate Sustainability Reporting Directive ('CSRD') that was finalized in December 2022 and is now being implemented by EU Member States. The Strategic objective is to attract high-quality and stable foreign and domestic investment and these demands align the interests of companies with their shareholders, stakeholders, and wider society. To make themselves more attractive to investors, Western Balkan companies will need to pursue a sustainable transition and focus on sustainable value creation. Companies will need to broaden their corporate reporting to include both financial and sustainability reporting, the latter focussed motivation on a range of ESG issues. While the convergence with EU regulation and the sustainable transition will pose challenges and bring inevitable disruption to the Western Balkans, in the long term it will help ensure the stability and prosperity of their economies and societies.

Keywords: corporate governance, sustainability, Western Balkans, EU, global regulation

JEL Classification: K2, K22, K29, K, Q

1 Instead of Introduction

A key aspect of corporate law and the governance process inside firms and markets is measuring and disclosing important metrics and information. In this paper, we examine the effect of sustainability disclosure regulations on firms' disclosure practices and valuations within the framework of corporate law and governance (Jocovic, Cvetkovic, Ljutic, 2022). Specifically, we explore the legal and law framework, and economic implications of regulations mandating the disclosure of environmental, social, and governance (ESG) information in Western Balkans, still lagging much behind in every mentioned aspect.

We find that relative to following the innovative and up-to-date regulatory solutions, different scopes of the sets of international standards, and relevant EU Directives, the firms and regulators in the area of Western Balkans are significantly slow and inert to even stimulate firms of voluntary reporting and receiving assurance. Consequently, the enhanced disclosure credibility is lacking as there is no enhanced disclosure comparability. Results of our preliminary research suggest that there is the absence of voluntary or mandatory regulation which would then speed up the process of mandates and the adoption of assurance or specific guidelines. Firms in the Western Balkans area of sustainability governance seek and need the qualitative properties of comparability and credibility of sustainability information, based on simple, but comprehensive and consistent regulation. Sustainability governance is in favor of sustainability disclosure driven by the future-oriented regulation, as a solid foundation for the firm valuations at the financial markets. Our research evidence suggests that current

efforts to regulate sustainability governance in general terms shall increase transparency around firms' impact on society. These are effective steps at improving environment disclosure quantity and quality as well as corporate value, strongly footed in governance.

Corporate governance can be associated with various concepts such as corporate social responsibility, business ethics, and other key aspects, and nowadays certainly with sustainability. However, corporate governance is different from these concepts, i.e., while at the same time, corporate governance strengthens these concepts. The concept of sustainability is becoming increasingly important for companies, and corporate boards, that is, directors who include issues such as human rights, climate change, and the environment in the creation of policy and the implementation of business operations and transactions. This paper attempts to address the next question - How does good corporate governance relate to sustainability? It is a *concept of sustainable corporate governance* – an initiative that has a basic commitment to improving the framework of company law and corporate governance. You could say nothing new, but it is for the West Balkan countries.

2 Corporate Governance, Sustainability, and Company Law

The starting point of our analysis is the determination of traditional company law and traditional corporate governance, with the conclusion that a different view is necessary on both sustainability, especially in West Balkan countries. Company law regulates the legal position of business entities. It is a set of rules of law that regulates the forms of performing economic activities, entities, their origin, internal organization, association, and methods of termination (Jocović, 2022; Ljutic, 2015). Company law creates legal certainty for companies and determines and combat corruption, fraudulent and criminal activities taken by individuals using companies as a veil to hide behind. Some authors are offering a different kind of view on company law: company law can be used to prevent and oppose climate change, conflict, and social disintegration (Sjåfjell and Richardson 2022).

The first step is to interconnect company law and corporate governance and after that, the second most key step is to relate both to sustainability. Company law deals with particularly principal issues of corporate governance such as relationships between a company's management, board, shareholders, and other stakeholders (employees, creditors, consumers, society, and other interested parties), on the ways the company is managed and controlled and obligations and responsibilities of corporate boards. The new concept of responsibilities of corporate boards/directors is to deal with issues like human rights, climate change, and the environment. Those kinds of issues are significant in the creation of policy and the implementation of business operations and transactions. Now you have sustainable corporate governance, improved and reformed company law, and corporate governance as well. Regulatory and public policy promoting legal security for companies and their stakeholders is linked in business practice and corporate operations precisely to sustainable corporate governance as a duty of both the director and the company, which promotes respect for human rights, and the environment, and mitigating climate change and deterioration in the world.

The definition of corporate governance, probably the best one and most often used by OECD is that corporate governance "involves a set of relationships between a company's management, its board, its shareholders and other stakeholders and provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined" (G20/OECD, 2015). The definition of corporate governance where the legal relationship between shareholders and corporate boards is at the center is long gone (Mason and O`Mahony, 2008). Over time, it has been shown that even the acceptance of the stakeholder theory is still narrow, i.e., that one should focus on the last most important stakeholder, which is society as a whole in the sociological sense of meaning.

3 Sustainability as a New Wild West Frontier for Corporate Law and Governance

We first aimed to start up the debate on defining the position and role of corporate law and corporate governance in the field of sustainability social, economic, and political global and local phenomenon, something that from now on shall be the main framework of the civilization redefined growth and the future. The feedback mechanics, connections, knowns, and unknowns are here, but we are not so close to the eternal truth and what is the whole truth of sustainability.

Corporate governance as a model, concept, and practice could be related to sustainability in important practical ways, but in the Western Balkans countries, even sustainability is in its initial pre-startup phase. Company law as

a broader legal foundation of corporate governance is defining the broader concept of the regulation of sustainability, there is no other way out. The approach is almost standard in contemporary corporate governance but a new concept in the region, since the prevailing practice of corporate governance is in the textbooks, scientific and professional publications but unfortunately not much in practice since stock markets are weak and underdeveloped with young and miniature financial institution infrastructure, regulation and practice. We just are foreseeing the best way for the future in the region to develop simple, but strong models for new legislation in corporate law and regulation, standards, and codes of corporate governance related to sustainability. It is also possible to have an alternate scenario first to establish and continuously improve the sustainability operations and practices for companies and then introduce a new regulatory framework on company law for the West Balkans countries as a foundation for sustainability governance. Also, there is the possibility of the third so-called combined solution of the previous two approaches. The goal could be to achieve as a result sustainable corporate governance solidly founded as an initiative to improve the regulatory framework on company law and relevant corporate governance structure.

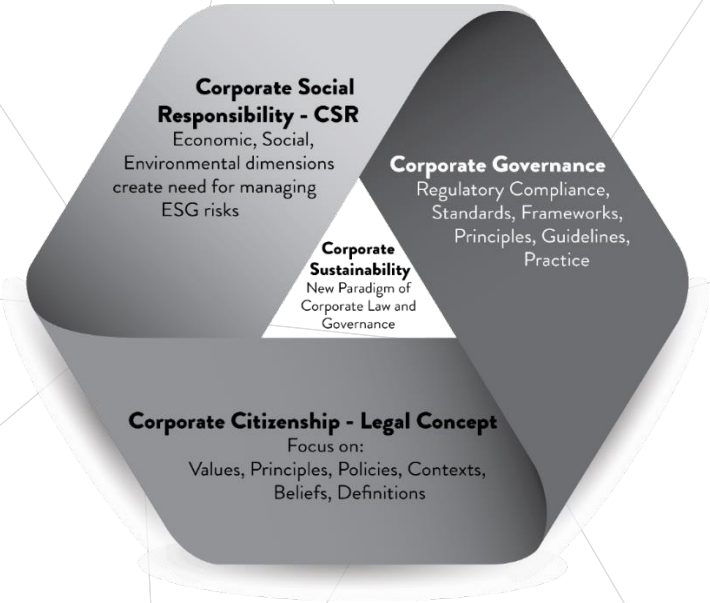
4 Main Points of this Paper

- Innovated and new corporate governance should serve as the best foundation for sustainability.
- New sustainability governance corporate structures that companies should adopt possess positive but also negative aspects.
- Other sustainability governance important aspects are all key management issues:
    - Materiality assessment of sustainability/Environment-Social Responsibility-Governance (ESG) factors.
    - Sustainability assurance (still in the initial and vague phase who shall report auditors or ESG experts or who else?
    - Corporate ESG ratings systems and databases.
    - Greenwashing.

5 Why we Consider Corporate Governance Convenient and the Best Foundation for Sustainability

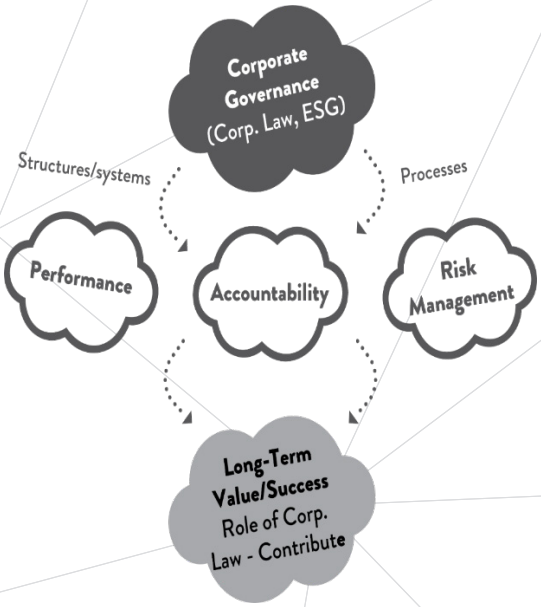
We have asked ourselves what eventual new sustainability governance structures companies shall adopt in Western Balkans and what are the positive aspects as well as the caveats of this process. Based on our preliminary research companies in the region do not adopt but only deliver something that could be named a lip service, in nice wording in annual reports with the minor elements of integrated reporting, some ESG, as a formal approach. We could not make any conclusion are companies are applying sustainability operation, management, and disclosure. Also, it is not clear whether the practical experience and reporting indicators are valid or not, and certainly are not based on any regulation since the regulation has not been introduced yet. Consequently, firms could develop sustainability management structures to gain experience while the sustainability governance structures shall follow the new regulation and standards, leaving in front of us the unsolved enigmatic question of what is older an egg or a han. On the other side of the equation, the logical time limit for this process is not defined since the public debate has not been initiated yet and the regulatory adoption process is even further away. From regulation, via operations, and governance to sustainability reporting there is a much longer way, while the obstacles are rising enormously, and the global crisis is almost holding this process to a standstill. This feedback mechanism is depicted in Figure 1, giving an intersection between corporate social responsibility, corporate governance, and corporate citizenship forming the integrated sustainability framework.

Figure 1
Corporate Governance Sustainability Framework



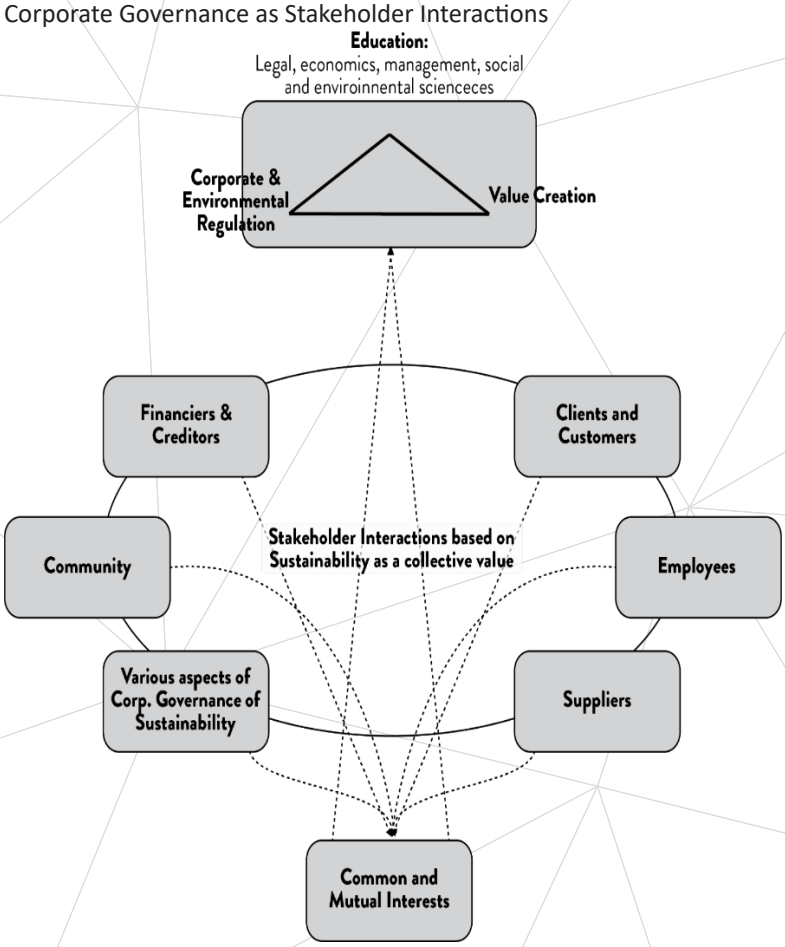
In the group of the most developed countries members of the Organization for Economic Cooperation and Development (OECD) and the EU new regulation, rather complex, broad, precise, but also many times incomplete or conflicting corporate governance for sustainability need is based on the corporate law and ESG reporting fundamentals. Further structures, systems, and processes are developed aiming to improve the firm's sustainability performance indicators, accountability, and assurance reporting, and ESG risk management practices. As indicated in Figure 2, this structure pyramid is contributing to the long-term creation of value and the success of sustainable corporate operations. Our clear conclusion is that the role of corporate law and governance is to contribute to this process.

Figure 2
Corporate Governance and Sustainability: EU/OECD Regulation



Stakeholders' interaction is well established in OECD countries and studied in developed market economies with strong legal systems and regulatory institutions and practices. That is not the case in ex-socialist countries of Western Balkans which still did not complete the necessary market and institutional democratic reforms. As we could see in Figure 3, a strong education in interaction with new sustainability regulations could only contribute to the process of value creation in sustainability. This is the model in which stakeholder interactions are contributing to the concept of sustainability as a creation of new socially acceptable valuable values.

Figure 3
Corporate Governance as Stakeholder Interactions



Global trends led by the OECD countries and for us in the region of Western Balkans the EU shall have the dominant impact and effects on the process of sustainability regulation and practice in the region. Countries shall refocus on aspects of ESG/Integrated Reporting (IR)/Sustainability Reporting with the top emphasis on environmental sustainability and the negative impact of ESG degradation on social structures and public institutions. All this is putting a new emphasis on the importance of defining the new corporate purpose and values. Important steps in this direction are better and constantly improving board oversight and monitoring, introducing new corporate culture which is incorporating sustainability and human capital management (HCM), and more open-minded, tolerant, and democratic boards, while the companies should adapt and accept wider forms of citizen activism, as portrayed in Figure 4.

Figure 4
Overview of Global Trends

Corporate law as a wider legal framework for sustainability governance is founded for better managing and utilizing the environmental negative side effects but at the same time improved and high-quality environment effect statements and corporate disclosure. This is opening broad new venues for better environmental risk assessment and impact assessment in the process of preparing environmental effects statements (EESI), as it is presented in Figure 5. Corporate law and interpreted sustainability governance regulation are increasing the footprint for the improved economic and regulatory base, environment, and social regulation related to sustainability. This, in turn, is giving maneuvering room for corporate law to be creative in the formation, activities, and precise duties of a corporation while sustainability governance shall have a narrower proper role to balance the interests of the business's stakeholders. The main message of this model approach is that sustainability governance is precisely calibrated for new sustainability operations and management.

Figure 5
Corporate Law Focus on Sustainability Governance

6 European Commission Approach to Corporate Sustainability Reporting

New EU law regulation is stipulating that all large plus all listed companies (except micro-enterprises) are obliged to fully disclose information on risks and opportunities from social and environmental issues as well the impact on people and environment, that is embodied in the Corporate Sustainability Reporting Directive (CSRD), as of 5

January 2023 which came into force (Directive (EU) 2022/2464). The Directive is enforcing and modernizing the rules concerning the social and environmental information in the report on sustainability including in total over 50,000 companies. Simultaneously European Financial Reporting Advisory Group (EFRAG) delivers the first set of draft European Sustainability Reporting Standards (ESRS) to the European Commission (EFRAG, 2022).

ESRS by EFRAG is focusing to standardize the investors' and stakeholders' access to information and investment risks from climate change and other important sustainability issues. The main important message is that the management and boards should report environmental risks and opportunities, and company law should create new obligations for companies. Precisely the EES risks report should be disclosed in the official memorandum statement on the environmental effects in the environmental evaluation statement (EES).

All is pointing out to the conclusion that sustainable corporate governance is an umbrella for economic, regulatory, environmental, and social aspects. Traditional company law deals with the issues such as formation, capital disclosure requirements and operations (mergers, divisions, acquisitions) of companies, corporate governance issues, and relationships between management, boards, shareholder, and other stakeholders, creating legal certainty for companies. This role should be strengthened and reinvigorated in the environmental context.

At the same time, we are also suggesting a little bit of a different and new angle view. Company law should be also a powerful regulatory tool a significant instrument to combat threats like climate change, and social disintegration, how companies could better identify and reduce violations of human rights, and negative influence on the environment or society while they operate effectively, go beyond traditional corporate transparency. Sustainable reporting is becoming a new, rather complex, and demanding reporting obligation for companies. Corporate governance in a new regulatory framework should focus to regulate the balancing of interests among the business's different stakeholders. The environmentalism landscape is ever and fast-changing panorama wide angle view with the emergence of new corporate operations, creating needs and requirements, and roles for the new company law and sustainability governance.

7 Overview of EU Activities in Sustainability Regulation and its Impact on Western Balkans Countries

There are new rules in the EU on Corporate sustainability reporting, new directive is The Corporate Sustainability Reporting Directive (CSDR) which builds up rules on reporting about social and environmental information. As we have pointed out earlier large companies and listed SMEs must report on sustainability. EU law strongly regulates that all large companies and all listed companies (SMEs) are obliged to disclose information about risks and opportunities from social and environmental issues and be transparent about the impact of their activities on people and the environment. This Directive came into force on 5 January 2023. Companies will have to apply in the 2024 financial year for the report published in 2025, about 50,000 (fifty thousand) companies for the EU it is more than a big task. That is also a part of the *European Green Deal* – the EU to be the first climate-neutral continent by 2050., with fresh air, clean water, healthy food, cleaner energy, more public transport, and so on.

We all consider that the *European Green Deal* enters the domain of climate, energy, agriculture, environments, transport even architecture (concept of living, new European Bauhaus), in the *European Green Deal (*European Green Deal, 2023).

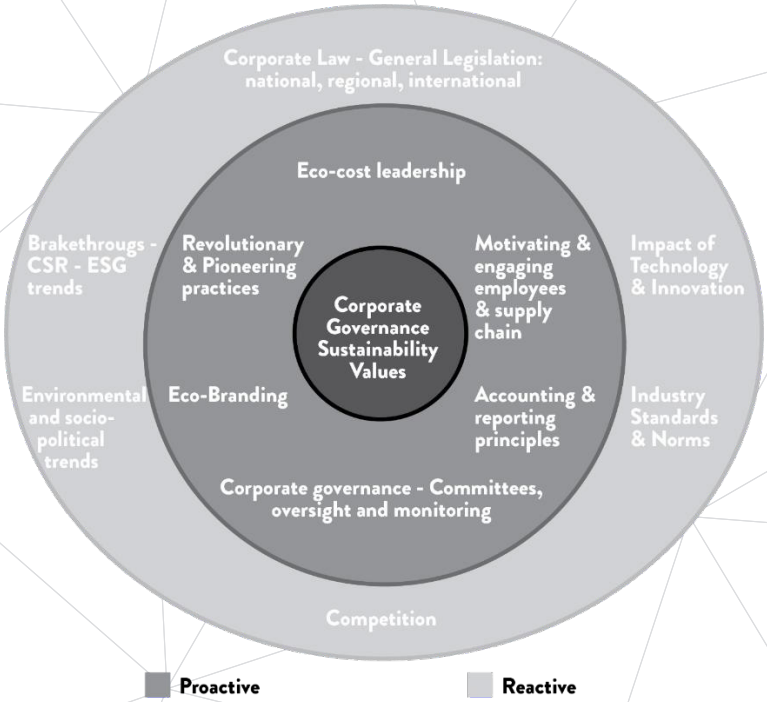
The company law and pertinent related regulation must be the first to react writing into law the goal set out in the *European Green Deal* for Europe's economy and society to become climate-neutral by 2050, in the *European Green Deal* and the *European Climate Law* (European Climate Law, 2023).

8 Sustainability Regulation Way Forward in Harmony with Nature, Environment, and Our Planet

Companies subject to this EU directive will have to report according to European Sustainability Reporting Standards (ESRS). The draft standards are developed by the EFRAG, previously the European Financial Reporting Advisory Group. The new regulation is very important as it helps investors, civil society organizations, consumers, and other stakeholders to evaluate the sustainability performance of companies. No adoption of the same or

rather simplified set of standards in the Western Balkans shall prohibit the evaluation of performance in the field of ESG. Under this rather pessimistic scenario investors and stakeholders shall not have transparent access to information and shall not be able to assess investment risks from climate change and other increasingly critical and for the local economies and societies progressively significant sustainability issues. Figure 6 depicts a key structural set of values that promote the corporate sustainability framework.

Figure 6
Corporate Sustainability Framework and Values



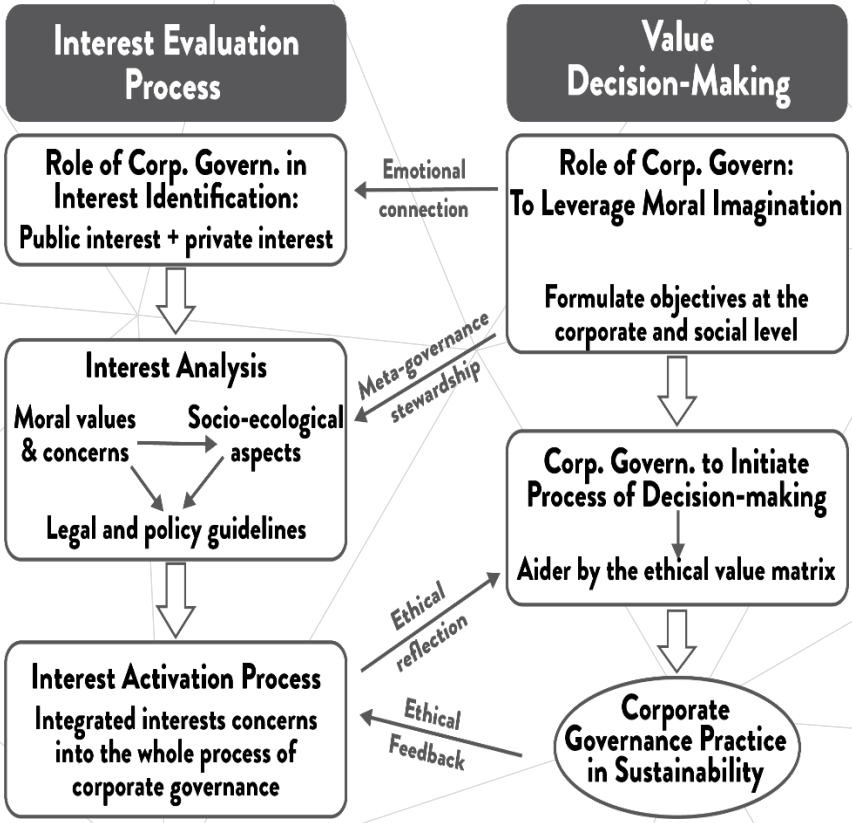
Until then the *EU Non-Financial Reporting Directive* will still be in force and should be applied. This directive obliges companies to publish information related to:

- Environmental matters.
- Social matters and treatment of employees.
- Respect for human rights
- Anti-corruption and bribery (including anti-money laundering and fiscal evasion).
- Diversity on company boards (in terms of age, gender, educational and professional background).

These new rules address large public-interest companies with more than 500 employees, listed companies, banks, and insurance companies. An important high-quality feedback mechanism between the interest evaluation process and value decision-making should be established.

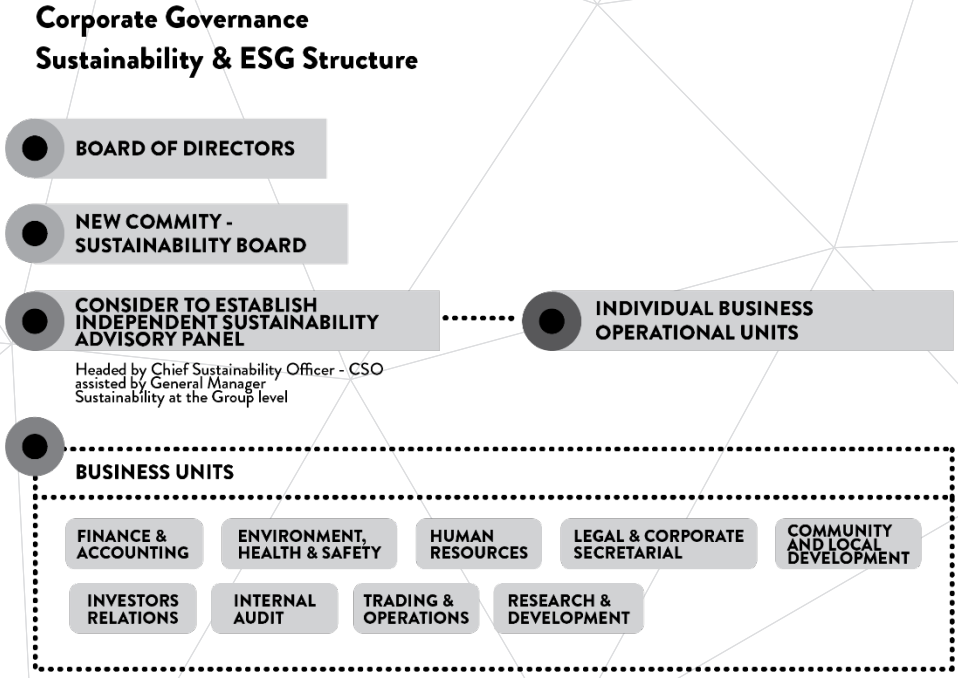
Feedback between *Interest Evaluation Process* and *Value Decision-making* at the corporate level is pointing out how with emotional connection corporate governance stewardship could be implemented, based on ethical values and strong ethical feedback, as important aspects of sustainability governance, as portrayed in Figure 7.

Figure 7
Interaction Between the Interest Evaluation Process and Value Decision-making



Corporate operational, strategic, and tactical structures are reflected in the inner flow of information, decisions, and implementation from the top board of directors, via the board's sustainable commitment to the implementation at the level of the sustainable management team. A useful element of that structure is the establishment and efficient functioning of the independent sustainability advisory panel, with two-way feedback mechanisms with the departments and business units, as displayed in Figure 8.

Figure 8
Corporate Governance Sustainability and ESG Structure



9 Preliminary Conclusions

Classical children's pedagogy more valuable today than ever is sending a message that we should teach children how to think and not what to think. The same logical framework is more than applicable to thinking about the future of sustainability in small countries in Western Balkans still in the transition towards free markets economies and open democratic sociates which are on the road of integration with the EU and globally in the Trans-Atlantic integration process. Some steps which we could publicly think over and come up with a certain set of strategic initial steps and guidelines should be further elaborated as follows:

- We should implement at the national regulatory levels in Western Balkans policy stance by the legislate and regulatory bodies, as well as the business community and citizens to be proactive, not to wait and see, since the consequences of inaction and inertia shall be prohibitively high and unbearable.
- Government, regulatory bodies, the public, and businesses should from now on have a constant and increasingly invest with sincere devotion and firm determination for rather costly preparatory and afterward implementation actions.
- There is not any logical or other reason to remain passive and to wait for the final legal and regulatory solutions, as nobody knows what the future holds, but at the same time, regulatory reforms and the creation of new corporate law and sustainability governance legislation should be fastened at the maximum speed without any delay.
- Nature is changing, resources are scarce, and business operations are changing, while the regulation is slow to respond to such drastic changes, we are aware of the dynamics and risks, and that is the reason why sustainability governance should change to define its new important and valuable contribution in future to the global, regional and local sustainability goals.

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LOCALIZING SUSTAINABLE DEVELOPMENT GOALS (SDGs) IN THE WESTERN BALKANS GREEN AGENDA CONTEXT

Djurovic, Gordana[1], Muhadinovic, Milica[1], Raicevic, Petar[2]
([1]Faculty of Economics, University of Montenegro, Podgorica, Montenegro, [2]Montenegrin Pan-European Union, Podgorica, Montenegro gordana@t-com.me; milicamuhadinovic@gmail.com; petar.raicevic@outlook.com)

Abstract: The 2030 agenda for sustainable development (Agenda 2030) was adopted by the UN General Assembly in September 2015, with the accompanying 17 Sustainable Development Goals (SDGs). All UN member states have agreed to work together in order to achieve these goals. The European Union, as a global leader made its own growth strategy – the European Green Deal (EGD) that represents a direct response to the Agenda 2030 with an additional strategy for the Western Balkans countries - the Green Agenda for the Western Balkans (GAWB). It is a new growth strategy of the Region, leaping from a traditional economic model to a sustainable economy, in line with the EGD and EU's ambitions to become carbon-neutral by 2050. This paper is focused on analysing the progress in the green development of the Western Balkans, through the lens of GAWB. The GAWB is a strategic roadmap towards a green development of the Region that supports the fulfilment of Nationally Determined Contributions (NDCs) of the Western Balkans countries and their European integration dynamic. More specifically, we focus on the GAWB thematic areas, indicators, data sources and their connection to the UN SDG indicators, as well as specific EGD indicators that stem from the UN Agenda 2030. The research shows that it is possible to measure the progress of green development through these sets of indicators. A comprehensive analysis of the UN SDGs indicators, the EU-EGD indicators, the GAWB indicators, as well as the IPA indicators for Window III related to green agenda and sustainable connectivity, shows a high degree of complementarity of these indicators. By localizing SDGs and measuring progress towards a green development, the Region has also committed to achieving carbon neutrality by 2050.

***Keywords**: UN Agenda 2030, SDGs, SDG indicators, Western Balkans, Green Agenda for Western Balkans*

1. The UN agenda 2030, SDGs and SDG indicators

UN Agenda 2030 marked a significant step forward in global collaboration and has become the main reference point for national and international efforts aimed at solving global challenges, mainly focused on sustainable development. Sustainable Development Goals (SDGs) of the Agenda 2030 formally came into effect on January 1st, 2016, with the final aim of being achieved in a 15-year timeframe, i.e. by year 2030 (United Nations, 2015).

The global commitment to transforming our world requires a global commitment to reporting and sharing data: The 17 Sustainable Development Goals are defined in a list of 169 SDG targets. Targets specify the goals and SDG Indicators represent the metrics by which the world aims to track whether these targets are achieved (Ritchie *et al.*, 2018). The 2030 Agenda includes a detailed mechanism to monitor progress with regard to these goals and targets. At the core of this mechanism are a number of quantified indicators for each target (231 unique SDG indicators in 2022) (UN Department of Economic and Social Affairs, 2023) that are regularly revised by the UN and other international agencies. These agencies, as well as the European Union (EU) provide support to national statistical services across the world in collecting data for the SDG indicators. Although technical in nature, SDG indicators and data also have a political dimension, as they clearly measure countries' and other stakeholders' achievements against their own commitments (European Parliament, 2022).

The SDG indicators can be classified as performance indicators as they allow measurement of progress towards a specific issue or norm (Lehtonen, Sébastien and Bauler, 2016). Agenda signatories are obliged to establish an institutional framework for monitoring the achievement of the SDGs and targets, and to report about it to the UN. These data feed the voluntary national reports (VNRs) that countries prepare to exchange good practices and advice on tackling the challenges they encounter in implementing their SDG strategies. Between 2016 and 2022, numerous UN Member States submitted their national reviews (333 VNRs in total). By the end of 2021, each EU Member State had presented a VNR at least once (United Nations, 2023).

2. The European Union: The European Green Deal and EU-SDG indicators

Sustainable development has been at the heart of the European policies for a long time, firmly anchored in the European Treaties. The EU has fully committed itself to deliver on the 2030 Agenda and its implementation, as

outlined in the European Green Deal (European Commission, 2019) and the Commission Staff Working Document 'Delivering on the UN's Sustainable Development Goals (European Commission, 2020a).

In the last couple of decades, governments have become increasingly aware of the threats posed by the climate change. They have acted by implementing strategic actions and increasing scientific knowledge on this issue, and so far the response of policy makers has been mainly focused on mitigating climate change by reducing greenhouse gases (GHG) emissions (Knez, Štrbac and Podbregar, 2022). EU's climate policy has been steadily developing also by focusing on GHG reduction, but also on early choices of instruments, as well as evolution of climate policy instruments over time (Dupont, Oberthür and Von Homeyer, 2020). Kulovesi and Oberthür (2020) argue that the EU's 2030 Climate and Energy Policy Framework, which includes GHG reduction, enhances the EU's climate law by advancing its operationalization.

European Green Deal (EGD), as the new European growth strategy, provides a roadmap with activities to strengthen the resource efficiency of the transition to a clean, circular economy and halt climate change, retrograde impacts on biodiversity loss, and reduce pollution. It introduces the necessary investments and available funding tools explaining how to ensure a fair and comprehensive transition. The EGD covers all sectors of the economyand includes development of financing instruments for transition to a green economy, as well as one of the key UN agenda 2030 principle "Leave no one behind" with Just Transition mechanism (European Compost Network, 2019).

All 27 EU Member States committed to turning the EU into the first climate-neutral continent by 2050, by pledging to reduce emissions by at least 55% by 2030, compared to 1990 levels. This will create new opportunities for innovation and investment and jobs (European Commission, 2021).

The European Commission remains committed to the 2030 Agenda and has integrated the SDGs into the current political programme. The SDGs are an intrinsic part of the EC political programme 2019-2024 (European Commission, 2019). All of the 17 SDGs feature in one or more of the six headline priorities for 2019-2024: 1. EGD (SDGs 2, 3, 4, 6, 7, 8, 9, 11, 12, 13, 14 and 15), 2. Economy that works for people (SDGs 1, 3, 4, 5, 8, 9 and 10), 3. Europe fir for the digital age (SDGs 4 and 9), 4. European way of life (SDGs 3, 4, 10 and 16), 5. Stronger Europe in the world (SDG 17), and 6. European democracy (SDGs 5, 10 and 16) (European Commission, 2020a).

Eurostat has developed its own set of sustainable development indicators, the 101 EU SDG indicators in 2022 (Eurostat, 2023c). Most of these indicators are of a higher standard than the Inter-agency and Expert Group on Sustainable Development Goal Indicators (*IAEG-SDGs*) recommendations, because most of them benefit from the long-established compilation of Member States' data or draw on pioneering research by the EU in-house Joint Research Centre. The EU SDG indicator set is aligned with, but not identical to, the UN list of global SDG indicators. This allows the EU SDG indicators to focus on monitoring EU policies and phenomena particularly relevant in the European context.

The scope of Eurostat's EU SDG indicators is limited to measuring results in the EU and its Member States. The Eurostat produces a country overview for EU 27 and compares it with the EU (Eurostat, 2023a). The Eurostat´s tool allows monitoring of 26 key indicators for the achievement of the EGD´s objectives, as presented in the table.

Table 1. EU SDGs indicators: European Green Deal indicators

EU SDG INDICATOR code	EUROPEAN GREEN DEAL INDICATORS (26)	VALUE	INDICATOR CATEGORY
13_10	**Greenhouse gas emissions** (Net | index, 1990=100)	66.7 (2020)	REDUCING climate impact
13_31	**GHG emissions by sector** (Energy | % of total gross GHG)	74.2% (2020)	
13_40	**Climate-related economic losses** (Euro per capita)	27€/pc (2020)	
15_10	**Forest and other wooded land** (Total | % of land area)	42.3% (2018)	PROTECTING planet and health
15_20	**Protected areas** (Land | % of total country area)	26.4% (2021)	

15_60	**Common bird index** (All species | index, 2000=100)	89.5 (2021)	
12_21	**Raw material consumption by main categories** (Total | tonnes/ pc)	13.7 t /pc(2020)	ENABLING A green and just transition
12_41	**Circular material use rate** (% of material input for domestic use)	11.7% (2021)	
09_10	**R&D expenditure** (Total | % of GDP)	2.27% (2021)	
07_40	**Renewable energy** (Total | % of gross final energy consumption)	22.1% (2020)	REDUCING climate impact
07_10	**Primary energy consumption** (Million tonnes of oil equivalent)	1309 Mtoe (2021)	
07_20	**Household energy consumption** (Space heating | GJ per capita)	14.7 GJ /pc (2019)	
02_40	**Organic farming area** (% of utilised agricultural area)	9.1% (2020)	PROTECTING planet and health
06_40	**Nitrate in groundwater** (Milligrams per litre)	20.7 mg / l (2019)	
02_52	**Pesticide use** (Index, 2015-2017 average = 100)	74 (2020)	
07_60	**Population unable to keep home warm** (% of population)	6.9% (2021)	ENABLING A green and just transition
13_10	**GHG emissions intensity of employment** (t GHG / employed)	13.6 t (2020)	
17_60	**High-speed internet** (Low settled area | % of households)	37.1% (2021)	
CLI_ACT_NOEC	**Zero-emission vehicles** (% of newly registered cars)	5.3% (2020)	REDUCING climate impact
09_50	**Passenger transport** (Rail | % in inland passenger-km)	5.4% (2020)	
09_60	**Freight transport** (Rail | % in inland freight tonnes-km)	16.8% (2020)	
12_10	**Consumption of hazardous chemicals** (Hazardous | million tonnes)	226.0 m t (2021)	PROTECTING planet and health
11_51	**Years of life lost due to PM2.5 exposure** (Per 100 000 inhabitants)	545 years lost (2020)	
12_50	**Generation of waste** (Total | kilograms per capita)	1 745 kg /pc (2020)	
17_50	**Environmental tax revenues** (% of total tax revenue)	5.6% (2020)	ENABLING A green and just transition
ENV_AC_EPNEIS	**Environmental protection expenditure** (Total| % of GDP; Budget data)	2.0% (2021)	

Source: https://ec.europa.eu/eurostat/cache/egd-statistics/

At the end of March 2022, Eurostat released a new interactive visualisation tool (Eurostat, 2023b) to show relevant statistics on the European Green Deal, one of the six European Commission priorities for 2019 – 2024. With the EGD, the Commission aims at eliminating greenhouse gases emissions by 2050 and decoupling economic growth from resource use, while leaving no person or place behind when trying to accomplish this.

3. The Western Balkans: implementation of the UN Agenda 2030 and SDGs

The Western Balkans (WB) economies defined their revised Nationally Determined contributions (NDCs), i.e. national goals for GHG reduction that are followed with identification of the needs for unfolding mitigation and adaptation efforts.

Table 2. Nationally Determined Contributions (NDCs) of the Region: (GHG reduction goals 2030)

ALBANIA	BOSNIA AND HERZEGOVINA	KOSOVO*
-20,9% below BAU in the period from 2021-2030, compared to 2016 level	**-12.8%** compared to 2014 **-33.2%** compared to 1990	**-16.3%** reduction in GHG emissions compared to 2016 levels
MONTENEGRO	**NORTH MACEDONIA**	**SERBIA**
-35% reduction in GHG emissions compared to 1990 levels	**-51%** reduction in GHG emissions compared to 1990 levels	**-13.2 %** in GHG emissions compared to 2010 **- 33.3%** in GHG emissions compared to 1990

Source: https://unfccc.int/NDCREG and https://climatepromise.undp.org/what-we-do/where-we-work/kosovo

At the regional level, activities in support of SDG implementation and monitoring have commenced, although these have been more comprehensive in some countries. Strategic development documents that include the UN Agenda 2030 with detailed action plans provide an institutional framework for the implementation of the SDGs:

- Agenda 2030 and SDGs are fully integrated into *Montenegro's* strategic framework through the National Strategy for Sustainable Development 2030 (NSSD) and its comprehensive action plan. The National council for sustainable development (NCSD) is established as a cross-sectoral advisory body for the development of sustainability policies, supported by the Office for sustainable development (responsible to monitor progress on SDG targets in national strategies and compile reports).
- *Albania* is in the process of drafting an NSDI 2030, in line of the priorities of the European integration process. The commitment to the 2030 Agenda has been supported by the establishment of the Inter-Ministerial Committee and Inter-Institutional working group on SDGs, including key institutions and other stakeholders.
- *Bosnia and Herzegovina* adopted "The framework for the implementation of SDGs in BiH" in 2021. This strategic document defines the vision for 2030, key development directions, and drivers adapted to the local context, which serves as a platform for cooperation and partnership. The Council for the implementation of SDGs in BiH is established and tasked with overall monitoring and reporting on the implementation of the SDGs Framework 2021, coordination of the preparation of annual reports, and voluntary reviews towards the UN.
- *Kosovo* authorities are committed to implement the 2030 Agenda in the context of the forthcoming NDS 2030 and in line with Kosovo's EU reform process. Progress has been achieved through the establishment of the Council for Sustainable Development within the Assembly of Kosovo.
- *North Macedonia's* existing policy framework includes several references to the SDGs while the Rapid Integrated Assessment conducted in 2019 assessed 83% alignment of national priorities/targets with the 2030 Agenda. A strong synergy and complementarily between the EU Accession Agenda and the 2030 Agenda will be further confirmed in forthcoming the 20-year National Development Strategy (NDS) till 2043.
- *Serbia* is in the process of establishing its institutional framework for monitoring the achievement of the SDGs. Serbian authorities established an Inter-Departmental Working Group for the SDGs with civil servants in charge of ensuring mainstreaming, implementation, and monitoring of SDGs. The prioritisation and nationalisation of SDGs in Serbia include plans to integrate the development agenda and the reporting process into existing institutional frameworks (i.e. European Semester Light).

WB countries have different experiences in recognising and producing SDG indicators by their own statistical producers. Almost all partners are using additional national indicators, as the inputs for the calculation of SDG indicators or as replacement for them.

Table 3. SDG indicator status in the Statistical Offices' databases or on the SDG portal

Partner	SDG indicator status – baseline or updated assessment
Albania	2017: 33% (**76**) are available in Albania, 24% (55) are either available with efforts or partially available, 43% (99) are currently not available and 7% (15) do not apply to Albania.
Bosnia and Herzegovina	2021: out of 74 indicators used to monitor Bosnia and Herzegovina's progress towards the SDGs, **36** are the same as the UN framework indicators, 24 are alternative indicators and 14 are adjusted as to be aligned with the national statistics and available data

Kosovo	2020: 35% are exact or relevant data (**77**), 42% no data (97), 25% are not relevant or without an internationally agreed way to measure them (Tier III indicators).
Montenegro	2016: 83 SDG indicator were recognised (49 entirely, by name and content, and 34 with an alternative content), numerous national indicators are included (252), international organisation's indicators (31) and so-called complex indicators (10). In November 2022 only **69** indicators are calculated and presented at the Portal.
North Macedonia	2021: In MakStat database **136** indicators are recognised as SDG indicators (by content) and presented by 17 SDGs. Some of the indicators are recognised in more goals.
Serbia	2022: **125** SDG indicators are reported online (50.4%), while for 123 indicators data sources are still exploring (49.6%);

Source: authors' compilation based on National Statistical Offices data

Institutional channels in support of SDG implementation also vary based on the structure of the strategic and policy planning processes, specific budgeting and reporting lines to track progress, and the capacity of respective legal and administrative frameworks. At the same time, the administrations established different models for overall monitoring and reporting about the implementation of SDGs and have defined an institutional framework for the implementation of SDGs on all levels of governance.
All partners work on the following activities: periodic assessment of the compliance of national planning documents with the SDGs and targets (mapping analysis), calculation of SDG indicators and strengthening the capacity of statistical data producers, acceleration of the achievement of SDGs through the EU integration agenda, and development of specific funds for the contribution to SDG implementation in close cooperation with the UN.

4. Linking the SDGs with the European integration process and IPA III

Western Balkans represent a complex structure of six small economies. Montenegro and Serbia started accession negotiations with the EU in 2012 and 2014 respectively, while the first intergovernmental conference with Albania and the opening phase of the accession negotiations with North Macedonia was organized in July 2022. Bosnia and Herzegovina is a candidate country since 15 December 2022, and Kosovo, as a potential candidate, submitted the EU membership application, on the same day.

The next table presents analysis of links between SDGs, negotiation chapters, clusters, and IPA III windows.

Table 4. Linking SDGs with the negotiation chapters, clusters and IPA III windows

	SDG	NEGOTIATION CHAPTERS	CLUSTER	LINK TO IPA III WINDOWS
1	No poverty	19*	3	W4. Competitiveness and inclusive growth
		2, 23, 17	2, 1	
2	Zero hunger (incl. Sustainable agriculture)	11*, 12*, 13	5	
		19*		
3	Good health and well-being	28*,	2	
		1, 12, 14, 21, 24	1, 4, 5	
4	Quality education	26	3	
		23	1	
5	Gender equality	23*	1	W1. Rule of Law, fundamental rights, and democracy
		19, 24, 28,	2, 3	
6	Clean water and sanitation	27*	4	W3. Green agenda and sustainable connections
7	Affordable and clean energy	15*, 21, 27*	4	

8	Decent work and economic growth	1, 2, 3, 4, 6, 7, 8*, 9, 28*	2	W4. Competitiveness and inclusive growth
		19, 29, 20, 17 - (for all so-called "economic" negotiating chapters)	3	
9	Industry, innovation, and infrastructure	10, 20, 25*,	3	
		14, 15*, 21*	4	
10	Reduced inequalities	23*	1	W1. Rule of Law, fundamental rights, and democracy
		17, 19*, 24	3	
11	Sustainable cities and communities	27*, 21*, 14	4	W3. Green agenda and sustainable connections
		17, 20, 23, 26, 31	3, 1	
12	Responsible consumption and production	27*	4	
		5	1	
13	Climate action	27*	4	
14	Life below water	27*,	4	
15	Life on land	27*	4	W3. Green agenda and sustainable connections W4. Competitiveness and inclusive growth
		11		
16	Peace, justice, and strong institutions	5, 23*, 24*	1	W1. Rule of Law, fundamental rights, and democracy W2. Good governance, legal harmonisation, strategic communications and good neighbourly relations
		10, 16*, 17*, 22*, 33 - Public administration reform - Stability of institutions guaranteeing democracy - Economic criteria (link with ERP and all economic chapters)	3, 5	
17	Partnerships for the goals	18, 23, 24*, 32	1	W1. Rule of Law, fundamental rights and democracy W2. Good governance, legal harmonisation, strategic communications, and good neighbourly relations W5. Territorial and cross-border cooperation
		16*, 17*, 30, 31	3, 6	

Source: authors' compilation;

With the new enlargement methodology (European Commission, 2020b), the negotiation chapters are grouped in six clusters: 1. Fundamentals (C23, C24, C5, C18, C32, functioning of democratic institutions, economic criteria and public administration reform), 2. Internal market (C1, C2, C3, C4, C6, C7, C8 and C28), 3. Competitiveness and inclusive growth (C16, C17, C19, C20, C25, C26, C29), 4. Green agenda and sustainable connectivity (C14, C15, C21, C27), 5. Resources, agriculture and cohesion (C11, C12, C13, C22, C33), and 6. External relations (C31, C32). At the same time, the IPA III programming framework 2021-2027 focuses on the priorities of the enlargement process according to five thematic windows.

As presented in the table, the SDGs are linked with numerous negotiation chapters and related clusters. In the first row of each SDG, key negotiation chapters and related clusters are proposed per SDG. Other significant chapters and clusters are proposed in the second row of all SDGs. An asterisk means that one chapter is repeated several times, in connection with different SDGs. The key cluster is further linked to related IPA III window(s) and specific thematic priorities.

5. The Green agenda for Western Balkans and its indicators

The Green Agenda for Western Balkans (GAWB) (European Commission, 2020c) represents a new growth strategy for the Western Balkans, leaping from a traditional economic model to a sustainable economy, in line with the EGD. In line with the EU's ambition to become climate-neutral by 2050, the region has also committed to achieving carbon neutrality by 2050, and to aligning with the EGD's key elements by endorsing the GAWB at the Summit in Sofia in 2020, and subsequently the GAWB Action Plan, at the Brdo Summit in October 2021 (Regional Cooperation Council, 2020).

The GAWB Action Plan envisages 58 actions and 7 roadmaps for implementation that are focused on: Climate policy, Sustainable energy, Sustainable mobility, Circular economy, Depollution, Sustainable agriculture and food supply and Protection of nature and biodiversity. The Plan also envisions the adoption of the 2030 Energy and Climate Policy targets to include carbon pricing, coal phase-out plans, pollution control, nature, and biodiversity protection, regional integration, and an indicative timeframe for the harmonization with the EU Emissions Trading System as of 2024 (Regional Cooperation Council, 2021). The GAWB has 34 indicators presented in the table.

Table 5. The GAWB indicators and link with SDG/EU SDG/EGD indicators

	No.	GAWB indicator	SDGs related indicators
Climate action	1	Total GHG emissions (tonnes of CO2 eq)	SDG 13, EU SDG 13 / EGD indicators
	2	The GHG emission intensity of power generation (tonnes of CO2 eq)	
	3	The number of sectoral policies that include climate change adaptation	
	4	Level of climate financing	
Energy	5	Implementation ratio electricity	SDG 7, EU SDG 7 / EGD indicators
	6	Implementation ratio renewable energy	
	7	Implementation ratio gas	
Transport	8	Relevant directives/regulations/standards/specifications transposed	SDG 9, EU SDG 9 / EGD indicators
	9	Western Balkan Strategies updated with sustainable and smart elements	
	10	Infrastructure developed according to TEN-T (related to green elements)	
Circular Economy	11	Domestic material consumption per capita	SDG 12, EU SDG 12 / EGD indicators
	12	Domestic material consumption	
	13	Resource productivity	
	14	Generation of waste - Total	
Depollution	15	Annual ambient concentrations of PMs, SO2 and NOx	SDG 11, EU SDG 11 / EGD indicators SDG 6, EU SDG 6 / EGD indicators
	16	Annual emissions of PM total, PM10, SO2 and NOx from large combustion plants	
	17	Annual emissions of NH3 and NMVOC	
	18	Population connected to public water supply (%) and Population connected to wastewater treatment plants (%)	
	19	Artificial land cover per capita by type	
	20	Nitrate in groundwater	
Sustainable	21	Share of the area under organic farming in the total utilised agriculture area	SDG 2, EU SDG 2 / EGD

Agriculture	22	Share of land under management requiring reduction in chemical input	indicators SDG 13, EU SDG 13 / EGD indicators
	23	Mean organic carbon content in agricultural land	
	24	Production of renewable energy from agriculture	
	25	GHG emissions from agriculture (tonnes of CO_2eq)	
	26	Number of farms and food processing enterprises receiving (IPARD) support to align with hygiene and animal welfare standards	
Nature and Biodiversity Protection	27	Designated terrestrial and marine protected and conserved areas including OECMs	SDG 14, EU SDG 14 / EGD indicators SDG 15, EU SDG 15 / EGD indicators
	28	Potential Natura 2000 sites and economy-wide ecological networks	
	29	Species Protection Index	
	30	Protected areas management effectiveness	
	32	Species recovery programmes	
	32	Area of restored forest landscapes	
	33	Phenology of selected plant and animal species	
	34	Biodiversity Strategy and Action Plans for Western Balkan economies (BSAPs)	

Source: GAWB Action Plan, RCC, 2021;

Qualitative and quantitative indicators that constitute the monitoring system are determined based on their relevance for the implementation of the Sofia Declaration on the GAWB as well as the availability of data through annual monitoring cycles.

The IPA III programming framework 2021-2027 defined 36 indicators per windows and thematic priorities, with their baseline values, milestones and targets. Comparing the GAWB indicators and the IPA III indicators, a high level of similarity is evident. Within the key performance indicators of IPA III, some are the same as the GAWB indicators, but focused on concrete contribution of the IPA III actions to achieve targets: GHG emissions avoided (tonnes CO_2-eq) with IPA III support, PM 10 concentrations compared to the EU daily limit value (50 µg/m^3); Areas of marine, terrestrial and freshwater ecosystems under a) protection, and with b) sustainable management with IPA III support, and Energy intensity measured in terms of primary energy and GDP and Share of renewable energy in gross final energy consumption % (contribution of IPA III funded project).

6. Conclusion

At the Western Balkans level, all partners have committed to implementing the 2030 Agenda in the context of the national development priorities, strategic partnership with the UN, and in line with their reform priorities on the European integration path. Activities in support of SDG implementation and monitoring have commenced, although these have been more extensive in some administrations.

Implementing SDGs in the WB region as a roadmap towards a green economy could be systematized as follows:

- Improving SDG coordination and institutional setup, as well as monitoring and reporting on progress achieved in localising SDGs;
- The role of the parliaments should be strengthened in terms of monitoring, controlling and supporting the Government in achieving progress on the UN 2030 Agenda and SDGs;
- The role of the ministries of foreign affairs is also growing since peace, diplomacy, and international cooperation are fundamental conditions for the world to progress on the SDGs towards 2030 and beyond;

- Align SDGs with national priorities - periodic assessment of the compliance of national planning documents with the SDGs and targets;
- Develop and evaluate National Strategies from the SDG perspective and EU integration process;
- Integrate SDGs in national strategies related to sustainable development and the EU accession;
- Calculation of SDG indicators and strengthening the capacity of statistical data producers (development of so-called indicator passport);
- National statistical offices should follow all recommendations from the UNSTAT Road Map on Statistics 2022, in line with their available administrative capacities and budget;
- SDG financing - development of specific funds for the contribution to SDG implementation in close cooperation with the UN;
- The need for more substantial SDG financing in the areas covered by the GAWB is undeniable. Achieving the SDGs can be done, among others, through an investment agenda in physical infrastructure;
- Localizing SDGs further on local level – numerous municipalities in the Region implement SDGs in various contexts, which could be integrated and strengthened by stakeholders at all levels. Municipalities need trainings, capacity building, finances and project development. Public administrations, international organizations and donors need to work with Municipalities, as they must know how to turn the Agenda 2030 into a development tool for their local communities and warrant better services for their citizens;

It is necessary to ensure consistency with the global SDGs process in the long run. The global Agenda 2030 – and the associated SDG indicators is a living document, for which revisions are already scheduled in mid-term by the UN Statistical Commission. As such, the outcomes of these reviews will need to be taken into account during the implementation of SDGs into national and local context in the coming years. To avoid potential inconsistencies between the work of UN agencies – which are responsible for the global SDGs monitoring, and that of individual parties – which are responsible for partner-level SDGs implementation, coordination among National Statistical Agencies as well as between them and the UN agencies should be ensured and enhanced.

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VALUING CRYPTOCURRENCIES AND NFTS AS INTANGIBLE ASSETS: A REVIEW OF THE LITERATURE

Miloš Grujić, Olja Knežević, Faculty of Applied Economics, University of Business Studies, Banja Luka, Bosnia and Herzegovina, Milos.grujic@mail.com, olja.a9@gmail.com

Abstract: This paper examines how to value cryptocurrencies and non-fungible tokens (NFTs) under international accounting standards. These digital assets are neither money nor financial assets, so their recognition and measurement are unclear. The paper conducts a literature survey using academic databases such as Google Scholar, Scopus, Web of Science and Springer Link. The sources are selected and analyzed based on their relevance, credibility and timeliness. The paper finds that cryptocurrencies and NFTs can be classified as intangible assets under IAS 38 or IAS 2, depending on their nature and purpose. However, it also discusses the challenges and limitations of applying these standards, such as the volatility of fair value, the lack of reliable measurement methods, and the inconsistency with the economic substance of these assets. The paper contributes to the academic and professional literature by providing a comprehensive overview of the valuation issues related to these new financial instruments. It also suggests some directions for future research and standard-setting in this emerging field.

Keywords: cryptocurrencies, non-fungible tokens, valuation, accounting standards

1. Introduction

The aim of this paper is to explore the opportunities and challenges faced by the accounting and investment community when it comes to investing in digital currencies, non-fungible tokens (NFTs), and distributed ledger technology (DLT). Over the past few years, digital currencies and DLT have gained significant popularity, capturing the attention of various stakeholders. Extensive studies have examined the speculative nature of digital currencies, revealing their higher volatility and risk compared to other financial instruments and currencies (Corbet et al., 2018). However, some authors argue that digital currencies possess specific attributes of other asset classes or financial instruments, such as currencies and gold, making them suitable for portfolio diversification (Bouri et al., 2017). Consequently, institutional investors are attracted to digital currencies as they provide opportunities for diversifying their investments and offer a simple means of capital investment. Nevertheless, investing in digital currencies raises the issue of reporting on them.

The essence of financial reporting is to provide information to a broader range of users regarding the financial position and performance of economic entities, facilitating decision-making (Božić et al., 2022). Financial reports serve as documentation of the financial, economic, and balance sheet position of a company, forming the basis for planning and decision-making by management, administration, and shareholders. Therefore, the information derived from financial reports should be of high quality, comparable, and transparent. The emergence of DLT has introduced enhanced security in financial reporting, as it contains an immutable record of each individual transaction. However, the advent of digital currencies has presented new challenges for the accounting profession due to the complexities involved in reporting these novel forms of assets. Regulatory bodies have not yet fully resolved the existing dilemmas surrounding the accounting treatment of digital currencies, and there are reservations within the accounting community concerning the digitization of financial reporting. Thus, this paper aims to discuss the current International Financial Reporting Standards that govern the financial reporting of digital currencies while highlighting the problems and ambiguities that persist.

By examining the opportunities and challenges associated with investing in digital currencies, NFTs, and DLT, this research contributes to the existing body of knowledge and aims to provide insights for accounting and investment professionals. The subsequent sections will delve into the regulatory framework surrounding the financial reporting of digital currencies, analyzing the implications and potential solutions for the accounting community.

There are numerous possibilities and use cases of blockchain in literature and practice. Some of them are asset exchange systems (Swan, 2015; Yermack, 2015) banking industry (Abid, 2014), blockchain or consensus as a service (Dyhrberg, 2016), clearing and settlement (Baur et al., 2018) cryptocurrencies (White, 2015) identity management (Katsiampa, 2017) insurance industry (Guesmi et al., 2019), internet of things (Radivojac & Grujić,

2018a), securities trading (Dyhrberg, 2016), remittance system (Yermack, 2015) securities register of paper values (proxy voting) (Pieters et al., 2017), smart contracts (Kristoufek, 2015; Baek, 2015), voting system (Platanakis and Andrew, 2019).

2. Literature review

This section reviews the existing literature on digital currencies and distributed ledger technology (DLT), as well as their applications and implications for the capital markets and monetary policy. The literature review covers the following topics: the origin and development of digital currencies and DLT; the benefits and challenges of using digital currencies and DLT in the capital markets; the implications and risks of digital currencies and DLT for monetary policy; and the views and initiatives of central banks and institutional investors regarding digital currencies and DLT.

The origin and development of digital currencies and DLT can be traced back to the publication of a paper by a mysterious Satoshi Nakamoto in 2008, titled "Bitcoin: A Peer-to-Peer Electronic Cash System". The paper outlined the theory and operational structure of the Bitcoin payment system, which is based on cryptographic proof rather than trust, i.e. without a central server or trusted parties. Millions of people followed his idea. By 2021, at least one million Bitcoin miners were verifying the data that makes up the Bitcoin blockchain (De Vries et al., 2021). However, those million miners represent only a fraction of the total number of Bitcoin owners, which is estimated to be more than 100 million people (Chainalysis, 2020). Today, Bitcoin is the world's largest digital currency by market capitalization, surpassing all other major digital currencies such as Ethereum (ETH), Binance Coin (BNB), Cardano (ADA), and many others. But even with BTC's astronomical value and adoption, Satoshi Nakomoto's identity remained unknown.

The foundations laid by Bitcoin were crucial for developing other digital currencies, as well as non-fungible tokens (NFTs). NFTs represent an upgrade of DLT that enables new ways of using it. This technology, although at the very beginning of its development, has the potential to change the way we manage property for a long time by using a permanent record of owners and transactions, which allows international verification of each ownership. However, if this development is not regulated, illegal activities may become more common when talking about NFTs (taking into account certain digital currencies that have been used for unlawful purposes). Considering that in the recent period, many digital works of art have been sold for millions, the interest in them is growing, as is the technological development that has enabled the sale of these works of art. There was also skepticism about the longevity of those transactions, the recording of ownership and the quality of the real value of art, which is ultimately expected given the caution of individuals regarding risky investments (which digital currency and NFT still are).

Interest in investing in digital currencies, especially Bitcoin, with the aim of achieving above-average returns, has not declined over the years. It is widely believed that Bitcoin is an extremely volatile and risky but potentially profitable financial instrument. Currently, digital currencies are not backed by any currency or asset and cannot be used to pay taxes. Digital currencies embody Hayek's dream of groups of people having their own money because "there is competition among private money rather than government monopoly" (Hayek, 1990: 9).

2.1. Non-fungible tokens (NFTs)

A non-fungible token (NFT) is a digital asset that represents real-world objects such as art, music, in-game items, or videos.

They are related to cryptocurrencies whose records are kept based on blockchain technology. Unlike cryptocurrencies where each unit or coin can be exchanged for another, with the same value, which is also true for real-world currencies - NFTs are unique (they have different identification codes to distinguish one from another). Since each NFT is unique, they cannot be traded or exchanged at par with each other. Each represents a unique digital collectible, i.e. a unique asset that cannot be copied. Non-fungible tokens, which have not received much attention since the blockchain game CryptoKitties in 2017, returned to the spotlight in November 2017 when the biggest incident in the history of NFTs occurred. CryptoKitties are represented as a digital cats with a unique code of the Ethereum Blockchain. Each kitten is different and its trading takes place in the ether.

They interbreed and form new offspring with attributes and appendages that differ from their parents. Cryptokitties, after launch, in a short time gathered a fan base who actively bought, exchanged and distributed ether and spent 20 million dollars.

Unlike digital currencies where each unit or coin can be exchanged for another, with the same value, which is also true for real-world currencies - NFTs are unique (they have different identification codes to distinguish one from another). Since each NFT is unique, they cannot be traded or exchanged at par with each other. Each represents a unique digital collectible, i.e. a unique asset that cannot be copied. NFTs are as unique as real works of art. DLT is used to verify their authenticity so that the difference between a replica and an original can be seen. This makes them certified data carriers that act as digital representations of real-world assets and are used to represent physical assets, such as real estate, artwork, collectibles, and more. Such digital assets have been touted as the next step for the global economy. They allow real-world assets to be securely stored and transferred onto the DLT. Any item or artwork can be traced back to the person who posted it. This can be used to avoid the scams and manipulations that are prevalent in many markets today.

Players can also own assets or goods in the game and sell them to earn money. Most NFT tokens are produced using two Ethereum standards ERC-721 and ERC-1155 (Griffin, 2021). The ERC-721 standard was used for their development by the same person who manages the ERC-20 smart contract. ERC-721 is used to define the minimum interface required to trade gaming tokens. The interface includes property, security, and metadata information. The ERC-1155 standard is defined as reducing transaction and storage costs in a single contract as needed for NFTs and groups in various non-fungible tokens. Although this is a minor use case, it is proven to be something very new and unique. They have taken the basics of rarity and digital ownership to a whole new level. NFTs are still very new and so far there have been only a few significant uses. However, there is a lot of potential for different applications in the future. The rise of digital asset exchanges brings a new type of liquidity that was not possible before. The current state of the NFT market is very similar to how the digital currency industry was in its early days. There are still many problems with the way they are defined and classified, so it can be said that the market is still experimental. It will take some time before this technology can be applied to different applications, but that does not mean that it will not arrive eventually. Most people are already very familiar with the idea of owning digital items such as game assets, maps, music albums and others. The success that NFTs have had so far in these types of markets means that there will only be more adoption going forward. As the public becomes more accustomed to using digital currency exchange platforms, the demand for NFTs will also grow. There are already a number of game developers using them for in-game assets. They have made them available for players to use in their favorite games. The ownership of these assets is managed on the DLT, which contributes to their general adoption. NFTs can also be used for other purposes.

2.2 Characteristics of NFT

NFTs are unique digital assets that offer a new way to invest and own digital content. Some of the features that set them apart from traditional funds are: uniqueness, authenticity, ownership, rarity, interoperability, digital ownership and decentralization.

Unlike traditional assets such as currencies or stocks, these are unique digital assets that cannot be replicated. Each NFT is unique and has its own set of identifying characteristics that set it apart from any other asset.

They are secured on the blockchain, which provides a secure and transparent way to verify the authenticity of the asset. This means that every NFT is a legitimate and genuine asset that can be owned and traded.

When someone buys an NFT, he or she owns a digital asset that is unique and cannot be duplicated. You also have control over the property, which means you can display, trade or sell it as he or she sees fit.

NFTs can be created in limited quantities, meaning they can be rare and valuable. This scarcity can increase their value, especially if they are created by a famous artist or celebrity. Besides, NFTs can be used on different platforms and applications, which means they are interoperable. This allows them to be used in different contexts and this can increase their usefulness and value.

At the end, NFTs allow individuals to own and invest in digital assets, which were previously difficult to monetize. This created a new market for digital art, music and other forms of media. Also, NFTs are often created and traded on decentralized markets, meaning there is no central authority controlling the market. This can increase transparency and reduce the risk of fraud or manipulation.

2.3 Creation and development of NFT

NFTs are digital tokens that represent unique media files on a blockchain. Anyone can create and publish their own NFTs, as long as they have some basic knowledge and resources. The process of creating an NFT involves several steps. First, the user needs to access a blockchain platform that allows them to submit requests and create smart contracts. A smart contract is a piece of code that defines the rules and properties of the NFT, such as its ownership and uniqueness. There are many platforms that offer free or low-cost tools for creating smart contracts, such as Ethereum, Solana, and Cardano. Second, the user needs to create a crypto wallet and buy some cryptocurrency that matches the blockchain they are using. For example, if they are using Ethereum, they need to buy Ether. A crypto wallet is a software application that stores the user's private and public keys, which are used to sign and verify transactions on the blockchain. Third, the user needs to write and deploy their smart contract on the blockchain platform. The smart contract should follow a standard that defines how the NFTs are created and transferred. For example, Ethereum uses the ERC-721 standard for NFTs. The smart contract should also specify the number of NFTs to be minted, the metadata for each NFT (such as name, description, image), and the owner of the NFTs. Fourth, the user needs to pay a fee in cryptocurrency to execute their smart contract and mint their NFTs on the blockchain. This fee is called gas on Ethereum and it compensates the miners who validate and process the transactions on the network. The gas fee varies depending on the complexity of the smart contract and the demand on the network. Fifth, the user can view their NFTs on their crypto wallet or on an NFT marketplace. An NFT marketplace is a website that allows users to buy and sell NFTs from different blockchains and categories. Some popular NFT marketplaces are OpenSea, Rarible and SuperRare.

FTs have a history that dates back to 2012, when an early Bitcoin developer proposed the idea of colored coins - tokens that could represent real-world assets on the Bitcoin blockchain. However, it was not until 2014 that the first NFT was created by Kevin McCoy on Namecoin - a digital artwork called Quantum that sold for $1.4 million at Sotheby's auction. Since then, many other NFT projects have emerged on different blockchains, such as CryptoPunks, CryptoKitties, Bored Ape Yacht Club, and others. In 2021, the NFT market exploded in popularity and value, with some NFTs selling for millions of dollars. NFTs have attracted artists, musicians, gamers, collectors, and investors who see them as a new way to express themselves, own digital assets, and support creators. However, NFTs also face challenges such as environmental impact, legal issues, and security risks.

2.4 Investing in NFT

NFTs are a new and potentially lucrative asset class that allows investors to own unique digital assets on a blockchain. NFTs can represent various types of media files, such as art, music, videos, games, and more. However, investing in NFTs also involves risks and challenges that investors should be aware of. Investing in NFTs requires careful consideration and attention, as with any investment. Investors should research the developer, property and market demand before buying. It is also important to understand the risks involved, as the NFT market is still relatively new and untested.

NFTs are believed to possess long-term value due to their unique nature and potential for scarcity. For instance, when a popular artist or musician creates a limited edition NFT, it can hold significant value for collectors seeking to own a distinctive piece of their work. However, it is essential to acknowledge that the NFT market is highly speculative and volatile, with prices often experiencing rapid fluctuations based on market trends and excitement. This volatility makes it challenging to predict which NFTs will maintain their value over time. Consequently, it is crucial to exercise caution and invest only within one's affordable limits.

In summary, NFTs can be perceived as a novel and potentially profitable investment opportunity; nevertheless, they also entail risks and uncertainties. Similar to any investment, conducting thorough research and

comprehending the associated risks are vital prior to making a purchase. Investing in NFTs offers the advantage of potentially high returns, as evidenced by some NFTs being sold for millions of dollars. Furthermore, given the relative novelty of the market, there may exist opportunities for early investors to realize substantial profits. Another advantage is the ability to invest in something truly unique. Unlike traditional investment options such as stocks or bonds, NFTs are entirely one-of-a-kind and cannot be replicated, thereby enhancing their value in the eyes of collectors.

Moreover, NFTs provide artists and creators with a fresh avenue to monetize their work, potentially leading to increased demand and value for NFTs in the future. As more artists and creators embrace NFTs, the market may continue to expand and evolve, creating additional investment prospects.

However, it is important to note that the NFT market largely lacks regulation, resulting in limited protection for investors in the event of unforeseen circumstances. Thorough research and investment within one's affordable range are imperative.

To summarize, NFTs present a new and potentially lucrative investment opportunity; nevertheless, investors should approach the market cautiously and carefully evaluate the risks and potential rewards prior to making a purchase decision.

2.5. Accounting Treatment of Cryptocurrencies under International Accounting Standards (IAS)

According to International Accounting Standard 7 (IAS 7), cash refers to cash on hand and demand deposits, while cash equivalents include highly liquid investments that can be easily converted into cash in the short term, characterized by high liquidity and low change in value. However, cryptocurrencies, despite being considered by the International Accounting Standards Board as potential means of exchange or units of expression for goods and services, do not currently meet the provisions of IAS 7. This is primarily due to their limited acceptance as a means of exchange, volatility, and the lack of clear positions from banks in many countries, which has resulted in associations with illegal activities. Nevertheless, El Salvador and Venezuela have become the first countries to approve cryptocurrencies as legal tender, disregarding the aforementioned position of the International Accounting Standards Board.

In line with IAS 32, a contract that leads to an increase in the financial asset of one entity and the financial liability or equity instrument of another entity is considered a financial instrument. Cryptocurrencies fail to meet the requirements for the recognition of financial assets since they do not give rise to contractual rights or obligations for payments in money or other financial means. Furthermore, IFRS 9, which regulates financial assets, outlines three valuation models: financial assets at fair value through profit or loss, financial assets at fair value through other comprehensive income, and amortized cost. Nonetheless, IFRS 9 states that a financial instrument is only recognized when a contractual relationship results in the creation of a financial liability or equity instrument for one party and a financial asset for the other. Cryptocurrencies do not fulfill these criteria either.

As per the International Accounting Standards Board's definition, a real estate investment involves property acquisition to generate income through changes in its value or rental. Cryptocurrencies fulfill this requirement as they are often held with the intent of making a profit from their value growth. However, they cannot be classified as an investment property or valued at fair value through profit or loss under IAS 40 due to their intangible form, which does not meet the provisions of IAS 16 for real estate, plant, and equipment.

Although cryptocurrencies do not meet the requirements defined by IAS/IFRS to be recognized as financial assets, there have been proposals to treat them as non-financial investments or investment gold. Since their treatment is not defined by the current standards, it is suggested that business entities develop their accounting policy and apply either the historical cost model or the fair value through another comprehensive income mode. The latter model is preferred when determining the market value of cryptocurrencies is challenging.

The International Accounting Standards Board defines a real estate investment as an investment in property, in order to generate income through a change in its value or rental. Cryptocurrencies meet this requirement because they are often held with the aim of making a profit through the growth of their value (Čičak, 2019). However, they are not physical assets, so they cannot be classified as investment property or investment

properties, according to IAS 40, and valued at fair value through profit/loss. In addition, their intangible form does not meet the provisions of IAS 16, so they cannot be classified as real estate, plant and equipment.

Although cryptocurrencies do not meet the requirements defined by IAS/IFSI to be recognized as financial assets, there are proposals to treat them as non-financial investments, investment gold, etc. Since their treatment is not defined by the provisions of the current IAS/IFSI, it is suggested that business entities develop their accounting policies and apply one of two valuation models, the historical cost model or the fair value through another comprehensive income model (Prochazka, 2018). The model of fair value through other comprehensive incomes represents a better solution in a situation where the market value of cryptocurrencies cannot be easily determined (Prochazka, 2018).

IAS 38 defines intangible assets as identifiable non-monetary assets without physical characteristics, distinct from goodwill, and expected to generate future economic benefits. Cryptocurrencies meet the criteria for identification as intangible assets, as they can be separated, sold, transferred, licensed, rented, or exchanged independently or along with associated contracts, assets, or obligations. They arise from contractual or legal rights, regardless of whether these rights can be transferred or separated from the subject or other rights and obligations. Accordingly, cryptocurrencies should be treated in accordance with IAS 38 and valued using either the cost model or the revaluation model. The cost model involves recognizing cryptocurrencies at acquisition cost and conducting impairment tests as required by IFRS 36. Since cryptocurrencies generally have known values on the reporting day, applying impairment tests is facilitated. The revaluation model entails measuring cryptocurrencies at their revalued value (fair value on the revaluation date), subtracting accumulated depreciation and impairment losses. However, the application of this model requires the existence of an active market, which may not always be the case for all types of cryptocurrencies (Čičak, 2019)

International Accounting Standard 2 defines inventories as assets intended for sale as part of regular operations, in the process of production for such sale, or in the form of materials that will be consumed in the process of production or provision of services. Cryptocurrencies can be acquired for resale or obtained through the mining process, both of which fulfill the recognition requirements prescribed by IAS 2. According to IAS 2, inventories are measured at the lower of cost price or net realizable value, which is the purchase price. Therefore, economic entities can own cryptocurrencies intended for further sale, treating them as inventories in accordance with IAS 2. If economic entities act as cryptocurrency intermediaries, inventories are reported at fair value less the cost of sales. However, accounting for cryptocurrencies created through the mining process can be more complex since it is not defined by existing accounting standards. Some proposals suggest accounting for this cryptocurrency production process in line with IAS 2. Inventory costs include acquisition costs, conversions, and other expenses incurred in bringing the inventory to its current location and condition. Inventory conversion costs encompass production unit costs, direct labor costs, as well as general fixed and variable production costs. Direct labor costs consist of electricity, labor, and other expenses directly related to the mining process. Indirect costs refer to the depreciation of mining hardware, software, other equipment, or programmer salaries (Prochazka, 2018). In the event of unsuccessful production or mining, these costs could be considered expenses for the period in which they were incurred. Newly created cryptocurrencies can be immediately exchanged for money. If they are held with the aim of subsequent sale for capital gain, the fair value through the profit or loss model or the fair value through another comprehensive income model would be used for measurement (Prochazka, 2018).

Therefore, according to the provisions of the current accounting standards, the only viable solution is to record cryptocurrencies as intangible assets and stocks (IAS 38 and IAS 2). Cryptocurrencies are relatively new assets that remain complex and abstract to many, often accompanied by mistrust or prejudice from regulators, banks, and users of financial statements. Nevertheless, the COVID-19 pandemic has brought about significant societal changes and accelerated the need for business digitalization. Consequently, new solutions in financial reporting and addressing the challenges accountants face in practice are necessary.

3. Discussion. Criticisms and the of Cryptocurrencies: Insights on Volatility, Supply, and Blockchain Technology

Since the creation of Bitcoin, there have been numerous criticisms of this cryptocurrency. One primary objection is its limited usage as a means of real payment due to its inefficiency. Another concern is its high volatility, constantly fluctuating in value. Additionally, the possibility of creating an unlimited number of other cryptocurrencies has been raised as another drawback. Advocates of cryptocurrencies, however, highlight their limited supply as an argument in favor of their adoption. Traditional currencies have their supply regulated by central banks, whereas cryptocurrencies exhibit significant demand variations. Nevertheless, given the government's monopoly and tax collection, the utilization of traditional currencies remains unavoidable (Radivojac & Grujić, 2018). Another objection to the broader use of cryptocurrencies as a form of money refers to their instability and value fluctuations. Due to the unpredictable nature of cryptocurrency price movements, rational market participants are hesitant to engage in international cryptocurrency transactions. Despite the considerable instability and lack of backing for tax payments, cryptocurrencies hold substantial value in facilitating legal and illegal activities between users. Consequently, experts and the general public have shown interest in the potential wider adoption of cryptocurrencies in international business and their impact on the future of financial markets.

Considering the aforementioned points, the use of cryptocurrencies as an alternative to traditional money is currently limited for two key reasons. Firstly, although the supply of cryptocurrencies is theoretically limited, any individual or group can create, agree on the currency's name and rules, and introduce numerous other cryptocurrencies. Currently, there are already thousands of cryptocurrencies in existence. Secondly, despite the limited supply, the price of cryptocurrencies depends on supply and demand dynamics. Consequently, there exists a quasi-limitation of supply coupled with significant demand uncertainty, leading to substantial instability (Tasić, 2017). Given the almost unlimited supply and uncertain demand, sustained long-term value growth for cryptocurrencies is unsustainable. Nevertheless, despite the apparent volatility, cryptocurrencies continue to be utilized in numerous transactions, both legal and illegal, for financing activities.

While blockchain technology owes its popularity to Bitcoin, it has garnered recognition within the IT community for its transparency, decentralization, independence, and immutability. The term "blockchain" derives its essence from its constituent elements, with "blocks" representing the individual units of data interconnected by a cryptographic "chain." The most significant contribution of blockchain technology lies in its inherent immutability, rendering data alteration impossible. Once recorded, data cannot be changed, and any content-related errors can only be "corrected" through subsequent re-recording, with the initial record being effectively nullified. These characteristics of transparency, decentralization, independence, and immutability have expanded the applications of blockchain technology beyond the realms of currency, finance, and markets, finding relevance in sectors such as healthcare, business, politics, culture, art, industry, pharmacy, and the Internet of Things (IoT (Lemeš, Jašarević & Buzađija, 2019).

Blockchain has found widespread applications across various industries, including finance, software development, oil and gas, automotive, hospitality, and even healthcare. Irrespective of the industry or specific application, blockchain has the potential to revolutionize numerous processes. Notably, several practical applications of blockchain in accounting and auditing can be identified:

- verification of transactions- Blockchain can enhance the efficiency and transparency of accounting processes.
- increased transparency - Since every transaction is public and visible to all participants in the network, it becomes traceable from its origin, thereby reducing the likelihood of financial abuse.
- automated reporting - Blockchain enables automatic tracking and collection of financial data, eliminating the need for manual data entry.
- audit and supervision - Blockchain facilitates easy monitoring of changes in financial data, simplifying the auditing process.
- smart contracts - By enabling automatic verification

The problem with the argument that blockchain has wide applications and bright prospects is that blockchain has not been popularized in an application until now. However, as with Bitcoin, academic papers for 13 years have been based on the discussion that it has incredible potential, but there are not many concrete, useful applications. Reading those works, it is difficult to escape the impression that blockchain has been the

technology of the future for a long time, but that future has never arrived (Tasić, 2021). Blockchain was invented along with Bitcoin, as a mechanism that records transactions in Bitcoin. Blockchain is the reason Bitcoin is considered decentralized. Everyone who buys and sells some bitcoins (directly, not through an intermediary) participates in the blockchain network. All of them use their computers to record transactions, thereby simultaneously maintaining the network and mining new bitcoins for themselves.
Blockchain is a networked recording of transactions. That is why it is not a particularly advanced technology. More precisely, blockchain is not a technology in the usual sense of the word, because it does not use anything materially new and has not been invented. In a nutshell, blockchain is the idea that a record of something can be kept independently on many computers. Tasić (2021) emphasizes that the problem with blockchain is the fact that this decentralization with transparency and immutability of input is not revolutionary. Blockchain was supposed to facilitate financial transactions, but it failed to approach the quality and speed of traditional, centralized payment systems, precisely because of the slowness of the decentralized design. The Bitcoin payment system consumes so much electricity precisely because of decentralization because hundreds of thousands of computers are doing the same thing in parallel. Blockchain technology has been presented as a technology that will improve some industrial processes, keep records of real estate and other properties (as a decentralized cadastre), to track the entry and exit of goods in supply chains, but none of this has gone far.

4. Conclusion

This paper has explored the concept of non-fungible tokens (NFTs) and their characteristics, as well as the creation, development, and investment aspects surrounding NFTs. The discussion has shed light on the challenges and criticisms associated with NFTs, particularly in relation to their underlying technology, blockchain.

The analysis has highlighted the need for education and understanding of blockchain technology to foster broader adoption and effective utilization of NFTs. The misconception of NFTs as mere assets rather than innovative technological indicators of ownership has hindered their full potential. Moreover, the high costs associated with blockchain gas fees and smart contract implementation have posed financial barriers.

Additionally, concerns regarding data privacy, government opposition to decentralization, and the environmental impact of energy-intensive blockchain operations have been raised. Addressing these challenges will require further research, technological advancements, and regulatory frameworks that strike a balance between innovation and sustainability.

While acknowledging the limitations and criticisms, it is important to recognize the transformative potential of NFTs and blockchain technology. By leveraging their unique characteristics such as immutability, transparency, and decentralization, NFTs have the capacity to revolutionize various industries beyond the realm of art and collectibles.

As the field of NFTs continues to evolve, it is crucial for stakeholders, including researchers, practitioners, and policymakers, to collaborate in exploring solutions that address the identified challenges. Through such efforts, the potential benefits of NFTs can be harnessed while mitigating their drawbacks, paving the way for a more inclusive, efficient, and sustainable digital economy.

In conclusion, this paper has contributed to the ongoing discourse surrounding NFTs and their implications, serving as a foundation for future studies in this dynamic and rapidly evolving field.

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THE IMPACT OF GREENHOUSE GAS EMISSIONS ON GDP: EMPIRICAL ANALYSIS OF GERMANY

Stevan Đurić, Tanja Mirotić, Sofija Sekulić, Dženana Đurković, Ekonomski fakultet Podgorica, Univerzitet Crna Gora, Crna Gora, stevan.dj@ucg.ac.me, tanja.m@ucg.ac.me, sofija.s@ucg.ac.me, dzenana.dj@ucg.ac.me

Abstract: *Global warming is a pressing issue that has garnered much attention in recent years due to its far-reaching effects. The increasing emission of gases that cause the greenhouse effect is the primary contributor to global warming. The main consequences of global warming include rising sea levels, more frequent and severe natural disasters, and the extinction of various plants and animal species. To better understand the relationship between production and total greenhouse gas emissions, a study was conducted in Germany from 1990 to 2019. The study employed an error correction model to establish both short-term and long-term relationships between these variables. The results revealed that in the short term, greenhouse gas emissions would increase by 0.01726 units for each unit of GDP increase. This is because in the short term, sudden increases in production cannot be accompanied by new technological discoveries, resulting in an increase in pollution. However, the long-term relationship between production and greenhouse gas emissions is negative. An increase in GDP of one unit leads to a decrease in greenhouse gas emissions by 0.2591 units. This negative relationship is due to the implementation of new technologies and practices that reduce greenhouse gas emissions over time. Germany managed to achieve these results by transitioning from coal to liquid fuels and implementing many new laws regulating greenhouse gas emissions. Nevertheless, Germany continues to update its legal system and technologies with new innovative ways of reducing pollution, with the final goal of achieving carbon neutrality by 2050. According to the Climate Action Report 2019, Germany failed to achieve its goal by 4 percent, mainly because of higher emissions in the transport sector. As countries like Germany continue to develop and prioritize environmentally friendly practices, the relationship between production and greenhouse gas emissions may continue to become more negative, reducing the harmful effects of global warming.*

Keywords: greenhouse emissions, GDP, error correction model, pollution, economic growth

1. Introduction

Since the beginning of the industrial revolution, the world has embarked on an unstoppable growth of production, which is accompanied by an increase in living standards and a decline in the poverty rate. However, since the second half of the 20th century, the industrial revolution together with the capitalist system has brought numerous consequences such as income inequality and deepening the gap between rich and poor. In addition, global warming is also occurring as a result of the growth of production. In his 2005 paper on global warming, John Houghton gave one of a number of definitions of global warming:

"'Global warming' is a phrase that refers to the effect on the climate of human activities, in particular the burning of fossil fuels (coal, oil and gas) and large-scale deforestation, which cause emissions to the atmosphere of large amounts of 'greenhouse gases', of which the most important is carbon dioxide. Such gases absorb infrared radiation emitted by the Earth's surface and act as blankets over the surface keeping it warmer than it would otherwise be."

(Houghton, 2005, p. 1)

The main source of harmful gases is the burning of fossil fuels, such as oil, coal or gas, and greenhouse gas emissions increased globally from 29 million kilotons in 1990 to 46 million kilotons in 2019 (WorldBank, 2023). Modern production is completely conceivable without the use of fossil fuels, and with an economic paradigm that implies maintaining continuous growth, unless new technologies are developed in this area, the combustion of fossil fuels will also have to grow.

The question arises whether it is necessary to change completely the economic system that is based on stimulating economic growth, or whether it is still possible to achieve constant growth that would not endanger the environment, and thus enable better living conditions for future generations. Accordingly, the paper will show the relationship between total greenhouse gas emissions and gross domestic product in Germany.

As one of the first member states of the European Union, Germany harmonizes its legislation with EU legislation. According to the Environmental Protection Agency (UBA), since 1990, Germany has reduced GHG emissions by 40.4%, while last year's data indicate a decrease of 1.9% compared to 2021. Although it is on track to achieve the goals of the Federal Climate Change Act, the energy sector is still the largest polluter, which emitted as much as 10.7 million tons more GHG gases last year compared to 2021. What encourages the Act's goals to be achieved, after all, are renewable electricity sources, which recorded an increase of 9% compared to 2021.

2. Literature review

The impact of GDP change on global warming is a topic that is at the heart of a large number of researchers' interest in finding the optimal model that presents how a change in production affects the greenhouse effect. In a survey conducted in Greece for the period 1977-2007, GDP is used as the best economic indicator representing the total production of a country, while CO_2 is the gas that contributes the most to the greenhouse effect. The results indicate the existence of causality between the level of GDP and the level of CO_2 emissions, however, the authors believe that it is unlikely to achieve economic growth while reducing CO_2 emissions (Hatzigeorgiou et al., 2011).

By exploring the link between GDP and CO_2 emissions in 17 transition countries using DOLs and FMOLS methods, it was found that there is a long-term cointegration link between the previously mentioned series, with a 1% change in GDP leading to a 0.35% change in CO_2 emissions. Namely, the conclusion is that countries in transition have a difficult time achieving economic growth while reducing CO_2 emissions (Mitić et al., 2017). By analysing panel data on a sample of 18 European Union countries in the period from 1995 to 2012, it was proven that there is a long-term negative correlation between GDP and CO_2 emissions (Kasperowicz, 2015). For example, in addition to GDP and CO_2 emissions, Malaysia also includes the impact of energy consumption and population growth as two parameters that can cause carbon dioxide emissions. Using ARDL models, they came to the conclusion that in the period 1970-1980, GDP growth per capita led to a reduction in CO_2 emissions; however, for the period 1980-2009, there was a sharp increase in CO_2 emissions accompanied by economic growth (Begum et al., 2015).

Through a panel analysis of developed (OECD members) and underdeveloped countries, data on CO_2 emissions per capita, GDP per capita and international trade were used. International trade is viewed in the context of promoting economic growth and should have a positive effect on reducing CO_2 emissions. The results of the error correction model show the existence of a long-term relationship between variables, and the results of the Granger causality test show the existence of a two-way causality in the short term between GDP per capita and international trade on the entire sample, as well as between GDP per capita and CO_2 emissions for OECD countries (Cialani, 2016).

Another significant survey conducted in ten Asian countries between 1995 and 2018 using the CS-ARDL model[2] testifies that clean energy and GDP have an impact on reducing greenhouse gas emissions in the natural environment. Nevertheless, other variables in the model, such as urbanization and economic growth, cause an increase in the aforementioned gases in both the long and short term. The authors suggest that macroeconomic policymakers should, through regulatory policies, influence the reduction of emissions of harmful gases through regulatory policies (Chien et al., 2022).

Unlike the aforementioned works, Lyeonov and others tested the impact of GHG, RE and PICE[3] on GDP per capita on the example of European Union countries in the period from 2008 to 2016. One of the main findings of this research is that the increase in PICE, GHG and RE leads to GDP growth, while the change in RE causes the biggest change in GDP (Lyeonov et al., 2019). In addition, a survey on a sample of 28 EU countries in the period from 1991 to 2014 found that by increasing the growth rate of GDP per capita by 1% there is an increase in the growth rate of CO_2 emissions between 1.10% and 1.15%. In addition, it has been proven that an increase in the growth

[2]Cross-sectional autoregressive distributed lagged model

[3]Engl. PICE – private investments, jobs and gross value added related to circular economy sectors; GHG – GHG emissions; RE – share of renewable energy in the total energy consumption

rate of relative energy consumption of 1%, leads to an increase in the growth rate of CO_2 emissions between 1.07% and 1.09%. In this paper, the authors used panel data and logged STIRPAT model (Petrović et al., 2018).[4]

Most of the scientific papers are focused on exploring the relationship between GDP and CO_2 emissions, while excluding other gases that may also have effects on environmental pollution. The results vary in each paper due to sample size and countries inculuded (developed/developing). Nevertheless, it is of great importance to all researches in this field to gain as much knowledge as possible about whether it is possible to achieve economic growth without additional environmental pollution.

3. Methodology and data

The focus of this research is on the analysis of the ratio of production to greenhouse gas emissions in Germany, which is an example of one of the most developed economies in the world. Previous research supported by economic theory points to the importance of applying GDP as one of the most credible indicators showing the total production of a country. On the other hand, the analysis of total greenhouse gas emissions is used to approximate pollution, unlike most studies where the focus is solely on carbon dioxide emissions.

An analysis of two time series will be carried out below:

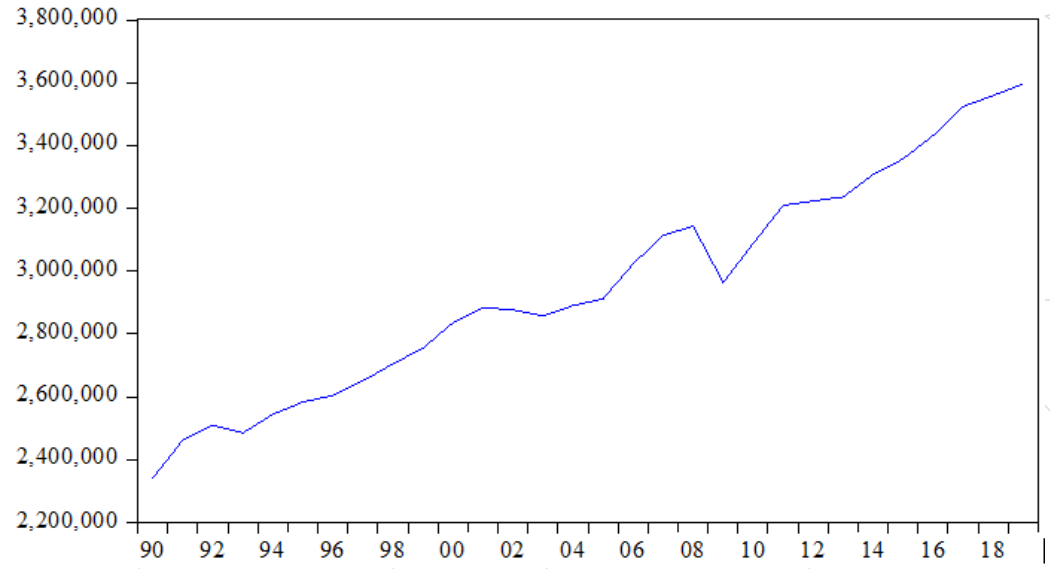
1) real GDP, in constant prices from 2015;
2) total greenhouse gas emissions shown in kilotons.

The data were obtained from the World Bank database and refer to the period from 1990 to 2019.

In order to analyse the relationship between the observed variables, error correction model (ECM) will be estimated. First of all, it is necessary to determine whether the data are stationary, and then confirm with an empirical test whether there is a cointegration between them. Using this methodology, it is possible to establish a relationship between variables in the short and long term, but also to determine the degree of adjustment of the model during shocks.

Time series analysis was carried out in the software package EViews 10.

[4]Take a closer look at the following link: https://doiserbia.nb.rs/img/doi/0038-982X/2018/0038-982X1800005P.pdf (https://doi.org/10.2298/STNV180614005P)



***Graph 1**. Movement of GDP in the period from 1990 to 2019*

Graph 1 shows GDP growth in the observed period, except in 2009 when the German economy felt the effects of the global economic crisis. In order to test the stationarity, the first order autoregressive model will be evaluated.

***Table 1.** First-order autoregression model, GDP time series*

Dependent Variable: GDP
Method: Least Squares
Sample (adjusted): 1991 2019
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP(-1)	1.014441	0.003689	274.9915	0.0000

R-squared	0.970177	Mean dependent var	2976963.
Adjusted R-squared	0.970177	S.D. dependent var	339632.5
S.E. of regression	58652.24	Akaike info criterion	24.83051
Sum squared resid	9.63E+10	Schwarz criterion	24.87766
Log likelihood	-359.0424	Hannan-Quinn criter.	24.84528
Durbin-Watson stat	2.046128		

From ***Table 1***, we note that the value of the coefficient of the first model autoregressive model is 1.01, which indicates the existence of a unit root, so the GDP series (independent variable) is not stationary. It is also necessary to conduct empirical tests in order to make a final decision. As a first step, autocorrelation is tested using the Breusch-Godfrey test.

***Table 2.** Breusch-Godfrey Serial Correlation LM Test*

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	3.484968	Prob. F(2,26)	**0.0456**
Obs*R-squared	6.130681	Prob. Chi-Square(2)	**0.0466**

Based on the probability of 0.0456 (***Table 2***), it was confirmed that there is an autocorrelation in the first-order autoregressive model.

Table 3. *Heteroscedasticity*

Heteroskedasticity Test: White			
F-statistic	0.136450	Prob. F(1,27)	**0.7147**
Obs*R-squared	0.145820	Prob. Chi-Square(1)	**0.7026**
Scaled explained SS	0.513225	Prob. Chi-Square(1)	**0.4737**

White's heteroscedasticity test (***Table 3***), with a probability of 0.702, indicates that there is no heteroscedasticity problem in the model, so in order to test the stationarity, an augmented Dickey-Fuller test (ADF) will be applied.

Table 4. *Stationarity test (GDP level)*

Null Hypothesis: GDP has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.173480	**0.1094**
Test critical values:	1% level	-4.309824	
	5% level	**-3.574244**	
	10% level	-3.221728	

*MacKinnon (1996) one-sided p-values.

The Augmented Dickey-Fuller test (***Table 4***) shows stationarity. Further, we will test first-order stationarity.

Table 5. *Stationarity test (GDP first difference)*

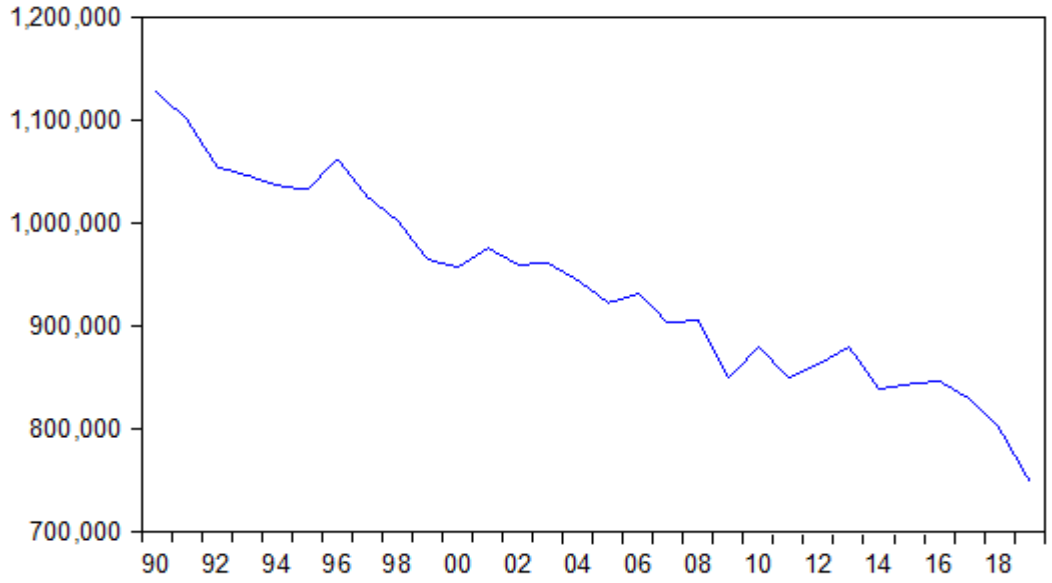
Null Hypothesis: D(GDP) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.978819	0.0002
Test critical values:	1% level	-4.339330	
	5% level	-3.587527	
	10% level	-3.229230	

*MacKinnon (1996) one-sided p-values.

The test shows that by rejecting the null hypothesis, an error of 0% is made, which means that the series does not have a unit root. Therefore, we can conclude that the GDP series is first order integrated.

The same procedure will be implemented for a series of data on greenhouse gas emissions. ***Figure 2*** shows a decrease in total greenhouse gas emissions for the observed period.



Graph 2. *Total greenhouse gas emissions shown in kilotons, in the period from 1990 to 2019*

The same procedure will be carried out for the series of data on greenhouse gas emissions. First order autoregressive model is constructed, and based on the value of the coefficient in the model (0.986). The conclusion is that there is a unit root. In addition, based on the correlogram (***Table 6***), it is noticeable that the autocorrelation function decreases along the sinusoidal pathway, while the function of partial correlation is significant at the first lag, and at other lags it is close to zero, which means that the series is not stationary.

Table 6. *ACF and PCF correlogram for total greenhouses gas emission*

Sample: 1990 2019
Included observations: 30

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |****** |	. |****** |	1	0.824	0.824	22.476	0.000
. |***** |	. |* . |	2	0.705	0.081	39.512	0.000
. |**** |	. | . |	3	0.620	0.062	53.187	0.000
. |**** |	. | . |	4	0.552	0.034	64.447	0.000
. |**** |	. | . |	5	0.492	0.013	73.756	0.000
. |*** |	. *| . |	6	0.404	-0.105	80.281	0.000
. |**. |	. | . |	7	0.319	-0.061	84.521	0.000
. |**. |	. *| . |	8	0.228	-0.092	86.794	0.000
. |* . |	. *| . |	9	0.139	-0.085	87.679	0.000
. |* . |	. | . |	10	0.094	0.052	88.106	0.000
. | . |	. *| . |	11	0.007	-0.148	88.109	0.000
. | . |	. | . |	12	-0.055	-0.006	88.268	0.000
. *| . |	. *| . |	13	-0.129	-0.098	89.212	0.000
. *| . |	. | . |	14	-0.179	-0.001	91.128	0.000
.**| . |	. *| . |	15	-0.237	-0.102	94.709	0.000
.**| . |	. | . |	16	-0.271	0.016	99.763	0.000

In ***Table 7*** the results of stationarity test are presented.

Table 7. *Stationarity test (GAS first difference)*

Null Hypothesis: D(GAS) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Elliott-Rothenberg-Stock DF-GLS test statistic		**-5.905266**
Test critical values:	1% level	-2.650145
	5% level	**-1.953381**
	10% level	-1.609798

*MacKinnon (1996)

The value of t statistics (***Table 7***) of -5,905, indicates a rejection of the null hypothesis (risk of error-5%). Thus, the first-order differential of the series is stationary; that is, the greenhouse gas emission series is first order integrated.

As both series are first-order integrated the next step is to carry out the Johansen cointegration test in order to confirm the existence of a cointegration relation between the series.

Table 8. *Johansen cointegration test*

Sample (adjusted): 1992 2019
Included observations: 28 after adjustments
Trend assumption: No deterministic trend (restricted constant)
Series: GAS GDP
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.377828	24.35723	20.26184	0.0129
At most 1 *	0.326564	11.07013	9.164546	0.0215

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Johansen's cointegration test (***Table 8***) shows that, we reject the null hypothesis (p=0,0129<0.005). We conclude that there is a cointegration relationship between the GDP series and greenhouse gas emissions, so it is possible to carry out the cointegration and evaluate error correction model.

5. Constructing the ECM

The first step is to estimate simple linear regression model that shows the relationship between greenhouse gas emissions (dependent variable) and GDP (independent variable).

Table 9. *Linear model*

Dependent Variable: GAS
Method: Least Squares
Sample: 1990 2019
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1704641.	40007.33	42.60823	0.0000
GDP	-0.259176	0.013443	-19.28004	0.0000

R-squared	0.929951	Mean dependent var	938569.7
Adjusted R-squared	0.927449	S.D. dependent var	94947.10
S.E. of regression	25574.25	Akaike info criterion	23.20090
Sum squared resid	1.83E+10	Schwarz criterion	23.29431
Log likelihood	-346.0135	Hannan-Quinn criter.	23.23078
F-statistic	371.7198	Durbin-Watson stat	1.418278
Prob(F-statistic)	0.000000		

The variables in the model are statistically significant. However, a high coefficient of determination combined with extremely high t-values may indicate a false regression. The next step is to test heteroscedasticity and autocorrelation in the model, as well as stationarity and distribution of the residuals.

Table 10. *Heteroskedasticity and serial correlation tests*

Heteroskedasticity Test: White

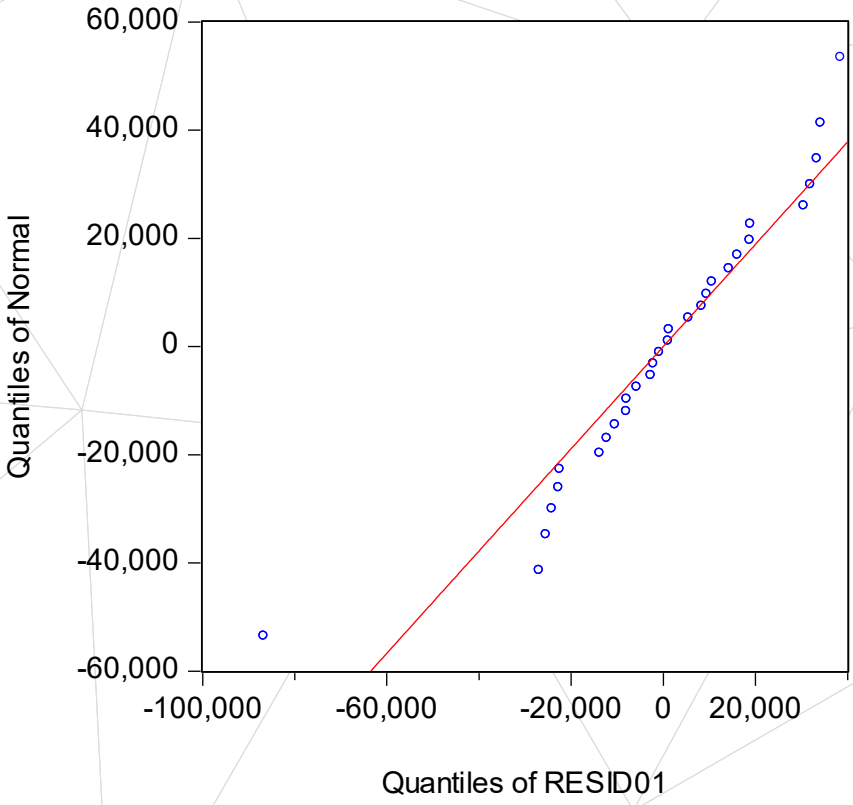
F-statistic	0.040897	Prob. F(2,27)	**0.9600**
Obs*R-squared	0.090608	Prob. Chi-Square(2)	**0.9557**
Scaled explained SS	0.192011	Prob. Chi-Square(2)	**0.9085**

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.093909	Prob. F(2,26)	**0.3498**
Obs*R-squared	2.328471	Prob. Chi-Square(2)	**0.3122**

Table 10 shows the results of the Breusch-Godfrey test, on the basis of which the absence of autocorrelation was confirmed, while the White test shows that there is no heteroscedasticity in the model.

The distribution of residuals will be tested using the graphical QQ plot test.



Graph 3. *QQ plot graph of residual distribution*

Observing the QQ plot graphics (***Graph 3***), the distribution of the residuals corresponds to the normal distribution. The next step in the residual analysis is the examination of stationarity. The stationarity of the residuals will be tested through an augmented Dickey-Fuller test, as well as the Phillips-Perron test (***Table 11***).

Table 11. *ADF and PP tests*

Null Hypothesis: RESID01 has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.112059	**0.0002**
Test critical values:	1% level	-2.647120	
	5% level	**-1.952910**	
	10% level	-1.610011	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: RESID01 has a unit root
Exogenous: None
Bandwidth: 9 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.990560	**0.0003**
Test critical values:	1% level	-2.647120	
	5% level	**-1.952910**	
	10% level	-1.610011	

*MacKinnon (1996) one-sided p-values.

The test results indicate that the residuals are stationary. Further, result from ***Table 12.*** Shows a short-term relationship between variables.

Table 12. *Model that shows short-term relationship*

Dependent Variable: D(GAS)
Method: Least Squares
Sample (adjusted): 1991 2019
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-13342.72	4500.835	-2.964499	0.0064
D(GDP)	0.017267	0.063865	0.270373	0.7890
RESID01(-1)	-0.575485	0.147461	-3.902633	0.0006

R-squared	0.394928	Mean dependent var	-13047.59
Adjusted R-squared	0.348385	S.D. dependent var	23536.12
S.E. of regression	18998.99	Akaike info criterion	22.63986
Sum squared resid	9.39E+09	Schwarz criterion	22.78130
Log likelihood	-325.2779	Hannan-Quinn criter.	22.68416
F-statistic	8.485064	Durbin-Watson stat	2.028840
Prob(F-statistic)	0.001457		

In order to evaluate model, the Breusch-Godfrey autocorrelation test, the White heteroscedasticity test (***Table 13***) as well as the empirical tests of the distribution of the residuals are carried out (***Graph 4***).

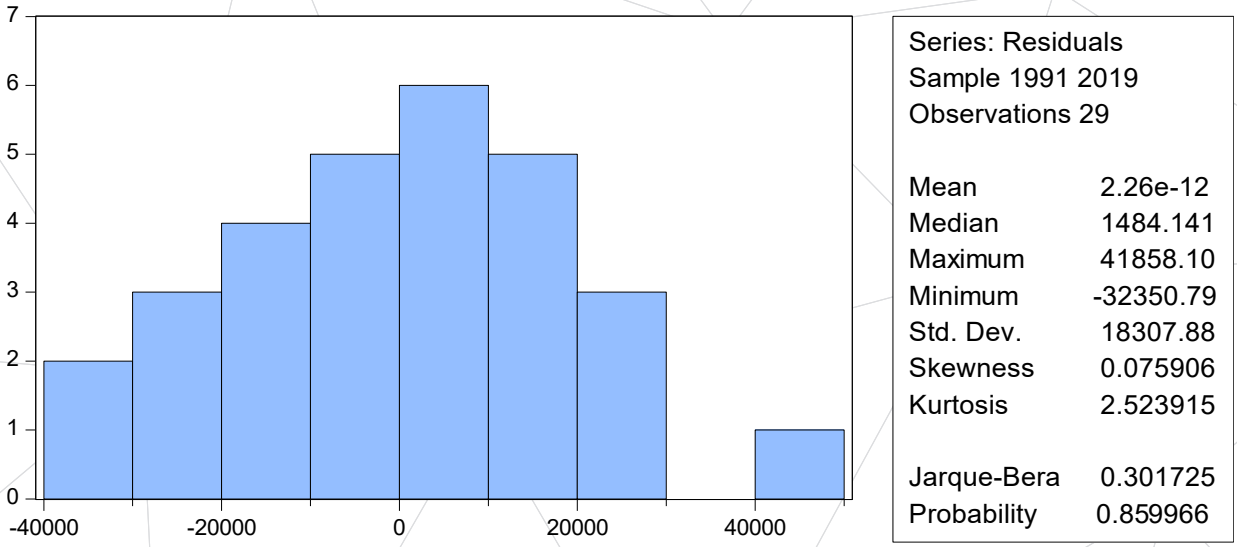
Table 13. *Serial Correlation and Heteroscedasticity tests*

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.217333	Prob. F(2,24)	**0.8062**
Obs*R-squared	0.515877	Prob. Chi-Square(2)	**0.7726**

Heteroskedasticity Test: White

F-statistic	0.939861	Prob. F(5,23)	0.4740
Obs*R-squared	4.919974	Prob. Chi-Square(5)	0.4257
Scaled explained SS	3.013314	Prob. Chi-Square(5)	0.6979



Graph 4. *Histogram*

The serial correlation test indicates that there is no autocorrelation in the model. Also, with the White heteroscedasticity test, it was confirmed that heteroscedasticity was not present in the model. The residual histogram clearly outlines the normal distribution. The excess and asymmetry coefficient are 2.52 and 0.07, which approaches the theoretical values of the normal distribution of 3 and 0. In addition, Jarque-Bera statistics indicate that the null hypothesis cannot be rejected, which confirms that residuals have normal distribution.

All tests performed on the model gave the desired results. However, what is problematic is that the dependent variable D(GDP) is not statistically significant. Therefore, the interpretation of the coefficient with this variable must be taken with reserve.

6. Model comments

Table 14. *Long-term and short-term relationship between GDP and GHG emission*

Long-term relationship			Short-term relationship		
Variable	The	p value	Variable	The	p value
C	1704641	0.0000	C	-13342.72	0064
GDP	-0.259176	0.0000	ΔGDP	0.017267	0.7890
			RESID	-0.575485	0.0006

The long-term relationship indicates that a change in GDP of one unit will lead to a change in greenhouse gas emissions of -0.25 units, i.e. confirms the existence of a negative long-term correlation between production and pollution. The results shows that German economy has found a sufficiently good technology as well as a combination of different legal solutions to be able to achieve growth in the long term, without increasing environmental pollution.

The negative coefficient (variable RESID) has the value of -0,575485 and is statistically significant, i.e. it meets all the conditions prescribed by econometric theory. The coefficient indicates that in the case of shocks, the model will return to equilibrium relatively quickly, 57% in one period of time, which in this study amounts to one year. The coefficient with the variable ΔBDP indicates positive correlation between variables, so an increase in GDP of one unit will lead to a rise in pollution of 0.017 units (the results must be taken with a reserve since the coefficient is not statistically significant). As stated in the literature review, a similar result was obtained by Kasperowicz (Kasperowicz, 2015) studying 18 countries of the European Union. Technological innovations and law regulations, as the most important factors affecting the reduction of pollution, cannot progress sufficiently in the short term to be able to contain the additional greenhouse gas emissions generated by the growth of

production. However, if we look at the long term, the increase in production and living standards has a stimulating effect on the development of new technological solutions, which then adapt the production processes so that negative externalities, in terms of pollution, are as little as possible. Thus, the example of Germany shows that the decision-makers will not have to choose between economic growth and environmental protection; they may exist as complementary categories. A radical change in the current economic system is not necessary; it is enough to integrate new ideas into the existing system, which has historically proven to be the best for increasing living standards, and to supplement it with new elements that will solve existing environmental problems and enable better overall living conditions for future generations. As research is focused on Germany, one of the most developed European economies, the question is how realistic is it to expect lower-income countries to make efforts to solve the problem of global warming. One of the solutions is to be supported by developed countries, both in terms of knowledge and finance.

7. Conclusion

Climate change and global warming are important current problems that experts in all fields of science have to deal with. The purpose of this research is to prove that it is possible to achieve economic growth in the long run, while reducing environmental pollution. Based on data of real GDP and total greenhouse gas emissions, during the period from 1990 to 2019 using the error correction model, it was shown that in Germany in the long run there is a negative correlation between these indicators.

However, this research is focused only on the question of *whether it is possible to achieve economic growth while reducing environmental pollution*, without giving an answer to *the question of how the same can be achieved?* In order to come to the answer to this it is necessary to observe the state of the German economy during longer period and systematically determine how specific results (in this field) were, are and will be achieved, which will certainly be the topic of scientific papers in the future.

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THE RISKS AND CONSEQUENCES OF FRAUDULENT SUSTAINABILITY REPORTING

Savka Vučković Milutinović, Dejan Malinić, University of Belgrade Faculty of Economics and Business, Belgrade, Republic of Serbia, savka.vuckovic@ekof.bg.ac.rs, dejan.malinic@ekof.bg.ac.rs

Abstract: Sustainability reporting is inevitable process in making entity's environmental, social and governmental performance visible to all interested parties, including general public. Although it has been a part of the reporting system of some companies for years, it is evident that this type of reporting has gained momentum in the recent period, thanks to the implementation of Agenda 2030 and sustainable development goals as well as to the transition of voluntary to mandatory and more regulated reporting. However, pressure to disclose company's impact on sustainability issues, especially in environmentally sensitive industries, increase risks of fraudulent reporting. In this paper, we analyze challenges of quality sustainability reporting and the main fraud risk factors, including complexity of non-financial reporting, application of different reporting frameworks, lack of balance in the reporting of positive and negative impacts, avoidance of assurance and questionable quality of assurance, where it is provided. As a result, we show that possibility of fraudulent reporting is high and must not be ignored. By intentionally omitting, misstating or obscuring some material information in the sustainability reports, companies could deceive stakeholders which rely on these reports in making their decisions. We shed light on the severe consequences of fraudulent sustainability reporting mainly recognized in the form of wrong channeling financial resources, compromising green transition and jeopardizing achievement of sustainablity development goals. These consequences have increased demand for faithfully represented sustainability reports, leaving all actors with the challenging task of developing the effective fraud prevention and detection mechanisms, including a greater role of specialists capable of addressing this relatively new type of fraud.

Keywords: sustainability reporting, SDGs, greenwashing, fraud risks, assurance, consequences of fraud

Introduction

The European Parliament and Council enacted the new Corporate Sustainability Reporting Directive (CSRD) in 2022, responding on demand for more relevant, reliable and comparable sustainability information than those which were provided by previous Non-Financial Reporting Directive (NFRD). According to the public consultation organized by the European Commission in 2020, even 94% of users said that they faced with a problem of non-disclosure of all relevant information by reporting companies, 73% of users emphasized the limited reliability of non-financial information as a significant problem and 84% of users claimed difficulties in using information because of the lower comparability (EC, 2021). Additionally, it was recognized that there is a need for sustainability information to be published by broader spectrum of companies than it was imposed by NFRD, and the voluntary regime could not provide it.

In the worldwide perspective, these issues appear to be even more striking, since EU is at the forefront of the sustainability reporting regulation. The sustainability reporting has been for a long time only voluntary initiative and the wave of regulation has just recently been accelerated. In its analysis of regulatory environment of 84 countries, the Carrots & Sticks Report 2020 shows significant increase in mandatory as well as voluntary sustainability reporting provisions, introduced mainly by governments and financial regulators, but also by stock exchanges and industry bodies (Van der Lugt et. al, 2020). However, Christensen et. al (2021) suggest that against some expected advantages of mandatory reporting, such as cost saving for users of the disclosures or the reduction of negative externalities produced by companies, there are also costs related to design, implementation and enforcement of mandatory reporting and it is pretty uncertain to determine in advance if it would achieve intended outcomes or be favorable than a market solution. It is not than surprising that many countries are still reluctant to introduce the sustainability reporting mandate.

In the meantime, most sustainability reports are still published on voluntary basis, so companies enjoy considerable leeway in deciding what and how to report, and could even avoid any disclosure. Even in mandatory regimes, such as the one in EU dictated by NFRD, which imply very broad approach, non-specific requirements and a lot of options, companies could make questionable choices in terms of presenting fair picture of their performance. It could be argued that there are severe risks of sustainability reports in the current reporting

arena. It is certainly not in the interest of the investing public and other stakeholder of companies, who may rely on these reports, without arriving at awareness of the limitation of the reported content.

It is of importance to address this problem, since fraudulent reports have potential to deceive users and lead them to make decisions different from those which they could make if they were properly informed. Among other harmful consequences, financial resources could be wrongfully channeled to activities and companies reported as sustainable although they are not as such in reality. This would then undermine the efforts of many initiatives, such as UN Agenda 2030 with its sustainability development goals, Paris Agreement and many others, focused on achieving sustainable and inclusive development.

This paper is organized as follows. The next section reveals main challenges of sustainability reporting, which are still not answered and make this kind of reporting a fertile ground for fraud. Thereafter, we shed the light on different type of fraudulent reporting and identify main fraud risk factors. We conclude the paper with a discussion of the severe consequences of fraudulent practices in sustainability reporting and promotion of preventive as well as detective safeguards which could help in the fight against these practices.

1. Sustainability reporting: main challenges

In a few last decades plenty of private and public initiatives have been launched in the field of sustainability. Some of them are intended to promote sustainability activities (e.g., UN Global Compact, SDGs), while the other have focused on specific task of developing sustainability reporting standards and guidelines (e.g., Global Reporting Initiative – GRI), but so far actors in this field have not yet agreed on concepts and definitions around the sustainability and sustainability reporting, pointing to the fact that this topic is very complex and convergence of different approaches is difficult to be achieved (Stolowy and Paugam, 2023).

In responding to the challenges, some experience from financial reporting field could be used along with well-established principles and practices. The good examples are financial reporting principles, which are also relevant for and could contribute to the quality of sustainability reporting, such as faithful representation achieved by reporting complete, neutral and accurate information. However, setting standards for sustainability reporting is neither a simple nor tautological matter. Although there are some similarities between financial and sustainability reporting, distinctive characteristics of sustainable reporting generate unique issues.

We argued that complexity of sustainability reporting raises many challenges which must be addressed by standard-setters. The complexity of sustainability reporting is reflected in many aspects, including broad range of stakeholders and reporting objectives, diversity of reporting topics, measurement issues, long-term horizon and extended reporting boundaries. According to financial reporting conceptual framework, sound reporting system must be built on the clear definition of the reporting objective and having in mind the information needs of targeted users. In the case of sustainability reporting, the investors are not the only group interested in the subject matter, although they show keen interest in it. However, even investors are not the homogeneous group since the growing number of investors show interest not only in financial issues related to sustainability, but also in investments which contribute to the achieving of sustainable development goals. Many other stakeholders, namely customers, employees, governmental and non-governmental entities, and society in general are concerned about the sustainability issues. Existence of such a broad audience is effectively illustrated by the fact that US Securities and Exchange Commission (SEC) received more than 11,000 public comments via form letters and more than 4,000 unique (non-form) comments on its Climate Disclosure Proposal (CDP), where the respondents were investors and investor group, non-profits and consumer protection groups, businesses, trade and industry associations, professional audit firms, and relevant government entities (KPMG, 2022a; SEC, 2023). These groups demand different insights in sustainability aspects of companies' activities, what imposes diverse objectives to sustainability reporting. Some standard-setters favor investors' needs, what is then reflected in the application of financial materiality as a convenient criterium for selecting information to be disclosed, while other prefer to see the impact of companies' activities to the planet and society irrespective of financial issues. One relatively new approach is to promote double materiality which reveals both inside-out and outside-in impacts, but the application of this approach is complicate as well.

It is also the fact that despite some definitions and categorizations, there is still a lack of consensus about the topics that should be subject of sustainability reports. In addition, these topics are very diverse in the nature and often appropriate metric has yet to be developed. Cohen and Simnett (2015) noticed that some subject matters reported could be measurable in monetary units, other could not be monetized but quantified in other way (e. g. in physical units), while there are some topics which are only described in narrative form. It means that some

common denominator for the measurement of different sustainability dimensions is not available. Additionally, some of these topics are more or less important to companies from different industries what further inhibits cross-companies comparability. Survey evidence by Amel-Zadeh and Serafeim (2018) show that many investors recognize the lack of comparability and quantifiability as major obstacles to integrating ESG information in the investment process.

Complexity of sustainability reporting is further imposed by broad time horizon and value chain perspective. Sustainability by definition includes long-term horizon, what implies greater use of estimates in the reporting of relevant topics and leaves reporting entities with the challenging task of dealing with related uncertainty. Moreover, traditional reporting focus on activities within boundaries of the reporting entity is extended for the purpose of sustainability reporting. Entities are expected to consider their value chain and report on sustainability issues that are linked to their activities, products or services through business relationships establised in the value chain. It is however demanding because the entity could face with a problem to obtain the necessary information from different partners. Kim and Davis (2016) provide empirical evidence that this type of reporting is hard to achieved. In the case of 1,300 US reporting companies required to disclosure if their products contained "conflicted minerals", 80% were not capable of doing so, and only 1% was confident that their products were conflict-free.

Besides inherent complexity, there is at least one more serious challenge related to sustainability reporting. There is currently no general accepted reporting framework and standards. It could be seen as burning question, since the usefulness of reported information is quite low when comparability cannot be achieved. Sustainability as the concept attracts considerable attention what leads many organizations to address the question of sustainability reporting and offer some guidelines and standards. In the Guidelines (2017/C 215/01) on EU Non-Financial Reporting Directive (2014/95/EU; hereinafter NFRD), even 21 reporting frameworks are explicitly referenced and over and above, companies are given option to consider using some other reporting frameworks. It is clear that in such environment, where each standard-setter seeks to legitimize its work, the convergence is not easy to be achieved. In meantime, investors and other stakeholders are faced with confusing reporting landscape and have difficulties to understand, interpret and compare reported content of sustainability reports published by different entities.

We could outline a number of impediments to convergence in the existing frameworks, including priorities given to different groups of stakeholders, different goals and different topics, but also endeavoring of their creators to be a leading force in the international arena of sustainability reporting. Due its longevity and broad multi-stakeholder perspective, GRI with its standards has broken to the first place in terms of market acceptance. According to the latest KPMG worldwide study, GRI is the "first and foremost" since 78% of the world's largest 250 companies (G 250) use GRI as well as more than two third (68%) of the top 100 reporting companies by revenues from 58 countries (KPMG, 2022b). However, GRI is not only one organization with ambitious to set globally accepted standards. At least, two other powerful actors are engaged (Giner and Luque-Vílchez, 2022), namely IFRS Foundation and EU. While GRI drives its legitimacy from the dominant market position, IFRS Foundation has recently started to build its sustainability reporting framework through its new established International Sustainability Standard Board. It relies on its success in the field of financial reporting, since IFRS are adopted from EU and many other jurisdictions, so become legally enforceable. It could be said that IFRS Foundation has structural legitimacy, where "audiences see the organization as valuable and worthy of support because its structural characteristics" (Suchman, 1995), since it proves to have stringent procedures and severe governance structure in its process of issuing financial reporting standards, which can be also exploited for the creation of sustainability reporting standards. On the other hand, EU has decided to regulate sustainability reporting by itself and to develop European Sustainability Reporting Standards (ESRS) through EFRAG. This is important step for EU in achieving its sustainability-related goals, but it will further contribute to market fragmentation in terms of sustainability reporting. Globally accepted reporting framework is unlikely to be reached in the foreseen future. Thereby, issuers and users of sustainability reports are exposed to significant efforts in dealing with sustainability reporting. Many companies choose to use more than one reporting frameworks, and in the case of TotalEnergies the number of used frameworks is even ten (Total Energies, (2023) Reporting standards, pristup ostvaren 24.6.2023), while Shell references on seven frameworks (Shell, 2022). It is questionable if these practices improve transparency since users should be able to process different and voluminous disclosures in order to derive meaningful conclusions.

2. The risks of fraudulent sustainability reporting

Despite challenges, there have been ever more companies that report on their sustainability performance and ever more stakeholders that use the reported content to make their decisions. However, in the extent that these reports do not present the true and fair view of the sustainability matters, users are exposed to the deception. Financial statements fraud is a huge problem in the field of financial reporting, and it seemed from the beginning that the sustainability reporting would not be also immune to fraud. Fraudulent financial reporting, often called creative accounting, is aimed at misleading investors (shareholders and creditors) about actual economic performance of companies. Indeed, such reporting has a rather long history. The same goes for fraudulent sustainability reporting. Both types of fraudulent reporting have one thing in common, i.e. they are based on information asymmetry, which concretely means that management is in an informationally superior position compared to the company's shareholders. Understanding these two types of fraudulent reporting could help us explore tools which may be useful in preventing and stopping frauds in sustainability reporting.

In the context of different sustainability initiatives, manipulative practices are often labeled as "washing", e. g. bluewashing, greenwashing, SDGs-washing. Due to the UN blue flag, Berliner and Prakash (2015) used the term bluewashing to describe such practices of UNGC (United Nation Global Compact) members where companies claimed to be committed to the GC principles although they tended not to undertake some costly actions to improve crucial environmental and human rights performance. Siano et. al (2017) point out that greenwashing is related to the gap between "talk" and "action" with aim to create green image of the company either through favourable statements regarding sustainability which are not supported by real actions (decoupling) or by diverting attention of stakeholders to some minor issues (attention deflecting). They also recognize another even more striking type of greenwashing where companies undertake substantial actions which are in contrast to the sustainability claims in order to support false statements. Considering growing attention that is given to SDGs, Heras-Saizarbitoria et. al (2022) analyze 1370 sustainability reports with reference to the SDGs that were published by companies accros the world and provide evidence that most companies had extremely superficial approach to SDGs reflecting SDGs-washing.

In accounting, fraudulent reporting is defined as one that involves practices of intentional misstating, omitting or obscuring some material information. This definition is also useful for studying fraudulent sustainability reporting. Misstatements reflect inaccurate information that reporting entities usually tend to publish in their reports in order to present inflated sustainability performance. They could be in different forms, such as overstatement or understatement of some indicator (e.g. greenhouse gas emission), false statement or description of entity's policies or actions, false declaration of having some certification etc. However, the danger of omitting material information is much emphasized in the context of sustainability reports. It is related to the complexity of implementation of the materiality principle, what opens space for companies to avoid publishing some material information that is not beneficial to them by claiming it as immaterial. According to empirical evidence, companies tend to report in an unbalanced way where omit relevant information about their negative impacts while positive impacts are reported or even overemphasized (Diaz-Sarachaga, 2021; Boiral, 2013). It means breaking the neutrality principle which requires selection and presentation of information without bias. In addition, assurance providers are faced with serious difficulties in detecting such type of manipulative reporting. With regard to obscuring material information, sustainability reports could have unclear contents that would mislead users. One way to present such content is to use boilerplate disclosures, which could help reporting company to gain legitimacy via perceived compliance, although disclosures are generic, rhetorical and uninformative. Another sophisticated variation of the obscuring the real sustainability performance is the use of fancy icons and attractive images and infographics, which improve image of company as sustainable actor albeit it represents just meaningless story.

It is interesting to observe that organizations' frauds related to sustainability matters are not even limited to fraudulent sustainability reporting. One comprehensive taxonomy of ESG frauds is developed by Grant Thornton on the base of the ACFE Occupational Fraud and Abuse Classification System, also known as the Fraud Tree. It shows different types of ESG-related frauds that could occur in all three traditional branches of fraud tree, namely in misappropriation of assets (e. g. theft of personal safety equipment), corruption (e. g., collusion for disaster relief procurement) and financial statement fraud (e. g., environmental cleanup reserve used as cookie jar), but it also defines one new branch called nonfinancial reporting fraud which deals with fraudulent sustainability reporting (ACFE and Grant Thornton, 2022).

Considering theory of "fraud triangle", three elements are crucial for the incidence of fraud: incentive/pressure, opportunity and rationalization. Regarding sustainability reporting, we could argue that all three elements are

very much present. In the current environment, a large part of society certainly has high expectations of companies to behave in a responsible way what creates significant pressure on companies to demonstrate such behavior. When it is not the case and company has poor sustainability performance, there is a trigger for fraudulent reporting. The impossibility of reaching sustainability goals and associated risks might stimulate unscrupulous managers to cover up the facts concerning environmental protection and negative impacts on the community. These activities, also known as the camouflaging of corporate unsustainability, are further encouraged due to an inferior position of shareholders in terms of access to information relative to the company's management (Pilonato et al., 2016, p. 3).

Unfortunately, opportunities for such misconduct are also available. A larger scope of reporting, significant presence of non-financial information, impossibility of establishing efficient control, and lack of clearly defined accountability in this process are certainly making sustainability reporting more difficult and increasing the likelihood of fraudulent behavior. Furthermore, opportunities could be found in shortcomings of existing reporting frameworks (e. g., vague requirements which allow different interpretations). However, manipulations could be primarily encouraged by the lack of independent assurance of sustainability reports. Assurance is inevitable for the improvement of the credibility of reports, since assurance providers are performing procedures and collecting evidence about assertions given in the report and are in position to express conclusion about whether subject matter information is fairly stated. However, assurance of sustainability reports is voluntary in most jurisdiction, so many companies do not decide to engage auditors or other assurance providers for this type of service. In its survey, KPMG (2022b) finds that assurance rate increased from 30% in 2005 to 63% in 2022 for G250 companies, what shows that large companies in a growing number recognize the importance of reports to be assured. Nevertheless, without mandatory assurance it is hard to reduce manipulative practices among companies.

There also some other problems regarding assurance of sustainability reports. Specifically, even in the cases where assurance is provided, its quality is often questionable. One of reasons is related to competencies of assurance providers. These providers could be audit firms with expertise in auditing but with financial statements as examination subject, so it is challenging for them to get sufficient knowledge and skills in sustainability field to be capable of providing quality assurance. On the other side are other providers, e. g. consultancy firms with expertise in the sustainability issues, but without reputation and experience in auditing services. Additionally, they do not belong to recognized profession and are not obligated to follow strict rules. There are also some concerns about independence issue, since managers tend to control the performing of the assurance service. Altogether, opportunities for misstatements in sustainability reports are not sufficiently restrained. Since the European Union included the requirement of mandatory assurance in the new CSRD, it could be the first step to regulate better the market of this service with aim of improving its quality.

Rationalization is the last element of fraud triangle and it deals with justification of the fraudulent act by fraudster. In the context of sustainability reporting, different rationalization could be used. The expected one is that it better to engage in fraudulent reporting practices than to jeopardize reputation and experience market losses. The company may also rationalize that competitors do the same things of cooking the books or that it is not a big deal to hide some bad news if there are at the same time some good things that company did for the society or for the planet.

Having in mind the existence of conditions for all three elements of fraud, our society is obviously exposed to the risks of fraudulent sustainability reporting. Managing those risks is imperative since consequences of users' deception are far-reaching.

3. Consequences of fraudulent sustainability reporting

The damage due to fraudulent sustainability reporting is to some extent similar to the damage caused by major financial scandals stemming from financial statement frauds. Investors suffer damage due to the absence of expected returns in the form of dividends and capital gains as well as the loss of invested capital, creditors also face explicit losses when the borrower's loss exceeds its equity, companies are often forced into bankruptcy, employees are left without wages and jobs, capital markets are compromised, together with the accounting profession, considering its responsibility for financial reporting.

However, the specifics of sustainability reporting frauds are reflected in the fact that the damage caused by fraudulent reporting in this case has an additional dimension. Namely, the damage is likely to spread to society

as a whole, jeopardizing some important processes, such as the green transition, environmental protection, the achievement of sustainable development goals, etc. The previous fact is exactly the reason why it is so difficult to quantify the total damage occurring in the process of sustainability reporting and, consequently, there are no accurate estimates of its magnitude (Kurpierz and Smith, 2020, p. 15). Nevertheless, despite these problems, it is relatively easy to understand that potential harm is far greater than in the case of creative financial reporting. The introduction of three-dimensional ESG metrics increases considerably the complexity of reporting. It is obvious that experience in applying these standards is not extensive, particularly in developing countries, that there are many open issues, that some indicators have yet to be defined, that non-financial indicators dominate, that accountants and auditors are still not skilled enough to cope with this task, and that the procedures concerning the users of information are not sufficiently developed. These are just some of the reasons that clearly indicate that there is substantial room for fraudulent reporting.

The amount and variety of damage that could be suffered as a consequence of sustainability reporting frauds are perhaps best illustrated by the Volkswagen's (VW) excessive ambition to double its annual vehicle sales in the USA market. A huge scandal broke after the discovery of the fraud with diesel vehicles of this company. Namely, in 2015, it was revealed that the Volkswagen Golf TDI on the open road recorded up to 35 times higher emission of nitrogen oxides (NOx) compared to the amounts recorded during the tests for the purposes of obtaining EPA (Environmental Protection Agency) and CARB (California Air Resources Board) certificates, which authorize the sale of vehicles in the USA. The vehicles were programmed so that their emission control systems show emissions within the prescribed limits only in test mode, but not on the open road in normal use mode. The revelation of this fraud ultimately led to costly litigations against VW, which resulted in the payment of a $15 billion settlement. Due to criminal violations committed in the USA, VW was fined $2.8 billion, while it had to pay an additional $1.8 billion in Germany due to the same violations. By the end of the second quarter of 2019, VW's costs associated with the scandal reached $32 billion, with many legal proceedings still pending (Jacobs and Kalbers, 2019, p. 17). All three pillars of sustainability collapsed due to the fraud. VW's operational performance was hard hit by the high costs of repairing explicit damage, while its lost reputation has had long-term consequences. Environmental pollution compromised the company's commitment to environmental protection, while the interests of the community were largely ignored. The gravity of the situation is further explained by the studies that forecasted that excessive emission of harmful gases caused by the sales of VW vehicles could lead to 59 early deaths, the number that might increase to 140 if the company failed to eliminate defects, while 130 out of 140 premature deaths would be avoided with a recall of vehicles starting from 2016 (Steven et al., 2015, pp. 6-8). All this happened in a globally renowned company characterized by high-quality corporate governance, effective risk management practices, high ethical standards, and a strong commitment to sustainability (Jacobs and Kalbers, 2019, p. 19).

However, at this point we would also like to draw attention to the global consequences of potential fraudulent reporting, primarily taking into account the inadequate channeling of financial resources and the subsequent delay in the green transition and slowdown in the achievement of sustainable development goals.

Considering our focus on damage occurring at national and global level, we will first address the damage that affects the area of sustainable finance, primarily because of its far-reaching impact. It is obvious that the achievement of sustainable development goals requires substantial investment to enable the implementation of green projects, substitution of dirty technologies with the clean ones, solving pollution problems, etc. Therefore, the issue of financing comes to the fore. McKinsey forecasts that the green transition could absorb about $275 trillion by 2050, or $9.2 trillion per year, which is an annual increase of as much as $3.5 trillion relative to 2020 (McKinsey and Company, 2022). It is logical that investment activities of such magnitude must be accompanied by the provision of adequate sources of finance. Investment volume calls for a variety of sources, starting from the state budget, through investing in the shares of companies that meet the ESG criteria (a growing number of investors opt for so-called socially responsible investing in green projects or, at least, avoid investing in compromised industries), green loans, green bonds, private-public partnerships, to different grants, carbon taxes, etc. Without entering into the debate whether there are too few or too many sources of green finance or over different conditions in developed and developing countries, one thing is sure – the number of applicants will be much greater than the number of companies who will actually be able to fulfil the conditions for obtaining the sources of green finance. Today, more than ever before, there is a growing awareness of the

connection between sustainability, environmental protection and financial performance of companies. Considering that beneficial synergistic effects can be achieved in this area, i.e. socially responsible companies are rewarded for their sustainable behavior and contribution to environmental protection, which is reflected in better financial performance, the interest in applying for the sources of green finance will also be expressed by some companies whose sustainability reports may contain certain discrepancies between presented and real impact of "green" projects on the environment and the community.

ESG metrics allow investors to assess risks and opportunities by observing all three dimensions. One of the key roles of ESG metrics is channeling capital into "companies that focus on long-term sustainability which is compatible with environmental standards and the requirements of the community in which companies operate" (Malinić and Vučković Milutinović, 2023). It is precisely at this point that the problem becomes apparent. Fraudulent reporting, motivated by the aim to get an easier access to the sources of finance, causes the redirection of investments toward the companies whose projects are environmentally compromised. In this way, covering up true information about sustainability makes it possible to finance the companies that will ultimately cause further environmental degradation instead of contributing to solving environmental problems. On the other hand, the companies that have green projects may be left without financial support.

In circumstances where ESG reporting is still not mandatory, investors have no choice but to assess the credibility of available information by themselves. The prerequisites for raising the quality of information on sustainability are a coherent ESG conceptual framework that will ensure consistency, relevance and reliability, mandatory sustainability reporting prescribed by law in order to protect the public interest, and a mandatory independent external audit (Esty and Cort, 2020, p. 204).

Based on the aforementioned, it is not difficult to conclude that the damage occurred as a result of an unacceptable behavior, leading to capital allocation pitfalls or mistakes, directly affects the efficiency of the green transition process and hampers the achievement of sustainable development goals. Raising awareness of the extent of damage that may occur due to unacceptable reporting which, aside from a financial dimension, also has its social and environmental dimensions, will bring the role of corporate decision making to a whole new level as far as its quality is concerned. Hiding information about waste and other harmful effects on the environment can slow down the development of the circular economy due to reduced investment in recycling and the use of renewable energy sources. The circular economy, as a pragmatic model based on a realistic approach to the use of natural resources, environmental protection, efficiency increase, cost reduction, elimination of waste or, at least, its reduction, stands in the way of "ecological overshoot". Hence, any obstacle that impedes the development of the circular economy is also seen as global damage.

In fact, it is becoming increasingly clear that a three-dimensional connection between economic, environmental and social dimension is so obvious that its impact on long-term value creation cannot be ignored. Any fraudulent reporting that misleads investors on any of these dimensions can have serious consequences at both corporate and global level. The previously mentioned case of VW caused enormous damage to the company's investors, but such irresponsible behavior also led to increased air pollution and human health deterioration, increase in global warming, natural resource depletion, and the release of harmful substances into the environment. Therefore, the above-mentioned three-dimensional risk reporting requires at least the same rigor, discipline and commitment as official financial reporting.

In the process of approving the sources of green finance, it is necessary to prevent the proliferation of the so-called "zombie" companies that are not sustainable and survive only due to an inappropriate selection of investments that can get green financing. The imperative to embrace green investments in order to achieve the sustainable development goals excludes the possibility of financing these companies by the sources of green finance because such an orientation would reduce the capacity for provide finance to truly sustainable companies. Channeling the sources of green finance into green investments is a prerequisite for a successful green transition.

When there are warning signals alerting us to fraudulent reporting, it is quite logical to expect that investors will be reluctant to invest. Of course, the opposite is also true. Investors tend to increase their investments when they feel more secure. The problem is that greater transparency of reporting clearly reveals investment risks and leads to a decrease in investment activities, while less transparency masks the real risks and contributes to

increased investment in companies that carry a higher risk of fraud. The lack of transparency increases the risk of misinterpretation of available information. Investors who do not have enough experience with the green transition financing may be confronted with a specific problem. In case of lack of complete information or fraudulent reporting, they could be inclined to disinvest when the risks are transparently presented, while in case of non-transparent reporting they could decide to further invest in wrong companies. In this way, companies that do not comply with the green transition requirements would get financial support. Therefore, investors need help to be able to identify the companies that applied for the sources of green finance by delegating projects that do not provide solutions to environmental and social problems. All this would take to a higher level the issue of providing high-quality sustainability reporting, but also the issue of mandatory and high-quality assurance.

Conclusion

Understanding ESG metrics is a major challenge for investors, financial institutions and companies, but also for accountants, auditors and regulatory bodies, particularly considering the need for possessing multidisciplinary knowledge. Besides, prioritizing individual measures is definitively an open and quite tricky issue. It is hard to imagine that value creation would become a secondary goal for profit-oriented companies. Also, it is unrealistic to expect that the differentiation of returns according to inherent risk would become less important. The market economy is actually functioning based on these postulates. On the other hand, it would be realistic and, let's say, ethical to expect that shareholders should also bear some part of burden due to irresponsible behavior of companies, which would also imply sharing the costs associated with the achievement of sustainable development goals and environmental protection. However, it is evident that the perception of risk will change in a way that environmentally harmful projects and dirty technologies will carry significantly higher risks, leading to an increase in the cost of capital, which should diminish investors' interest in financing similar projects and direct it toward investing in green projects and the shift in business model, in terms of moving from a linear to a circular economy model. In such circumstances, value creation will be the privilege of companies that are strongly committed to sustainability standards and ESG metrics, while other companies will be marginalized.

There is no doubt that most companies are recognizing this and paying increased attention to the issues related to sustainability, green transition, rational use of natural resources, and alignment of business practices with the sustainable development goals. Therefore, a growing number of companies will soon begin to grasp the direction in which the business model will evolve. It is also certain that not all companies will be able to comply with required environmental standards, which will consequently give rise to risks (e. g. they will not have enough sources of finance) not only of shrinking profits, but also of bankruptcy. It is most likely that some companies will be trying to present their business activities as environmentally conscious only to get access to the sources of finance under more favorable terms. The complexity of reporting and non-mandatory assurance will certainly encourage such behavior. In such circumstances, sustainability reporting frauds had better not become a hot topic of interest for researchers and the public. That would prematurely compromise all the good things that are happening in this area. So, to reduce associated risks, a lot of effort should be put in preventive activities. It is important to understand motivations behind frauds, risks and consequences that may arise due to frauds as well as to undertake all preventive measures to avoid damage or, at least, to minimize it. In other words, there is a need for a far greater degree of responsibility regarding these issues.

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TANDEM SOLAR POWER PLANT BUSINESS MODEL IN THE CONTEXT OF THE MAOCHE COAL BASIN DEVELOPMENT INVESTMENT PROJECT

Uladzimir Buts, PhD of Economics, Department of Economics, BSAA, Gorki, Belarus (Ukraine),
butshard@inbox.lt

***Abstract**:* In a scientific article are reflected the key points in the development of a business model for generating electric energy based on the joint use of solar and thermal power plants in order to smooth out the dynamics of energy consumption. The modern experience are described of using solar power plants indicates such a disadvantage as the uneven volume of electricity production, which is associated with different solar activity in certain time periods. This disadvantage is absent for other methods of obtaining electrical energy that are associated with the use of fossil fuels or the possibilities of a nuclear reaction. Traditional sources have of electricity generation exhausted their capabilities in terms of limits on the consumption of fossil resources, the cost of their extraction, waste disposal and negative impact on the environment. Solar energy is becoming increasingly widespread as one of the promising areas of green energy. Despite the use of a fairly well-developed theory and practical tools for of direct of solar energy based on the photovoltaic effect, the creation of new materials, the cheapening of the material and technical base of solar energy require further development of theory and practical recommendations for improving methods and business models of solar power plants. A description give of the research in the article begins with a theoretical review of modern approaches to the use of solar energy and an assessment of its development prospects. The physical and chemical bases are described of the photoelectric effect, and the efficiency coefficient is compared of individual materials for photovoltaic energy generation. An analysis is made of the potential of solar energy in ensuring the energy balance and reducing the cost of energy. A methodology is proposed of business calculations of technical and economic parameters a solar power plant in Montenegro as a tandem (additional) option to a thermal power plant within the framework of a business project for the development of the Maoche coal basin. A main idea of presents is an importance of the development of solar energy as a promising direction for green energy. It is combined the solar energy and traditional methods of generation based on fossil fuel sources. For the practical implementation of this idea, a feasibility research has been developed of a solar power plant with the option of connecting it to a common electrical network to ensure the load at peak moments of energy consumption and save fossil fuels. In conclusion was made on the results of the calculation.

***Keywords**:* Green energy, solar power plant, photovoltaic effect, business model of energy generation, investment design, economic effect

Introduction

One of the main indicators are determined the level of development of a society's energy capacity. Every year is increasing the energy needs of the world's population. Energy consumption has increased more than 100 times over the history of the development of the population of our planet. The energy have needs of mankind for more than 200 years met mainly through the use of fossil hydrocarbon fuels: coal, oil and natural gas, which are the most convenient and cost-effective types of fuel. However, the threat increase of global climate change calls into question the further in the use of these fuels. An alternative is to fossil fuels called nuclear (and in the future – thermonuclear) energy. The main source is of energy of natural processes on the planet, the processes of thermonuclear fusion occurring in the Sun. The potential is determined by solar energy the solar constant – the density of the solar radiation flux at a distance equal to the average diameter of the elliptical orbit of the Earth through a platform perpendicular to the direction of the sun's rays. This value is 1353 W/m^2. This energy does all reach the earth's surface. It is partially reflected and dispersed in the atmosphere. Solar energy is the kinetic energy of radiation (mainly visible range), which is formed as a result of reactions in the bowels of the Sun. Since its reserves are practically inexhaustible (the Sun will “shine” for about 4 billion more years). It is classified as renewable energy resources. In natural ecosystems are absorbed a small part of solar energy chlorophyll contained in plant leaves and is used for photosynthesis. The organic matter is formatted from carbon dioxide and water. Thus, it is captured and stored in the form of potential energy of organic substances. The energy are met due to their decomposition, needs of all other components of ecosystems. It is estimated that even a small percentage of solar energy is quite enough to meet the needs of industry, transport and our everyday life, not only now, but also in the foreseeable future. A more remarkable is regardless of whether are used it or not, the state of the biosphere and the energy balance of the Earth will not be affected in any way. The sun is a very high-

power energy source. Only twenty-two days of sunshine by the total power coming to our planet is equal to all the reserves of organic fuel on earth. In practice, solar radiation can be converted into electricity both directly and indirectly. Indirect conversion is used by concentrating solar radiation of tracking mirrors to turn water into steam, and then using steam to generate electricity in the usual ways. Such a system can only work in direct sunlight (Martins G et al., 2023: 3). Direct conversion of solar energy into electrical energy used the photoelectric effect (Mi, J. et al., 2023: 7-9). Elements are made of a special semiconductor material, for example, silicone, under direct solar irradiation, detect a difference in voltage on the surface, i.e., the presence of an electric current. The purpose of the work is a project of a mini solar power plant with electric energy storage capable of providing uninterrupted power supply to an autonomous consumer. Scope of application: it is used to transfer energy from solar panels to power an autonomous consumer with a capacity of up to 5 *kW*. It is possible used by private individuals in order to save electricity.

1. Experience of using solar energy

Solar energy systems are perfect and absolutely environmentally friendly. People around the world are beginning to abandon the use of traditional fuels due to rising oil and gas prices. 47% of residential buildings have in Germany already solar collectors for heating water. In many countries of the world are developed state programs to develop the using of solar energy. This program is in Germany the “100,000 solar roofs”. The program is in the USA a similar called “A Million solar roofs”. Solar energy is used in a variety of industries – from supplying a private home to powering space stations. There have been solar buildings, bridges, trains, planes for a long time. The Swiss project is “Solar Impulse 2” a good example, which is a manned aircraft powered by solar batteries. In March 2015, it was he who made a trip around the world, demonstrating at the same time the amazing possibilities of alternative energy. At the beginning of July of the same year, this solar-powered aircraft broke the record in world aviation for the duration of a non-stop flight without any refueling. Swiss Andre Borschberg was at the controls of the plane, spent eighty hours in the air, flying 5,663 *km*. Thus, Solar Impulse 2 exceeded the figures set in 2006 by Steve Fossett during a flight that lasted seventy-six hours and forty-five minutes on a Virgin Atlantic Global Flyer jet. At the same time, “Solar Impulse 2” broke the flight range records, as well as the duration of stay in flight for solar-powered aviation. An equally striking example are used of successfully of solar energy is the Black friars Bridge in London. This world's largest bridge is with a “solar” roof equipped with a total of 4,400 Panasonic HIT photovoltaic panels, the peak power of each of which is 250 watts. The total area is 19,685 square feet (ca. 1,829 m²). It is expected that the panels will generate up to 900 thousand kilowatt-hours per year. Because of this, it is planned to provide approximately 50% of the annual electricity demand of the station, as well as reduce carbon dioxide emissions into the atmosphere by 563 tons per year. The world's first hotel of the InterContinental Hotels Group chain has opened in the UAE in 2017, which fully provided with electricity from solar panels. The InterContinental will also be connected to the city's electricity grid. The excess energy generated will be sold to third-party consumers. These measures will reduce the cost of electricity by about 25-30%. An ardent supporter of alternative energy sources is Elon Musk, the head of companies such as Space-X and Tesla Motors. He introduced the Tesla Energy battery system in the field of “green” technologies. These battery packs will be available in two versions — with a capacity of 7 and 10 kWh. The first model is designed for everyday home use, the second is primarily for power supply in cases such as an accident or a man—made mistake. This system is powered by solar panels or a conventional power grid. It to a fully autonomous power supply transfers the house connected, when the power goes out (Flamant, Gilles, 2022; Ponnurangam, Jayapradha & Barik, Debabrata, 2023: 4; Ji, 2023: 1-23; Pažėraitė, 2023; Ma Rui, 2023).

2. Theoretical Review

The performance of a photovoltaic plant depends on the latitude of its location, as well as on climatic conditions (Poddar, Shukla, 2023). The feasibility to determine in order, cost-effectiveness, and efficiency of using the Photo electrical systems (PES) in a particular area, modeling is carried out in special software complexes in which all elements of the station are modeled, and in which all environmental features shout take into account in order to predict generation with high accuracy at every moment of time (Subramanian, E. et al., 2023). The most important task of designing hybrid systems with renewable energy sources is to coordinate the modes of energy production and consumption, which requires high discretization of the projected generation of electric energy by various sources: from average daily to hourly. A thorough analysis of the energy balance is necessary to solve such design problems as optimizing the ratio of installed generating source capacities, selecting parameters of regulating devices and configuring control systems. A lot of articles have been written on this issue. In his work, Horvath, Laszlo et al. have developed a library of graphical models for all components of the PES (Horvath, Laszlo

et al., 2023: 30-33). A detailed model of the arrival of solar radiation on an arbitrarily oriented surface was proposed by Bloomfield, Hannah et al. (Bloomfield, 2022). Comparing the results obtained with the results of ground measurements at weather stations, the modeling error is less than 11.7% for total solar radiation. The error analysis showed the absence of a systematic error, since the errors are distributed evenly relative to the zero level. Kallio, Sonja et el proposed a method for modeling a photovoltaic module (PM), the feature of which is to find the parameters of the expression describing the VAC and the effect of the temperature effect on them (Kallio, 2023: 594-601). Flamant G. and others described a thermal power plant for residential buildings, which uses a DC/DC controller with a search for the maximum PowerPoint and a connected battery (Stanislawski, 2022; Flamant, 2023). Vibha K. and others in the Simulink environment have created a simulation model of a solar battery controller, the logic of which corresponds to the logic of the functioning of a real controller in various modes: in the mode of charging the battery with a constant current of a given value, in the mode of searching for the point of extreme regulation of the solar battery, in the mode of charging the battery with a decreasing current when the battery voltage reaches a certain level, the model also monitors the state of the battery and, if the battery voltage drops to a lower level, it turns off the load (Vibha, 2021). Jing Jiaxuan compared different PV systems, and explained nineteen methods for constructing PV (Jiaxuan, 2023). A summary of all these techniques allows you to choose the right one for each Panel Electronic Solar. Many works are devoted to the modeling of batteries. Kowsar Abu proposed a battery model based on Shepherd's generalized expression (Kowsar, 2022). In another article together the model of the mathematical description of the battery operation proposed a more accurate method using a filtration current flowing through the polarization resistance (Oday A. Ahmad, 2019; Kulkarni, 2022; Alexander, Dr.S.Albert, 2023).

3. Physico-chemical fundamentals of the photoelectric effect

The generation of solar energy has a number of problems that are associated with the cost of Photo-panels, their disposal, as well as the imperfection of energy conversion devices in these systems. All this requires the creation of power supplies on a modern element base, as well as their control systems that allow to achieve high energy efficiency. Such sources include network and autonomous solar battery inverters (hereinafter referred to as SB), which have in their structure a direct current link at the input of a DC-AC converter. In the case of an autonomous inverter, the consumer of electricity necessarily needs a backup power source due to the lack of sunlight at night. Thus, it is assumed that there is a battery (hereinafter AB) at the input of a DC link and a charge controller, which can also be made in the form of a DC voltage converter with pulse width modulation (hereinafter PWM). As part of the SB network inverter, a DC link is necessary both to expand the range of operation of the device and to track the point of maximum power of the voltage characteristic of the SB. As a direct current link at the input of both types of inverters, a step-up voltage converter (hereinafter referred to as the PPN) is usually used, since the voltage of solar panels is usually low. At the same time, the PPN has the best ratio of simplicity and energy efficiency, compared with other types of DC-DC converters (step-down, inverting and converter made according to the Cook scheme). If we present a mathematical description of semiconductor converters of electrical energy with pulse modulation, then it will be a system of nonlinear differential equations. The main element that determines the nonlinearity of the control circuit by a power converter is a pulse modulator. The mode of operation with a clock frequency of PWM oscillations is the main mode of closed-circuit electrical energy conversion systems. For solar inverters, the issue of identifying the permissible range of parameters is relevant, since the input voltage for these devices is a function of the illumination of the SB, which varies over a wide range. Photovoltaic energy generation is caused by the spatial separation of positive and negative charge carriers when electromagnetic radiation is absorbed in a semiconductor.

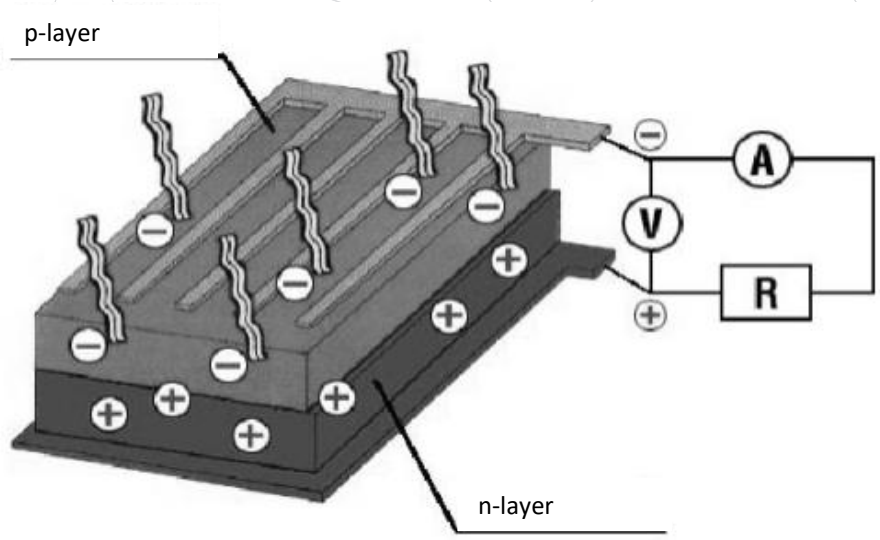

Fig. 1. The principle of operation of the photoelectric element (Kim, J. et al., 2022: 1)

A solar cell consists of two interconnected silicon wafers. Light falling on the upper plate knocks out electrons from it, sending them to the lower plate. Thus, the EMF of the element is created. The elements connected in series are a direct current source. Several combined photovoltaic converters are nothing more than a solar battery. Solar cells (hereinafter SE) are made of materials that directly convert sunlight into electricity. Most of the currently manufactured SE is made of silicon. Silicon is a semiconductor. It is widely distributed on earth in the form of sand or "quartzite", which is silicon dioxide 20 (SiO_2). Solar panels made of monocrystalline photovoltaic cells are more efficient, but they are also more expensive in terms of watts of power. Their efficiency, as a rule, ranges from 14 to 16%. Solar panels made of poly crystalline photovoltaic cells are the most common, due to their optimal price-efficiency ratio among all types of panels. Their efficiency ranges from 12 to about 15%. Solar panels made of amorphous silicon have one of the lowest efficiency. Its values usually range from 6 to 8%. However, it is worth noting that among all silicon technologies of photovoltaic converters, they generate the cheapest electricity due to the cheapness of production and, as a result, the low cost of elements. Solar panels made of cadmium tellurium (*CdTe*) are also created on the basis of film technology. A semiconductor layer, several hundred micrometers thick, is applied to the substrate. 25 The efficiency of cadmium tellurium elements is low, their efficiency is about 11%. However, in comparison with silicon panels, the watt of power of these batteries costs several tens of percent cheaper. Solar panels from CIGS are also common. CIGS is a semiconductor consisting of copper, indium, gallium, and selenium. The film of this composition is obtained by spraying copper, indium, and gallium with further treatment with selenium vapor. In comparison with cadmium tellurium panels, GIGS has a higher efficiency, its efficiency reaches up to 15%. Today, crystalline silicon elements are the most noticeable on the world market (about 85% of the world market). Solar panels made of poly crystalline and monocrystalline photovoltaic cells are the most common due to their optimal price-efficiency ratio among all types of solar panels (Soum-Glaude, 2022).

4. Investment project for the development of the Maoche coal basin

The Government of Montenegro is constantly working to improve the business climate. In recent years, Montenegro has made significant progress on this indicator. In addition, every possible support is provided at the State level for the development of projects of great national importance for Montenegro. Among the most interesting opportunities for foreign investors is participation in the construction of a thermal power plant in the Maoche coal basin, located in the Northeastern part of Montenegro, near the town of Pljevlja. The participation of a foreign investor involves financing, commissioning, and Re-cultivation of the Maoche coal mine, as well as financing, construction and management of the Maoche thermal power plant, within the framework of a single business project. The Government of Montenegro grants a concession for coal mining and the construction of a thermal power plant with a design capacity of 500 MW. The term of the concession is 45 years with the possibility of extension. The proven coal reserves in the Maoch Basin are 113 million tons. The average calorific value of coal in the Maochky basin is 12.3Mj/kg. Advantages of Pleval lignite: extremely low sulfur content (less than 1%), relatively low water and ash content. In addition to the construction of a thermal power plant, significant attention is paid to the development of renewable energy sources, such as wind, solar

and biomass energy. In this area, investors are offered the construction of windmills with a total capacity of up to 70 MW, solid waste processing plants with an installed capacity of up to 10 MW, solar cell parks, as well as various biomass processing plants (Jensen, 2022; Shi, 2022; Kurustien, 2023; Thompson, 2023).

5. Metodology

The conversion of energy into FEP is based on the photovoltaic effect in inhomogeneous semiconductor structures when exposed to solar radiation. It is possible to use the energy of photovoltaic converters as well as the energy of other power sources, with the difference that solar cells are not afraid of short circuits. Each of them is designed to maintain a certain current strength at a given voltage. But unlike other current sources, the characteristics of a solar cell depend on the amount of light incident on its surface. The pH module will generate the following amount of energy during the selected period :

$$W = k\ Pw\ E\ /\ 1000 \tag{1}$$

Where E is the value of insolation for the selected period, k is a coefficient equal to 0.5 in summer and 0.7 in winter. The power of solar radiation depends on the latitude of the terrain, the time of year and day. In addition, the power of solar radiation practically reaching the Earth's surface (i.e., minus atmospheric losses) also depends on the state of the atmosphere (the presence of clouds, fog, dust, etc.). Since the state of the atmosphere depends on many random factors, the daily and annual schedules of solar energy intake are complex. Graphs of their changes in this case can be represented by two values: - deterministic, functionally related to the time of day, year, and latitude of the area; - random, depending on the state of the atmosphere. The mathematical expression of the power in this case has the form (Li, Jiadong, 2022: 171):

$$S_g = S_g(t, T, f) \cdot \frac{S(x)}{F} \tag{2}$$

Where: S_g is the power density of solar radiation reaching the horizontal surface of the Earth W/m^2; $S_g(t, T, f)$ is a function of the density of solar radiation on a horizontal surface from the time of day, time of year, latitude of the terrain ; $S(x)$ – solar radiation power loss in the atmosphere, *W; F* is the horizontal projection of the Earth's surface over which solar radiation is measured, m^2 S kg = $S_g(t, T, f)$ is called, in accordance with its essence, cosmic solar radiation. Let's introduce the concept of transparency coefficient:

$$k_t = \frac{S_g}{S_{kg}} \tag{3}$$

Taking into account (2), we get:

$$k_t{}' = 1 - \frac{S_g}{S_{kg}} \tag{4}$$

$$S(x) = \frac{S(x)}{F} \tag{5}$$

Where: *S(x)* – density of solar radiation power loss in the atmosphere, W/m^2. Theoretically, the transparency coefficient can vary from 1 (losses in the atmosphere are zero) to 0 (solar radiation is completely lost in the atmosphere). Practically, the CPR is in the range of 0-0.8. This is due to the fact that even in perfectly clear weather, solar radiation is absorbed and reflected by air molecules. The introduction of the transparency coefficient allows you to write in the following form:

$$S_g{}' = k_t \cdot S_g(t, T, f) = k_t \cdot S_g \tag{6}$$

The function of cosmic solar radiation, due to its strict determinism, is well studied and tabulated. Note that the power of solar radiation incident on a single site oriented in any way depends on the orientation of this site. For the orientation of a single site, we introduce the following parameters h – the angle of the height of the Sun above the horizon; β – the angle of inclination of the site above the horizon; γ is the azimuth angle, i.e., the angle of deviation of the projection of the normal to the site from the direction of the solar noon.

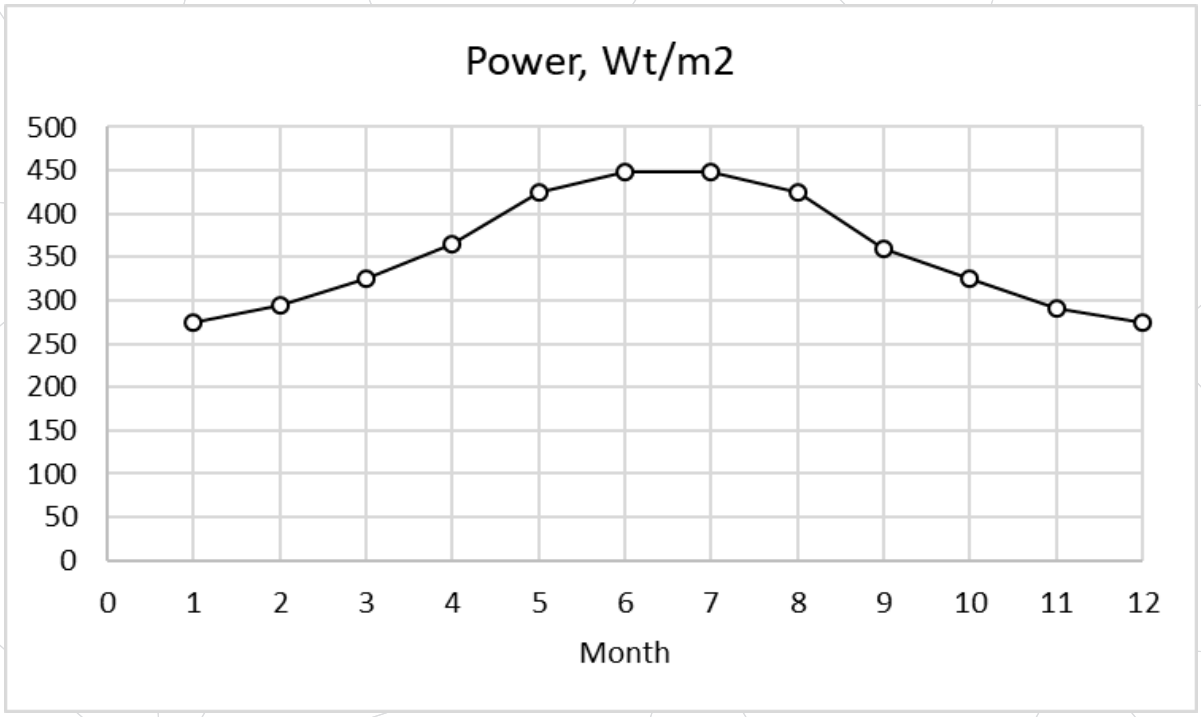

Fig. 2. Average solar radiation power per horizontal platform (Lopez-Gasso, 2022: 13)

According to Fig. 2, the greatest power density of cosmic solar radiation will be when the normal to the site and the direction to the Sun coincide. Since the position of the Sun relative to the Earth continuously changes throughout the year and day, in order to obtain the maximum possible solar radiation power density, the angles b and g must change accordingly, i.e., continuous tracking of the Sun is necessary.

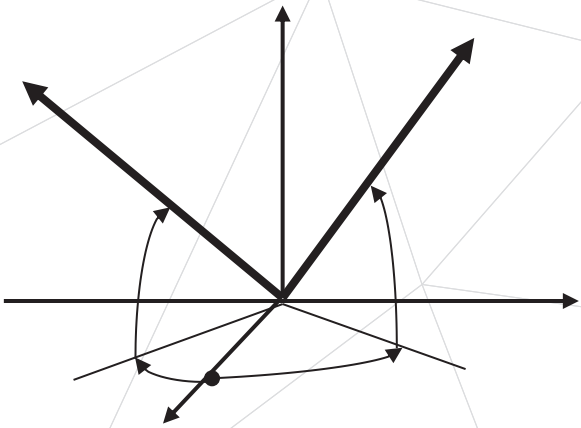

Fig. 3. Angles of orientation of the software and the sun's rays (Zholubak, 2022: 37-46; Jeong, H.,2023: 7-9)

Thus, the analysis showed that solar radiation has a lot of energy and there is enough statistical data and mathematical apparatus for designing solar power plants.

Table 1 Specific power of solar radiation on a horizontal surface

Hours (hr)	Power, Wt/m^2			
	Winter	Spring	Summer	Autumn
5	0	15.47	38.74	0
6	0	50.38	124.09	11.38
7	3.87	112.39	228.63	46.46
8	16.94	190.01	337.22	100.72
9	30.98	263.57	422.54	155.09
10	42.54	314.01	492.25	193.72
11	54.29	337.29	500.05	221.01
12	58.17	325.58	507.75	217.06
13	46.47	279.09	461.23	182.18
14	31.05	232.54	383.74	155.04
15	15.49	174.44	298.49	100.72
16	3.48	96.83	201.59	42.53
17	0	42.52	108.48	7.77
18	0	11.53	31.03	0
19	0	0	3.78	0

Source: Fernandez, Malcolm & Go, Yun., 2023: 8;

Results of technical and economic calculations

The mathematical description of elements and processes is a reduction and explanation of formulas and laws that describe the influence of the environment on the operation of the PES, as well as the regularities of the operation of the components of the PES. A special feature is the description of the nonlinear characteristics of the elements and their dependence on external parameters. According to the presented formulas, a photovoltaic installation will be simulated. Modeling of an autonomous photovoltaic plant includes six main components: a model of the arrival of solar radiation, a solar battery, a DC voltage converter (charge controller), a rechargeable battery, an inverter, and an electrical load. All models have the property of scaling, which makes it possible to conduct studies of photovoltaic systems of arbitrary configuration. The peculiarity of the proposed model is to take into account the influence of external climatic factors on the energy characteristics of the solar battery, which ensures an increase in the accuracy of forecast calculations in electricity generation. A necessary condition for building a model of a power plant is the coordination of models of elements as part of a single energy system, which determines the choice of a single universal modeling tool. In this paper, models of all components of the power plant are implemented in MATLAB/Simulink as separate subsystems, which allows them to be used to study the modes of PES of arbitrary configuration. The input data are 8 values that determine the value of the final solar intensity: the number of the calendar day from the beginning of the year; the latitude of the terrain; the presence of a tracker; the azimuth angle of the panel installation; the angle of inclination of the panel; the albedo of the Earth's surface; the transparency index of the atmosphere; the difference between local time and Greenwich. In MATLAB, input values are set via the Constant parameter block. The model includes the possibility of taking into account the solar tracker by azimuth, azimuth and angle of inclination, as well as its absence. In the absence of a solar tracker, the Track block generates 1, then, according to a given model, the angles of inclination, and azimuth of the panel are equal to the values set by the designer. In the presence of a solar tracker by azimuth, the Track block generates 2, while the azimuth of the panel will be equated to the azimuth of the position of the Sun, forming a tracking system (Ates, Ali., 2023; Karabiber, Abdulkerim, 2023). If

there is a tracker by azimuth and angle of inclination, the Track block generates 3, with this value, the angle of inclination of the panel is consistent with the height of the Sun's rise, and its azimuth angle. The result of the simulation is the cumulative value of solar radiation per square meter per day, as well as a graph of changes in its magnitude. The model also includes the possibility of simulating a cloud gap, which is used to study the dynamics of processes and can be included optionally. The model was formed into a subsystem with the possibility of changing input parameters to calculate the magnitude of the arrival of radiation in any area, as well as for any day of the year. The possibility of setting the operating mode of the solar tracker allows you to evaluate its effectiveness under specified climatic conditions. The result of modeling a solar panel is the output power that the SB gives out under certain operating conditions. The model allows you to analyze the efficiency of use and calculate the economic benefits of various types of batteries (monocrystalline and poly crystalline), predict power generation and analyze the operating modes of photovoltaic systems. The initial data are the data of the technical specification of a single panel, such as: the temperature coefficient of the no-load voltage; the temperature coefficient of the short-circuit current; the number of photo-modules in the battery; voltage at the point of maximum power; 46 current at the point of maximum power; no-load voltage; short-circuit current. The value of the output power of the solar battery depends on the level of solar radiation that comes to the SB unit from the radiation modeling unit and the surface temperature of the PM, the higher the value of which, the lower the power given to the consumer(Kavaliauskas, Ž. at all, 2023: 4). The input data from other blocks are solar radiation and the surface temperature of the photovoltaic module. 298.15 is subtracted from T_PM due to the conversion of this value into kelvins in its block, as well as taking into account that normal conditions for ambient air temperature are 25 OC. It turns out that this value is responsible for determining how many degrees the surface temperature of the PM is higher than normal. The load model in this work is set through the Signal Builder block, in which the load at each time is indicated in fractions of a unit. Typical active power load schedules are used for the selected type of consumer. The feedback principle is implemented in the model and a signal delay block was included to take into account the step-by-step modeling, as a result of which the past state of the system is taken into account at each new step. The signal from the load (Power) changes the load current at the next step of the simulation by an amount proportional to this signal. Then this current enters the inverter.

Discussion of the results

On cloudy days, the rays of solar radiation are blocked by clouds, resulting in an isotropic distribution of scattered radiation across the sky. Consequently, in comparison with an inclined panel, a larger amount of scattered radiation falls on the surface of a horizontally located panel. However, on a clear sunny day, the radiation components of solar radiation play a key role, they make it possible to increase the efficiency of using DSS, since 90% of solar radiation consists of radiation components. In general, the solar radiation absorbed by the DSS during the flight period is about 1 MW. In other words, the generated electricity is 32% higher than the generated electricity of the FS. At the annual interval, the productivity of the DSS exceeds the annual productivity of the PS by 44.02%. At the same time, the mobile biaxial system generates 2.275 MWh/m^2 per year, while the PS for the same period – 1.58 MWh / m^2.

Conclusion

The conducted research allows us to formulate the following main conclusions:

1. The existing ideas about renewable energy resources and approaches to their assessment in the world have been studied. It is revealed that at the moment there is no single strict generally accepted methodology, theoretical and methodological foundations for assessing the potential for use by renewable energy systems have not been developed. In world practice, certain aspects of assessing the potential for use by renewable energy systems have been worked out, they are presented in fragments depending on the goals and level of research.

2. The results of solar potential studies are systematized and analyzed. The analysis of the conducted quantitative estimates and maps shows a fairly wide range of the determined values and the results obtained. Comparison of the results is complicated by the fact that the considered works often do not provide methods for determining the potential, and the estimates themselves are based on different initial data.

3. Some aspects of the theory and methodology of assessing the landscape potential for the use of renewable energy systems are disclosed. The concept of landscape potential for the use of renewable energy systems is formulated as the sum of its three components – natural, technical and geoecological. The natural component consists in assessing the maximum possible natural potential determined by the components, conditions, and properties of the landscape itself. The technical component is a part of the natural potential that can be used at this stage of technological and socio-economic development. The geoecological component consists in the need

to preserve landscape diversity and ensure sustainable development of the territory by introducing a system of geoecological restrictions. At high values of natural potential, landscape potential can be zero at low values of technical and geoecological potentials. By the landscape potential for the use of renewable energy systems, we understand the ability of the landscape to perform the function of energy supply, taking into account natural resources, the current level of technological development, as well as existing technical (engineering) and geo-ecological restrictions on the use of the territory.

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GREEN TAXES AND TAX REFORM IN MONTENEGRO

Aleksandar Kešeljević[1], Milijana Novović Burić[2], Ana Lalević Filipović[3]
[1] University of Ljubljana, Faculty of Economics, saso.keseljevic@ef.uni-lj.si,
[2] University of Montenegro, Faculty of Economics, mnovovic@ucg.ac.me,
[3] University of Montenegro, Faculty of Economics, analf@ucg.ac.me

Abstract: Modern and globalized society is increasingly moving towards a circular economy that ensures social welfare by creating sustainable products, i.e. by production growth with simultaneously increasing the protection of the environment and the health of citizens. Green (ecological) taxes are certainly one of the mechanisms for preserving the environment and creating long-term sustainable development. These taxes ensure the collection of financial resources from all those economic entities that lead to the devastation of the environment through their business activities but also promote environmental activities through various incentive mechanisms. Green taxes implementation does not lead to an increase in the fiscal burden of economic entities. They replace other tax revenues, which can ultimately sustain or increase the level of the total budget revenues of a country. For mentioned reasons, the authors of this paper point out the importance of green taxes, their types, and the experiences of European countries in implementing green tax reform, all with the aim of creating and implementing the most efficient green tax strategy in Montenegro, which will achieve economic and environmental benefits known as the so-called "double dividend". This research will show that the Montenegrin tax reform did not realize the effect of a "double dividend", and that it was exclusively implemented for the achievement of economic goals.

Keywords: *sustainable development, green tax reform, double dividend and regressivity of green taxes, Montenegro*

Introduction

The environment, as a public good, has no price. Modern and globalized society is redefining its business philosophy from the traditional linear approach to the increasingly necessary circular economy, which ensures social well-being by creating sustainable products. Green financing, also known as green finance, is certainly one of the mechanisms for advancing the green economy. Green finance is a broad term in itself and can be viewed through various products and mechanisms, and green (environmental) taxes are certainly one of them. While in the past, ecological policymakers relied mainly on regulatory measures, such as setting environmental standards, today, there is a growing trend of utilizing market instruments such as CO2 emissions trading and the implementation of green taxes.

The European Commission defines environmental taxes as all those for which a tax base is a physical unit of something that has a proven negative impact on the environment (European Commission, 2009). The tax is defined as green or ecological taxes should exclude taxes on renewable resources (including labor), and the resulting loss of revenue should be compensated by taxing the consumption of non-renewable resources, as well as unwanted waste and emissions. Thus, green taxes yield a double benefit or double dividend effect, which implies their use as a form of tax reform in the broader context of fiscal reforms. Through this approach, the state taxes "harmful" activities (pollution, natural resource use) instead of "beneficial" activities such as labor and capital (Bousquet, 2000). In this way, there is an improvement in the state of the environment and an increase in the efficiency of resource use (ecological dividend), i.e., an increase in employment, competitiveness, and growth (economic dividend) due to lower labor/capital costs. More precisely, by implementing green taxes, the state can encourage the collection of financial resources from all those economic entities that lead to the devastation of the environment through their operations, which achieves both economic and ecological benefits. Therefore, the goal of the green tax reform is to improve the situation in an environmental and economic sense (Ekins, 2009; Glomm et al., 2008; Siegmeier et al., 2015; De Miguel et al., 2015; Freire-Gonzales, 2018; Andersen et al., 2018). , 2007; Baranzini et al. 2000).

Since it represents a new type of newspaper, it is clear that the process of determining the optimal amount of the green tax is complex because it is not easy to decide on the size of the externalities. The purpose of green taxes is to collect financial resources from polluters for damage caused to third parties and the environment. Also, it is crucial to specify who pays this type of tax, whether it is the producer (polluter) or the consumer. Consumers, based on demand and purchase, encourage producers to pollute the environment. Yet, only

introducing green taxes changes consumer consumption patterns regarding more socially responsible behavior. To what extent will the buyer or producer (polluter) take over the payment of ecological, i.e., green taxes, largely depends on the elasticity of supply and demand of a particular good. Theoretically, in the case of inelastic demand, the most significant part of the green tax is paid by the consumer, and in the case of elastic demand, the producer (Turner, 1994).

Practice shows that the green tax reform was first implemented by those countries characterized by high labor taxation (Sweden, Denmark, Finland) because they sought the benefits of the "double dividend" (Albrecht, 2006). In this regard, as an ecological country, Montenegro recognized the importance of the concept of sustainable development and environmental protection. It introduced several green taxes to encourage the responsible behavior of business entities and reduce pollution and negative environmental impacts. More precisely, green taxes in Montenegro are part of a broader strategy of sustainable development, and the state can use the funds collected from these taxes to finance environmental protection projects and renewable energy sources and encourage innovation in sustainable technologies.

Considering the significance, topicality, and novelty of this issue, especially in Montenegro, the following paper is structured in two parts, in addition to the introduction, conclusion, and literature. The first part provides an overview of the conceptual definition of green taxes and the tax reform systems implemented in developed countries. Conversely, the second part focuses on the green tax reform and the implementation of green taxes in Montenegro.

The fact that this topic is currently of great importance and has long-term implications speaks volumes about its relevance and the need for further discussions on similar subjects. It serves as an imperative to promote the concept of sustainable development, which is crucial from the perspective of future generations.

Green taxes and tax reform in developed markets

The EU has made significant strides in implementing the green transition on a global scale. Within the European Green Deal, the EU has set ambitious goals to promote sustainable development and reduce the adverse impacts of climate change. It has expressed its intention to achieve climate neutrality by 2050. One of the strategies to foster this transition is through the implementation of green tax reforms, which focus on two primary directions: reducing or eliminating subsidies for environmentally harmful activities and restructuring the existing tax system by introducing new, so-called green taxes. The objective of these green taxes is to address environmental issues while simultaneously substituting traditional taxes (such as income tax, contributions, etc.), with the overall fiscal burden remaining unchanged and without reducing the taxing power of taxpayers who meet stringent environmental standards.

Classifying all forms of taxes that can be considered green taxes presents challenges. Moreover, even for the same type of tax, significant variations exist regarding the determination of the tax base, tax exemptions, tax rates, and other factors. At the EU level, energy taxes have been harmonized, while other forms of taxation are subject to national legislation, resulting in significant differences among EU member states. For instance, taxes on motor vehicle use are not harmonized across EU member states.

The European Commission defines three main types of green taxes: a) energy taxes, b) motor vehicle taxes, and c) taxes on pollution and resource use. Energy taxes are levied on transportation fuels (gasoline, diesel), fuel oil, natural gas, coal, and electricity. Green taxes specifically include excise duties on these products, while value-added tax is a form of consumption tax. Motor vehicle taxes encompass taxes on vehicle ownership and usage, ranging from cars to airplanes, as well as road tolls and other transportation-related taxes (e.g., air traffic taxes). Pollution and resource use taxes cover various emissions to air and water, solid waste disposal, noise pollution, and specifically, taxes on the extraction and utilization of natural resources.

In most developed countries, energy taxes are the most important. Taxes on natural resources, pollution, and motor vehicles represent a much smaller tax source. Energy tax at the EU27 level generates average tax revenues of 1.5-1.8% of GDP, tax on motor vehicles 0.5% of GDP, and tax on natural resources and pollution 0.1% of GDP. The EU is the world leader in green taxes. Data on the share of green tax revenues in GDP from 1995 to 2020 by EU countries are shown in the table below.

Table No. 1: Revenues from green taxes in the period 1995 - 2020 in EU countries (% of GDP)

Belgium	2,2	2,5	2,5	2,3	2,3	2,3	2,1	2,0	2,0	2,5
Bulgaria	1,8	1,3	2,4	2,7	2,9	3,0	3,4	3,4	3,0	3,8
Czech	2,7	2,4	2,4	2,4	2,4	2,6	2,4	2,4	2,4	1,9
Denmark	4,4	4,7	5,2	4,7	4,8	4,9	4,6	4,2	3,9	3,1
Germany	2,3	2,2	2,3	2,4	2,7	2,5	2,2	2,2	2,3	1,7
Estonia	1,0	1,6	1,7	1,7	1,9	2,3	2,2	2,3	3,0	2,4
Ireland	3,0	3,0	2,9	2,8	2,3	2,5	2,5	2,5	2,4	1,2
Greece	3,1	3,1	2,7	2,3	2,2	2,1	2,1	2,0	2,0	3,7
Spain	2,2	2,1	2,3	2,2	2,1	1,9	1,8	1,6	1,6	1,7
France	2,5	2,4	2,4	2,2	2,0	1,9	1,8	1,8	1,8	2,1
Italy	3,6	3,4	3,5	3,2	3,0	2,8	2,7	2,7	2,7	3,0
Cyprus	2,9	2,5	2,5	2,7	3,8	3,5	3,4	3,2	2,9	2,4
Lithuania	1,2	2,2	2,5	2,4	2,5	2,7	2,1	2,0	2,3	3,1
Lithia	1,9	2,1	2,9	2,4	2,7	2,3	1,8	1,6	2,0	1,9
Luxembourg	3,0	3,0	2,8	2,8	2,8	2,9	2,5	2,5	2,5	1,3
Hungary	2,9	2,9	3,3	3,0	2,8	2,8	2,8	2,7	2,7	2,1
Malta	3,2	3,5	4,1	3,6	3,3	3,3	3,8	3,4	3,4	2,2
Netherlands	3,6	3,8	3,9	3,9	3,7	3,9	3,8	3,9	4,0	3,1
Austria	2,1	2,4	2,3	2,4	2,7	2,6	2,4	2,4	2,4	2,1
Poland	1,8	1,8	2,1	2,1	2,5	2,7	2,7	2,6	2,6	2,5
Portugal	3,4	3,2	3,3	2,6	3,0	3,0	2,8	2,6	2,5	2,4
Romania	1,8	2,8	3,9	3,4	2,4	2,0	2,1	1,8	1,9	1,9
Slovenia	4,2	4,5	4,1	2,9	3,3	3,2	3,0	3,0	3,6	2,9
Slovakia	2,3	2,0	2,0	2,2	2,4	2,4	2,1	2,0	1,9	2,3
Finland	2,9	3,3	3,4	3,1	3,2	3,1	2,7	2,7	2,6	2,7
Sweden	2,8	3,0	2,9	2,8	2,9	2,9	2,6	2,7	2,8	2,8
EU27	**2,7**	**2,7**	**2,8**	**2,7**	**2,6**	**2,5**	**2,4**	**2,3**	**2,4**	**2,2**
EU17	2,7	2,6	2,7	2,6	2,5	2,5	2,3	2,2	2,3	2,2

Source: Eurostat, 2022.

There are considerable differences in the share of green tax revenues between EU countries. In most EU member states, tax revenues from green taxes range between 2% and 3% of GDP. Six EU countries had a share of green taxes below 2% (Czech Republic, Germany, Ireland, Lithuania, Luxembourg, Spain, and Romania) in 2020. In six EU countries, the share exceeds 3% of GDP (Denmark, Netherlands, Bulgaria, Greece, Italy, Latvia). Despite the growing trend of environmental awareness, the percentage of green tax revenue in GDP in the EU has been declining since 1999 (from 2.7% in 1999 to 2.2% in 2020). In as many as 15 countries, the share of green taxes in GDP decreased. In six countries, it increased, while in other EU countries, it remained unchanged. There are several reasons for this trend of green tax participation. One is other environmental policy instruments that certain governments use besides ecological taxes. Also, rising oil prices increase political pressure, which is why the increase in oil prices is compensated by the reduction of excise duties on motor fuels, and due to the decrease in energy consumption, the share of this type of tax inflows in GDP also falls. All this indicates that in most EU countries, the policy of green tax reform could be more active.

An effective tax reform was implemented in Finland, which was the first to introduce a green CO2 tax in 1990 (Speck and Jilkova, 2009). In the following years, it "greened" its taxes by submitting new green taxes (on solid waste disposal, tax on motor vehicles, tax on cans). At the same time, Finland reduced labor taxes (on personal income) and social security contributions (OECD, 2004). In addition to Finland, among the countries that implemented such reforms are Sweden, Denmark, the Netherlands, Great Britain, and Germany (Andersen, Ekins, 2009). It was noted that in most of these countries, the focus was mainly on the economic dividend and much less on the environmental dividend.

The positive effects of green tax reforms on GDP (economic effects) vary based on their implementation and key characteristics. Alongside the economic dividend, it is crucial to consider the ecological dividend as well. The ecological dividend can be measured by reduced emissions and energy consumption (Siegmeier et al., 2015). It is worth emphasizing that Denmark has made significant progress in environmental protection, while differences in outcomes exist among countries due to varying levels of consistency in implementing green reforms (Sokolovska, 2020).

One of the more regressive taxes is the energy tax, which is also the essential green tax. Because of this type of tax, the green tax reforms are regressive. Energy taxes (e.g., electricity) are much more regressive than transport taxes, as the latter relates to the ownership of a means of transport. At the same time, the former applies to all population groups. In addition, the electricity tax affects the poor not only because of the introduction of the tax itself but mainly because people with low incomes live in poorly insulated buildings, often with old thermal storage furnaces. Families with small children and older people, who usually need heating throughout the day, are also frequently affected.

Effectively addressing regression issues at the household level is critical to gaining broader public support for green tax reform. In order to reduce the regression problem, EU countries generally use two measures: 1) exemption of specific population groups from taxation (ex-ante) (e.g., lower tax rates) and 2) transfers to affected groups (ex-post). The problem with the first measure is a reduction in the effectiveness of environmental efforts. The second measure, however, makes more sense because it changes the existing behavior patterns of the respondents. In most countries, regression effects are almost completely eliminated through these two measures (West, Williams, 2004; Kosonen, Nicodeme, 2009).

Green taxes in Montenegro

In 2015, Montenegro signed and, after 2017, ratified the Paris Agreement on climate change. This agreement represents one of the main instruments of the fight against the negative effects of climate change at the global level. In the process of joining the EU in 2018, Montenegro accepted the Sofia Declaration and undertook to implement the Action Plan on the Green Agenda for the Western Balkans. The action plan is structured to contain seven essential components of the Sofia Declaration: the fight against climate change, energy, traffic, circular economy, pollution, sustainable agriculture, and protection of nature and diversity. These seven components are classified into five pillars of the plan, namely:

1. Decarbonization
2. Circular economy
3. Cleaning from pollution
4. Sustainable agriculture
5. Protection of nature and biodiversity

Indeed, in this part, we should not forget the fact that to encourage the realization of the goals of the UN 2030 Sustainable Development Agenda, and with the desire to be part of the EU community, Montenegro opened the most demanding and expensive chapter from the implementation aspect several years ago, Chapter 27- Protection environment and climate change. Also, we point out that the National Sustainable Development Strategy was adopted, but in order to achieve the circular economy concept in 2022, the Roadmap for circular transitions of Montenegro was also adopted. Montenegro has made a good step forward, at least in the part of the adopted documents when it comes to tax reform.

The most important segments of the Action Plan refer to the payment of greenhouse gas emissions, plans for the gradual cessation of coal use, regional integration, environmental protection, and pollution control with a deadline of 2030.

Montenegro has started implementing green tax reform following accepted international agreements and conventions. However, although certain forms of green taxes have been implemented, they cannot be considered green in the true sense because they are primarily intended for increasing public revenues and only to a lesser extent for the targeted resolution of environmental problems. It is very difficult to give a complete

and accurate overview of all public revenues that can be subsumed under the green taxes and, therefore, perform their quantification.

The laws that enable the collection of funds in the form of green taxes in Montenegro are the Law on Excise, the Law on Tax on the Use of Passenger Motor Vehicles, Watercraft, Aircraft and Aircraft, and the Law on Hydrocarbon Tax.

The Excise Law regulates the system and introduces the obligation to pay excise duty for excise products. This law stipulates the obligation to pay excise duty on coal that is put into free circulation on the territory of Montenegro. The Excise Law prescribes coal from tariff code CN 2701 as an excise product, which includes: hard coal, briquettes of various shapes, and similar solid fuels produced from hard coal and tariff code 2702: lignite, agglomerated or non-agglomerated, except Nagata. Excise duty on coal (tariff codes CN 2701 and 2702) is paid per gigajoule (GJ) of gross thermal value, the amount of which in the period from January 1 to December 31, 2019, was 0.15 euros, while from January 1, 2020 ., the amount of excise duty for this excise product is 0.30 euros per gigajoule of gross thermal value (Article 53a, Law on Excises). Excise duty is also paid on mineral oils, their derivatives, and substitutes. The type of mineral oil is determined depending on the classification of the product from the customs tariff, that is, concerning the characteristics of individual products. Any product that is sold and used as fuel is considered mineral oil; additives, i.e., extenders added to motor fuels; any other hydrocarbon, which is produced from crude oil and which is sold and used as heating fuel, except for black coal, lignite, peat or biomass. Excise duty is also paid on biofuel. The excise base is the quantity of mineral oils expressed in liters or kilograms. If the quantity unit for excise duty is in liters, the liter is measured at a temperature of + 15°C. The amount of excise duty for this type of product is (Article 52, Law on Excise Duty):

1) leaded gasoline 554 euros per 1000 liters;
2) unleaded gasoline 549 euros per 1000 liters;
3) kerosene used: as motor fuel 330 euros per 1000 liters and for heating 89.7 euros per 1000 liters;
4) gas oils used as motor fuel 440 euros per 1000 liters, as motor fuel for industrial and commercial purposes 259 euros per 1000 liters; for the performance of works on the Bar Boljare highway project - 169 euros per 1000 liters and for heating 207 euros per 1000 liters;
4a) natural gas used: as motor fuel EUR 0 per 1000 liters for industrial and commercial purposes EUR 0 per 1000 liters and for heating EUR 0 per 1000 liters;
5) heating oil 19.5 euros per 1000 kilograms;
6) liquid petroleum gas used as motor fuel is 125 euros per 1000 kilograms and as motor fuel for industrial and commercial purposes, 58.5 euros per 1000 kilograms but also for heating, 26 euros per 1000 kilograms and
7) biofuel 350 euros per 1000 liters

According to the Law on the tax on the use of passenger motor vehicles, vessels, aircraft, and aircraft, the tax on the use of motor vehicles is paid by legal entities and individuals who own registered cars and motorcycles. The tax on the use of motor vehicles is paid annually according to the working volume of the engine, for passenger vehicles from 25 to 1500 euros, and for motorcycles from 10 to 300 euros. The tax on motor vehicles is reduced by 5% for each completed year of the vehicle's age, with the total reduction not exceeding 50% of the total prescribed tax amount (Article 4, Law on Tax on the Use of Passenger Motor Vehicles, Watercraft, Aircraft, and Aircraft). The Law on the Tax on the Use of Passenger Motor Vehicles, Watercraft, Aircraft, and Aircraft specifies that the tax is also paid for the use of watercraft when registering watercraft, as well as for every regular extension of the validity of a navigation license that is carried out following the regulations governing the registration of watercraft objects in the appropriate register.

The tax on the use of vessels is paid upon registration of vessels as well as with each regular extension of the validity of the navigation permit. A ship (yacht or small boat) and a craft for inland navigation used for leisure, sport, or recreation are considered vessels (Article 7, Law on Tax on the Use of Passenger Motor Vehicles, Vessels, Aircraft, and Aircraft). Tax on the use of vessels is paid annually according to the vessel's length expressed in meters, whether the vessel has a cabin or not, and engine power expressed in kW.

Table 2: Tax on vessels

Crafts without a cabin					
If the length of the vessel is in meters			Engine power (kW)		
over	to	to 30	over 30 to 100	over 100	/
5	7	5 €	20 €	40	/
7	10	10 €	30 €	50 €	/
over 10		20 €	40 €	60 €	/
Crafts with a cabin					
If the length of the vessel is in meters			Engine power (kW)		
over	to	to 30	over 30 to 100	Over 100 to 500	over 500
5	7	10 €	20 €	30 €	50 €
7	10	20 €	40 €	50 €	200 €
10	12	30 €	50 €	100 €	250 €
12	16	1,500 €	1,500 €	1,500 €	1,500 €
16	20	2,000 €	2,000 €	2,000 €	2,000 €
over 20		3,000 €	3,000 €	3,000 €	3,000 €

Source: Article 8, Law on tax on the use of passenger motor vehicles, watercraft, aircraft, and aircraft, "Official Gazette of Montenegro," No. 86/2009, 43/2018, and 146/2021.

Also, this law provides for the payment of tax on the use of aircraft and aircraft when registering airplanes and aircraft, i.e., extending the term of validity of the certificate of airworthiness in the aircraft register or aircraft records, which are carried out following the regulations. Tax is paid on aircraft and aircraft when they are used for (Article 12, Law on Tax on the Use of Passenger Motor Vehicles, Watercraft, Aircraft, and Aircraft):

1. Own transportation €

1) sizes up to 6 seats 1.500
2) over 6 to 12 seats 3.000
3) over 12 to 20 seats 4.000
4) over 20 seats 5.000

2. Sports and recreational activities €

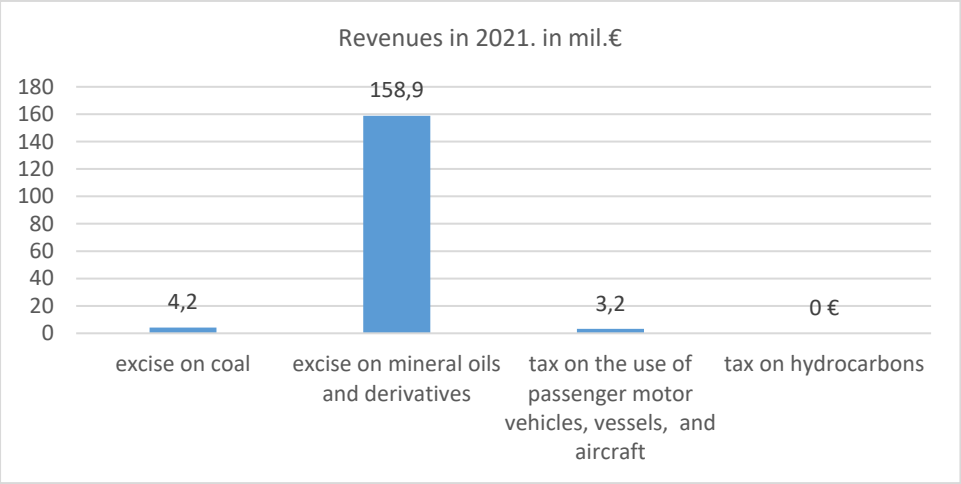
1) sizes up to 4 seats 1.000
2) over 4 seats 1.500

The tax on the use of aircraft, i.e., aircraft, as well as vessels, is reduced by 5% for each completed year of age of the plane, i.e., aircraft, as well as vessels, with the total reduction not exceeding 50% of the prescribed amount of tax.

The Law on Tax on Hydrocarbons in Montenegro was adopted in 2014, introducing the obligation to pay tax on profits from "upstream" operations related to hydrocarbons (oil and gas). "Upstream" operations are considered to be activities related to the extraction of hydrocarbons from deposits, the construction or use of facilities and related equipment for the production and delivery of hydrocarbons, including exploration, drilling, production, transportation, or use of oil and gas for the production of hydrocarbons, but and other activities associated with "upstream operations," except for the transport of hydrocarbons in bulk by rail, aircraft, road vehicles or vessels. The hydrocarbon tax rate is 54% of the tax base (Article 16 of the Hydrocarbon Tax Law). The research that was carried out in the sea of Montenegro did not give results, so the budget revenues on this basis were absent, at least in a medium-term period.

Based on the available data, the following table provides an overview of the collected amounts of green taxes according to their form in Montenegro in 2021.

Graph no. 1: Budget revenues in 2021



Source: Ministry of Finance and Social Welfare - Treasury Directorate

In 2019, Montenegro formed the Eco Fund, whose activity is financing, implementing, and developing programs in the field of preservation, protection, and improving the environment, achieving energy efficiency, and using renewable energy sources. The Eco Fund generates income from eco fees paid according to the "polluter pays" principle - fees charged for the import of substances that destroy the ozone layer, costs for the emission of pollutants into the air, and fees for the creation and deposit of hazardous waste. In 2020, the Government of Montenegro passed the Regulation on activities, i.e., activities that emit greenhouse gases, for which a permit for the emission of greenhouse gases is issued. According to the Decree, as mentioned above, the Eco Fund earns income from fees for the transfer of emission credits in the amount of 0.1% of the minimum price of the emission credit, which is €24/t CO2. In 2020, the Eco Fund generated an income of €498,486, which consisted of income for releasing pollution into the air in the amount of €207,188 and an income based on fees for creating hazardous waste of €283,930. No income was generated based on costs for importing substances that destroy the ozone layer, so these fees were not collected. On the other hand, the Eco Fund planned to invest €300,000 in environmental projects in 2020, but the plan was not implemented.

Conclusion

In modern business conditions, talking about the concept of sustainability is unquestionable. In support of the above, there is evidence of a large number of activities and institutional and legal achievements that are adopted and that go in the direction of establishing and building solid foundations of a holistic approach to balanced development. In that part, the EU particularly expressed interest, which it publicly glorified through a large number of documents and through a clear aspiration to become climate neutral by 2050. Through its institutions, more than a decade ago, the European Union passed a large number of Directives, Regulations, and other normative solutions that set the concept of "greening" as a priority to realize the activities of green transition and climate neutrality

The effectiveness of green taxes can be increased if they are implemented together with other instruments, such as subsidies, labels, certificates of origin, various regulations, etc. The mutual interaction of different measures is crucial, especially in the direction of understanding their complementarity or exclusion. Also, the green tax reform measures should be coordinated with other policies, such as primarily housing, fiscal and sectoral-industrial policies. Although all countries have introduced green taxes to some extent, only a few can be said to have implemented a comprehensive green tax reform. An extensive green tax reform implies that the state reduces the size of other taxes and/or social contributions by the size of the newly introduced green taxes, which further means that the total tax burden remains unchanged.

Montenegro should implement an effective green tax reform, which will enable an increase in green taxes and, accordingly, a reduction in social contributions or personal income tax. Therefore, the ultimate goal should be fiscal neutrality and strengthening the competitiveness of the economy. Like other countries in the region, Montenegro has started a green tax reform in accordance with accepted international agreements and conventions. Although one gets the impression that power holders very quickly assume the obligation to fulfill specific goals, the question remains about the prerequisites for their successful realization. An essential and very complex task facing Montenegro is the decarbonization process. Solving this problem is very complicated when it is known that the energy sector is significantly dependent on the use of coal, and for this reason, significant financial and operational assistance from the EU is needed.

The experience of some countries shows that poor change management can make green tax reform inconsistent and unconvincing. Due to the potential negative impact on competitiveness, the regressivity of green taxes, and the perception that only high taxes can be effective, many green tax reforms still need to be fully implemented. Therefore, many of them still need to achieve the expected goals. A project approach, targeting of complementary measures, transparency, strong public support, dedicated use of collected funds, phased implementation of the reform, a sense of political reality, respect for the international environment, coordination of measures, and effective control, are vital parts of a successful green tax reform.

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RURAL DEVELOPMENT AND POVERTY EVALUATION IN SHKODRA REGION

Ambra Kraja, Department of Mathematics and Informatics, Faculty of Economy and Agribusiness, Agricultural University of Tirana, Koder Kamez, Tirana, Albania, akraja@ubt.edu.al

Abstract: Poverty is a widespread phenomen in all over the world. Measurement and analysis of poverty is needed to identify the poor, the nature and extent of poverty and its determinants and to assess the impact of policies and welfare programs on the poor. Based on Albania Living Standard measurement Surveys (LSMSs) data, after an improvement of the main indicators measuring the poverty from 2002 to 2008, the percentage of population living in poverty has increased by 15.4% from 2008 to 2012 (INSTAT and World Bank, 2013). The purpose of this study is to analyze the impact of employment status, family composition, education of parents, migration, and family residential area on poverty using a questionnaire. The objectives of this research are, to measure the level of poverty of the sample population in Shkodra region to determine the potential factors that impact poverty and to evaluate their impact on the level of the household's welfare and poverty status of the household. The data were collected during September 2020, and direct interviews were conducted with 240 households living in Postribe municipality. Poverty alleviation efforts should be made to improve the social and demographic characteristics of the households, since the number of the poor is increased in both urban and rural areas. To reduce poverty, great attention must be paid to the manufacturing sector, agriculture and tourism.

Introduction

Poverty is one of the most discussing topics nowadays. It is defined as the lack of quantity of necessary material assets or moneys. It is caused by many factors and brings several effects which influence the lives of people considered to be poor. The influence of the factors varies from one place to another, because many countries have different development possibilities. The influential factors of poverty level are not only economical, but also social, political, cultural, geographical, etc. Measurement and analysis of poverty is needed to identify the poor, the nature and extent of poverty and its determinants, and to assess the impact of policies and welfare programs on the poor. In general, poverty can be expressed as deprivation in well-being. Poverty can be defined both in terms of income deprivation and inadequacies in a number of non-income measures of welfare such as education, health and access to basic services and infrastructure. The focus of this paper was the absolute poverty. Absolute poverty is defined as the inability of people to meet their basic needs. A measure of absolute poverty is the headcount index rate, which indicates the number of people below the poverty line. There exists different line of poverty. For the situation of Albania, where the extension of the informal sector makes the estimation of incomes difficult, more adequate is the poverty line based on consumption expenditures.

During the transition period, Albania has faced many economic, political and social problems. One of these problems is the poverty phenomenon too. Many governments use the direct method to gather the poverty data by using the living standard measurement survey (LSMS). Institute of Statistics in Albania (INSTAT) is using the same method. LSMS is done for 2002, 2005, 2008 and 2012 in collaboration with WB and UNDP. Therefore, since 2012 there are not accurate data related to poverty rates. The survey used for the LSMS is composed with questions related to the demography, education, job, shelter, ownership, family's member etc. Based on the data of 2002, 2005, 2008 and 2012, the respected poverty rate in Albania was 25.4%, 18.5%, 12.4% and 14.3%. In the other hand the extreme poor in 2012 were 2.2% of population, and compared to 2008 it was increased by 1%. Compared with the previous years, the population living in poverty in 2012 was increased in both, rural and urban areas

Even though the poverty is spread everywhere around Albania, it is more dominant in rural areas. People living in rural areas are deprived from many conditions to achieve the minimum standard of living over poverty line. Poverty has particularly affected mountainous region which have lack of investments and infrastructure. In addition, high unemployment rate has been often one on the main reason of the poverty. In Albania, around 14.5% of population live in poverty and form this group of people, around 53% of them live in rural areas.

Literature Review

Poverty still is a critical problem threatening the whole world, and researchers in developed and developing states have been interested in this issue. Many researchers have focused on their studies to the factors affecting poverty. A number of studies have studied the factors that can contribute to one's poverty status. Household level determinants of poverty generally rely on the household level data. Age, gender of the household head and educational level are generally found to be the most important determinants of poverty. Sekhampu (2013) using logistic regression analysis to identify the factors influencing household poverty status found that household size, employment status and age of the household head were significant predictors of poverty. Cuesta-Nepo and Pizzolito (2011) showed that with respect to absolute poverty limit, the effective factors on poverty were age, gender and the level of education. Fouareg and Layte (2003), in their research exhibited that education level and the numbers of household members were effective on poverty. Most of the studies about poverty in Albania rely on the consumption data and thus use the poverty line computed from the Albania Living Standards Surveys data using the cost of basic needs method. In the report of World Bank (2003) about poverty in Albania, results of analysis using LSMS (2002) data confirmed high correlations between education, higher shares of members with secondary and higher, large households, number of children, share of family members unemployed and poverty. In their study, Audet et al. (2006), using LSMS (2002) data, found that the education level of the household's head, household size and residence were significant factors explaining poverty in Albania. In the report of World Bank (2007) was found that poverty was correlated with household size, age and education, using LSMS 2005 data. Mastromarco et al. (2010) found high correlations between gender, low education level, household size and poverty, using LSMS 2005 data. Myftaraj (2011) found the following variables as the key determinants of poverty: household size, residence, education level and age of household head, using LSMS (2008) data.

Results of the study

The study population consists of families living in Shkodra region. Using a simple random sampling, 240 families living in rural area was completed a questionnaire during September 2020. In the questionnaire were included questions about demographics characteristics of the household head such as age, gender, education level, employment status and the sector of employment, and family data such as household size, residence, average monthly income and average monthly consumption expenditures. Also they were asked if they consider themselves poor or non poor.

Table 1: Characteristics of the head of family

Age	%
-35	17.5
36-45	27.5
46-55	28.33
56+	26.67
Total	100.00

Education	%
< 8	6.25
8	53.75
12	35.42
12+	4.58
Total	100.00

Family members	%
1-3	34.17
4-6	60.83
7+	5.00
Total	100.00

Gender	%
Male	81.67
Female	18.33
Total	100.00

Related to the employment status of the head of families we have got the following results, where the majority of them is not employed, 40.42%.

Employment status	**Percentage**	**Frequency**
Self-employed	28.33	68
Employed;	22.92	55
Not employed	40.42	97
Pensionist/Invalid	8.33	20
Total	100.00	240

Annual Income	Self - employed	Employed	Unemployed
0-182000	23	3	12
182000-364000	32	19	78
364000-546000	8	5	37
546000-728000	2	3	12
728000 +	1	0	3
819000-910000	0	0	0
Total	**240**		

According to the distribution, we can see that the majority of the interviewed are unemployed and with low income level. It is clear that this 2 indicators are strongly linked with each other.

When asked about the land they own, the results shows that 166 families (69.17%) have 0-2 dynym, and only 6 (2.5%) have more than 6 dynym.

Land	Percentage	Frequency
0-2	69.17	166
2-4	20.83	50
4-6	7.5	18
>6	2.5	6

Some other results that have come out this survey are as follows:

- About 54% of the households have declared that they have a certificate for the land.
- About 23.33 % (56) of the families in the study have properties.
- Related to the productive assets of the families; 28.75% possess livestock; 3.33% have a truck, 18.33% have a well water, 15% have arboriculture and 2 of them have business shop.
- About 41.5% of the families use improved agricultural inputs.
- About 16% of the families receive remittances.
- Only 5.44 % of the families take part in community activities and about 35.6% of them have a tendency to save money.
- About 10.13 % of the families have taken a loan at the bank or at other credit institutions.
- About 49.8% of the households have declared that they are poor, and 9.21% that are very poor.
- About 44.35% are unsatisfied with the current situation, and 17.57% are satisfied.

Conclusions

Poverty trends in Albania, based on Albania LSMS surveys data analysis, indicated an overall poverty increase due to global financial crisis and the slow-down of economic growth. The increase of the incidence of poverty was higher in urban area. Poverty alleviation efforts should be made to improve the social and demographic characteristics of the households, since the number of the poor is increased in both urban and rural areas. To reduce poverty, attention must be paid to the manufacturing sector, agriculture and tourism.
The results of this study are descriptive and reflects the real situation of the rural areas of Shkodra. As shown from the data gathered during this study, the Shkodra region and especially the rural areas, suffer from poverty. The majority of the people and not employed and also they do not own any land. Local government should adopt social policies to improve the living conditions of this region. The main policy should be the employment of the local people which should at the end result with an increase in annual income and better living conditions.

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THE IMPACT OF COVID 19 PANDEMIC ON THE WORLD TOURISM

Branislav Dudić 1, Alexandra Mittelman 2, Velibor Spalević 3, Goran Škatarić 4
(1Comenius University, Faculty of Management, Slovakia, Bratislava and Faculty of Economics and Engineering Management, Serbia, branislav.dudic@fm.uniba.sk, 2Comenius University, Faculty of Management, Slovakia, Bratislava, alexandra.mittelman@fm.uniba.sk, 3University of Montenegro, Biotechnical faculty, Podgorica, velibor.spalevic@gmail.com, 4National Parks, Montenegro, goran.skataric@yahoo.com)

Abstract: Tourism is one of the most important industrial sectors for the economy of every country. The tourism sector is one of the most affected economic segments just because of the crisis caused by Covid 19 pandemic. Economic potential of tourism is huge, mainly thanks to the growing standard of living of many countries as well as the continuing globalization and the end of Covid 19 pandemic. Tourism makes the multiplied effect of the sector of the future. We can state that the influence of Covid 19 pandemic on the tourism is much worse than the global financial crisis in 2008. Covid 19 pandemic has brought the loss of more than 100 million jobs and some countries suffered the impact of the pandemic more seriously than others. Tourism has suffered global losses in the amount of almost 4.5 trillion dollars and GDP from tourism dropped by 49.1% in comparison with the year 2019. Nowadays, society has started to learn to live with this negative phenomenon. Information-communication technologies are integrated to the tourism sector. New trends that appeared in tourism during Covid 19 pandemic is „ digital green pass "without which it is not possible to travel.

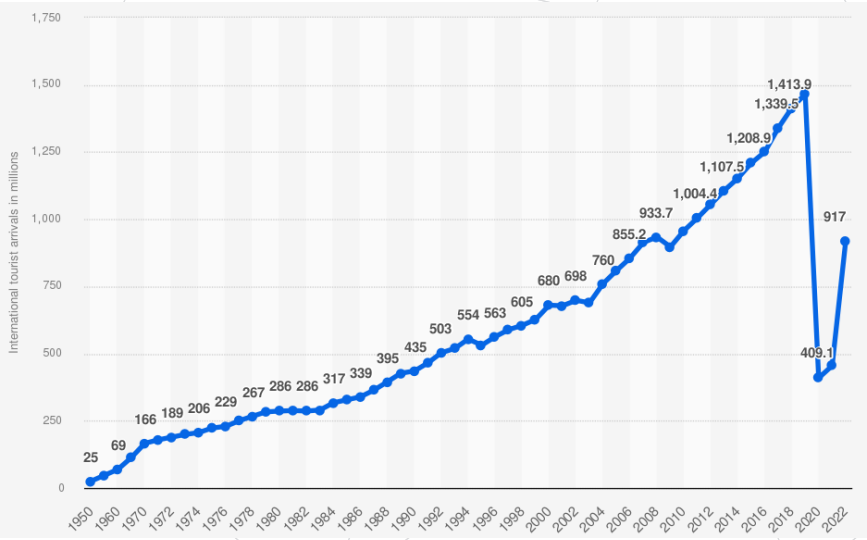
Keywords: Tourism, COVID-19 pandemic, active tourism, international tourism.

Introduction

Nowadays, the tourism sector is widespread very much. Tourism is one of the important industrial sectors for the economy of every country. Service sphere offered by tourism in all developed countries represents two thirds of the share of the world's economy, now.

The United Nations World Tourism Organization - UNWTO, defines the word tourism as the movement of people to certain places outside their common work and personal life, whose motivation is social, cultural, or economic character.

Number of international tourist arrivals worldwide from 1950 to 2020



Source: UNWTO. (November 27, 2021). Number of international tourist arrivals worldwide from 1950 to 2020 (in millions) [Graph]. In *Statista*. Retrieved January 21, 2022, from https://www.statista.com/statistics/209334/total-number-of-international-tourist-arrivals/

The number of international tourist arrivals worldwide bounced back in 2022 after dropping sharply with the onset of the coronavirus (COVID-19) pandemic. Despite the significant annual increase, international tourism

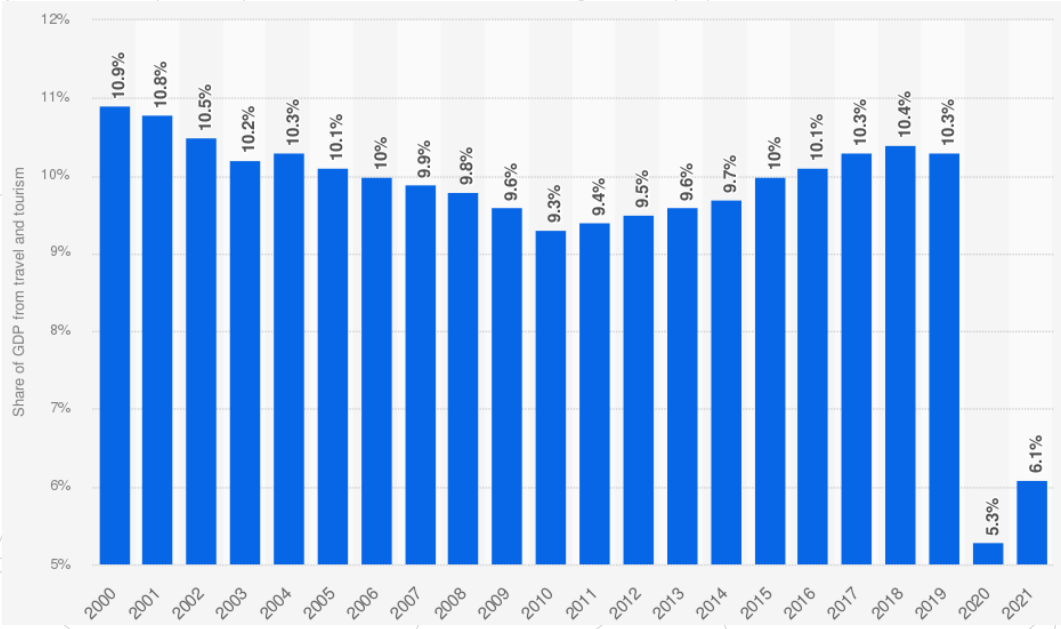
arrivals remained below pre-pandemic levels, totaling approximately 917 million in 2022. In the first year of the health crisis, inbound tourism arrivals worldwide had declined to roughly 409 million, the lowest figure recorded since 1989 (Statista 2022).

World tourism where arrivals and departures of visitors belong, reached in 2019 the highest number of 1.41 trillion visits. March 2020, the start of Covid 19 pandemic was a turning point for the tourism sector. International tourism fell by 56% during the first months of the year 2020, what meant the loss of 320 billion dollars for the world's economies. To compare, UNWTO states, that the mentioned statistics represent three-times higher the value of the loss of world economy during the global economic crisis in 2009.

Tourism is the open system created by offer and demand which is in the close interaction with economic, ecological, legal, technological, political, cultural, and social environment. Demand for tourism represents then the willingness of a visitor in tourism to change certain amount of goods in tourism for certain amount of money, i.e., to gain these goods for money.[5] Offer and demand of travel market are closely connected to the changed lifestyle of people what was shown during Covid 19 pandemic. Tourism has suffered global losses in the amount of almost 4.5 trillion dollars, where GDP from tourism dropped by 49.1% in comparison with the year 2019.

As tourism belongs to the most affected areas by the Covid 19 pandemic, governments in the concerned countries have also paid special attention and support to this sector. An effectively functioning public administration in this field is one of the factors supporting economic growth, job creation, and a prerequisite for the development and implementation of policies that build trust, support investment, and sustainable development (Stoličná, Barjaková, 2021)[6].

Share of the total gross domestic product (GDP) generated by travel and tourism worldwide from 2000 to 2021



Source: WTTC. (April 25, 2022). Share of the total gross domestic product (GDP) generated by travel and tourism worldwide from 2000 to 2021 [Graph]. In *Statista*. Retrieved May 01, 2023, from https://www.statista.com/statistics/1099933/travel-and-tourism-share-of-gdp/

[5] KASPAR, C. Základy cestovného ruchu. 1. vyd. Banská Bystrica: Ekonomická fakulta UMB, 1995. 142 s. ISBN 80-901166-5-5.

[6] Stoličná Z., Barjaková J. (2021) The Possibilities of the Optimization of Managing Organizations of Education Sector. In: Bilgin M.H., Danis H., Demir E., Karabulut G. (eds) Eurasian Business and Economics Perspectives. Eurasian Studies in Business and Economics, vol 20. Springer, Cham. https://doi.org/10.1007/978-3-030-85304-4_6

Travel and tourism accounted for 6.1 percent of the global gross domestic product (GDP) in 2021, denoting an increase over 2020 but not catching up with the figures reported prior to the coronavirus (COVID-19) pandemic. Overall, the total contribution of travel and tourism to the global GDP amounted to roughly 5.8 trillion U.S. dollars in 2021.

We should understand tourism as an industry that provides all services connected to travelling and that can be divided into the following sectors:

- Accommodation services sector: providers of accommodation services from hotel chains to private small B&Bs etc.
- Transport sector: air transport, ship transport, railway transport, automotive and bus transport, rental services, and intermediaries of car rentals
- Attraction sector– national parks, cultural and historical places and curiosities, botanical gardens, sports centres, etc.
- Organization sector– includes national tourism head-offices, regional centres, tourism associations, etc.
- Intermediaries sector -– tour operators, travel agencies, agencies, seasonal intermediaries, or agents, organizations of conferences, etc.

Tourism has significant meaning for the economy of a country

We range tourism into the most important sectors of economy, and it significantly contributes to the growth of economy. Economic potential of tourism is huge, mainly thanks to the growing standard of living of many countries as well as the continuing globalization and the end of Covid 19 pandemic. Tourism makes the multiplied effect of the sector of the future. Europe is thanks to the diversified offer of destinations, the most visited region of the world. There is still growing number of visitors, mainly from China, but also from other quickly developing markets like Russia and India.

Covid 19 pandemic has consequences connected to European tourism that has been weakened and has problems like old devices, complexity of the sector intervening to various fields, relative uniformity of tourism products, etc.

There are various groups of tourism:[7]

1. Recreation tourism

- Holiday stay and suburban recreation
- Spa (healthcare) tourism

2. Cultural tourism

- Educational tourism
- Alternative tourism
- Religious tourism

3. Sport and experience tourism

- Tourism with active and passive sports activities

4. Economically oriented tourism

- Business tourism
- Congress tourism
- Exhibitory and fair tourism
- Incentive (stimulation/motivation) tourism

5. Socially oriented tourism

[7] Matušíková, D. 2013:Základy cestovného ruchu pre manažérov: skriptá pre predmet Základy cestovného ruchu. Prešov: Bookman, 2013. 125 s. ISBN 978-80-89568-75-8.

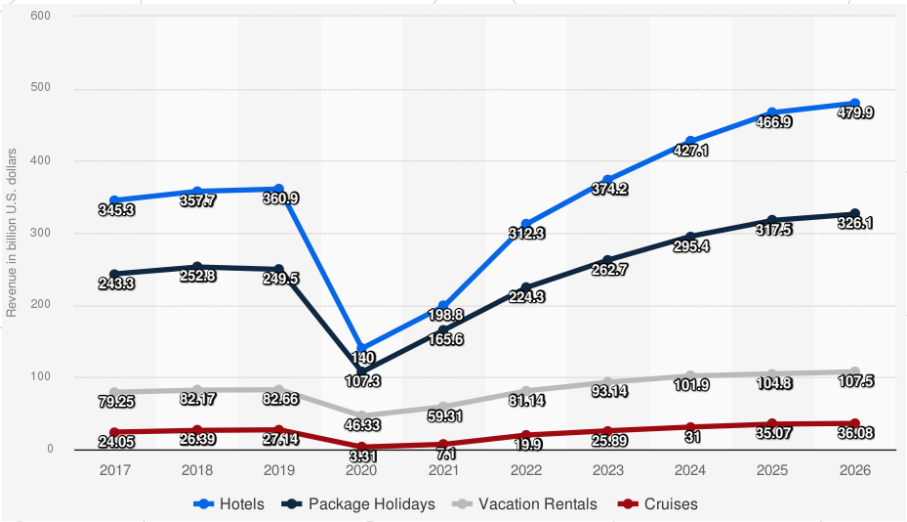
- Visits of relatives
- Club tourism
- Action tourism

6. Politically oriented tourism

- diplomatic and congress tourism
- tourism connected to political events

Tourism brings for the economy of the country relatively high revenues. Visitors who come to foreign country buy different services as accommodation, restaurant services, transport services and they also can buy food, clothes, they pay for various tourism events and for medical services what is considered the sale on the international market.

Revenue of the global travel and tourism market from 2017 to 2026, by segment



Source: Statista. (2022). Revenue of the global travel and tourism market from 2017 to 2026, by segment (in billion U.S. dollars) [Graph]. In *Statista*. Retrieved May 01, 2023, from https://www.statista.com/forecasts/1238973/revenue-in-the-travel-and-tourism-market-worldwide

In 2020 the revenue from the global travel and tourism market crashed due to the Covid-19 pandemic and the resulting quarantine restrictions. However, after dropping by over 400 million U.S. dollars since 2019 the global travel and tourism market already began to recover generating a revenue in excess of 430 billion U.S. dollars, an increase of over 100 billion U.S. dollars since 2020. Estimations of the Statista Mobility Market Outlook say that by 2022 the revenue will reach over 600 million U.S. dollars and by 2023 will return to a pre pandemic amount of over 730 million with hotels being the main contributing segment to this increase (Statista 2022).

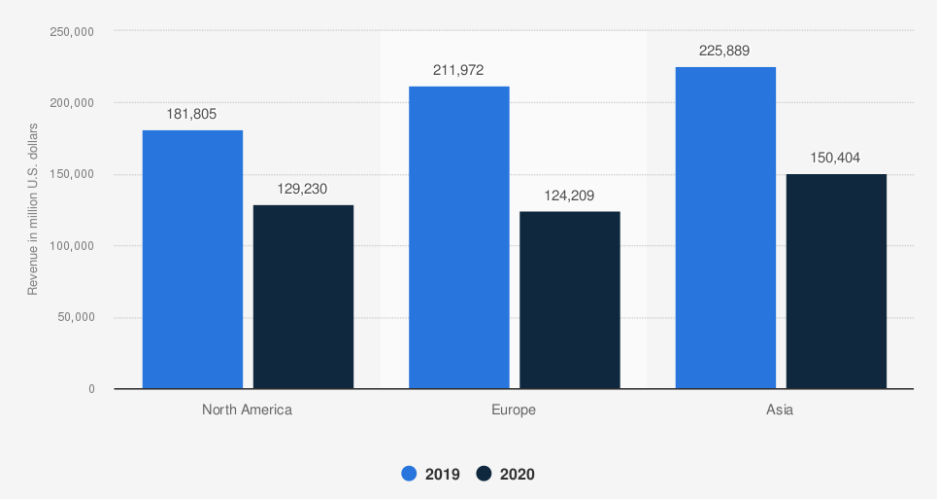
Influence of the pandemic on the tourism

The COVID-19 pandemic has paralyzed so far not only the world economy but also the domestic environment. Europe is facing one of the biggest declines in its history (Stoličná, Pinke, 2021)[89]. COVID-19 pandemic, which has influenced the performance of all companies in tourism and at the same time this sector has suffered significant damages. It is mainly the gastronomy field hotel industry and tourism. In the fight against the pandemic, countries rely on the domestic tourism which represents so called the tool for decreasing poverty,

[8] Stoličná Z., Pinke L. (2021) A Year in the COVID-19 Pandemic. In: 34th EBES conference - program and abstract book 1. vyd. – Istanbul (Turecko) : EBES : Eurasia Business and Economics Society, 2021. – ISBN 978-605-80042-4-5, s. 33-33

creating new jobs, development of infrastructure and mainly the tool for the support of the economic growth. Economic importance of domestic tourism lies in its capability to return the used money back to economy of the specific country and to secure more vital and prosperous economics

Forecasted change in revenue from the travel and tourism industry due to the coronavirus (COVID-19) pandemic worldwide from 2019 to 2020, by region *(in million U.S. dollars)*

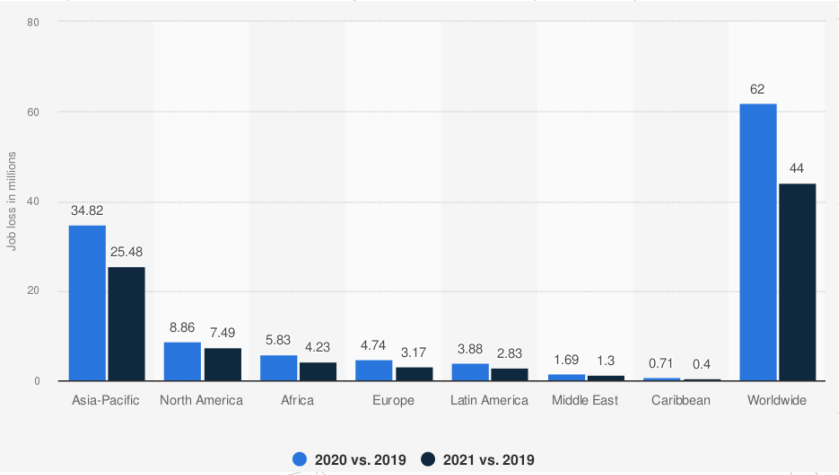


Source: Statista. (March 11, 2020). Forecasted change in revenue from the travel and tourism industry due to the coronavirus (COVID-19) pandemic worldwide from 2019 to 2020 (in million U.S. dollars), by region (in million U.S. dollars) [Graph]. In *Statista*. Retrieved January 21, 2022, from https://www.statista.com/forecasts/1103431/covid-19-revenue-travel-tourism-industry-region-forecast

According to the Mobility Market Outlook on COVID-19, the revenue for the travel and tourism industry in Europe will be the most affected by the pandemic, decreasing from 211.97 billion U.S. dollars in 2019 to roughly 124 billion U.S. dollars in 2020.

Economic activity of almost all entrepreneurial subjects stopped repeatedly for some months, companies went bankrupt, people lost their jobs. Socialization and meeting of people stopped, too.

Forecast employment loss in the travel and tourism industry due to the coronavirus (COVID-19) pandemic worldwide in 2020, by region



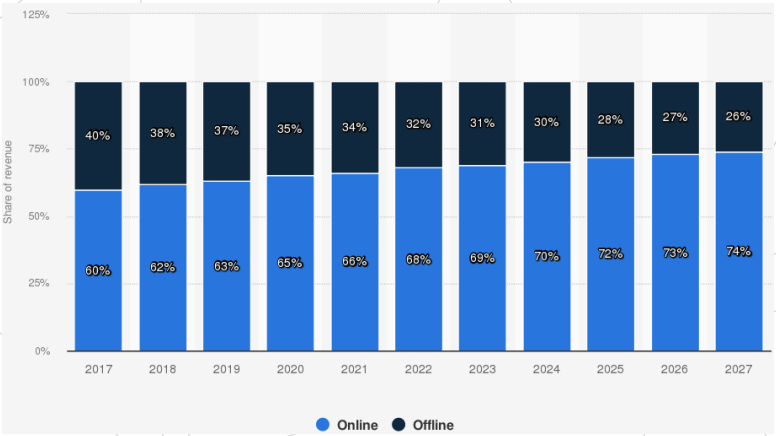
Source: WTTC, & LinkedIn. (April 24, 2020). Forecast employment loss in the travel and tourism industry due to the coronavirus (COVID-19) pandemic worldwide in 2020, by region (in millions) [Graph]. In *Statista*. Retrieved January 21, 2022, from https://www.statista.com/statistics/1104835/coronavirus-travel-tourism-employment-loss/

Due to the impact of the coronavirus (COVID-19) pandemic, it was estimated that the global travel and tourism market had lost roughly 62 million jobs in 2020. While this scenario improved in 2021, the sector still reported around 44 million fewer jobs worldwide compared to 2019. Overall, the Asia-Pacific region recorded the most significant employment loss due to the COVID-19 pandemic, with nearly 25.5 million fewer travel and tourism jobs in 2021 compared to 2019 (Statista 2023).

Online technologies in tourism

Information-communication technologies are integrated into the tourism sector. In tourism, integration of modern technologies enables simpler and more effective approach for reaching its strategic goals of modern future. Nowadays, we can observe the growth of popularity in technologies mainly for processing data and modern ICT a Smart technologies. Online technologies are presently the most widespread type of technologies applied in tourism. It serves mainly for the collection and sharing of information.

Revenue share of sales channels of the global travel and tourism market from 2017 to 2027



Source: Statista. (2023). Revenue share of sales channels of the global travel and tourism market from 2017 to 2027 [Graph]. In *Statista*. Retrieved May 01, 2023, from https://www.statista.com/forecasts/1239068/sales-channels-travel-tourism-worldwide

As estimated by the Statista Mobility Market Outlook, more than two-thirds of the revenue in the global travel and tourism market came from online sales channels. While the online segment generated roughly 60 percent of income in 2017, online sales channels were expected to account for 69 percent of the revenue in the travel and tourism market worldwide in 2023 (Statista 2023).

Digital Green Covid pass in tourism

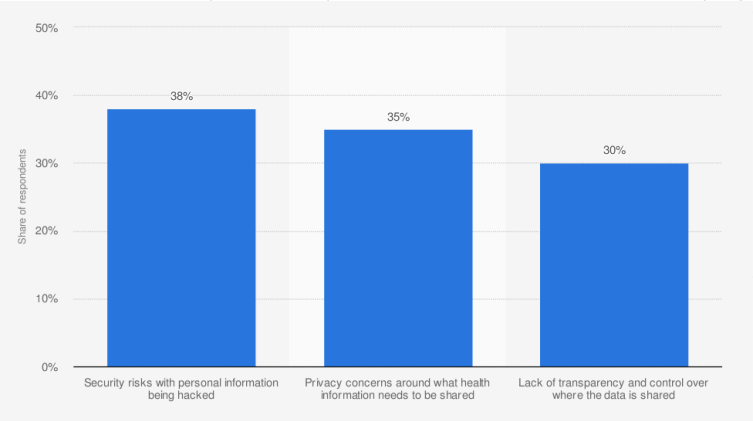
In the pandemic era, it is possible to travel only with the digital Covid pass or „ digital green pass "which represents that a person was vaccinated against the COVID-19 disease, had negative result, or overcame that disease. Every owner of digital green pass has the equal rights when travelling as citizens of the visited member state. Digital green pass includes necessary basic information as name, surname, date of birth, issuing state and unique identifier (online).

Except of this digital green pass includes:

- confirmation about vaccine with the type of vaccine, its manufacturer, number of doses and date of vaccination.
- Certificate of recovery – date of positive test result, who issued the certificate, date of issue and validity date
- Certificate about test made – type of test, date, and time of test, testing facility and result

Certificates are issued and are controlled in the digital format to be able to see them in smartphones or to print them. They include QR code where necessary essential data as digital signature are entered.

Main concerns of travellers related to the use of digital health passports during the coronavirus (COVID-19) pandemic worldwide

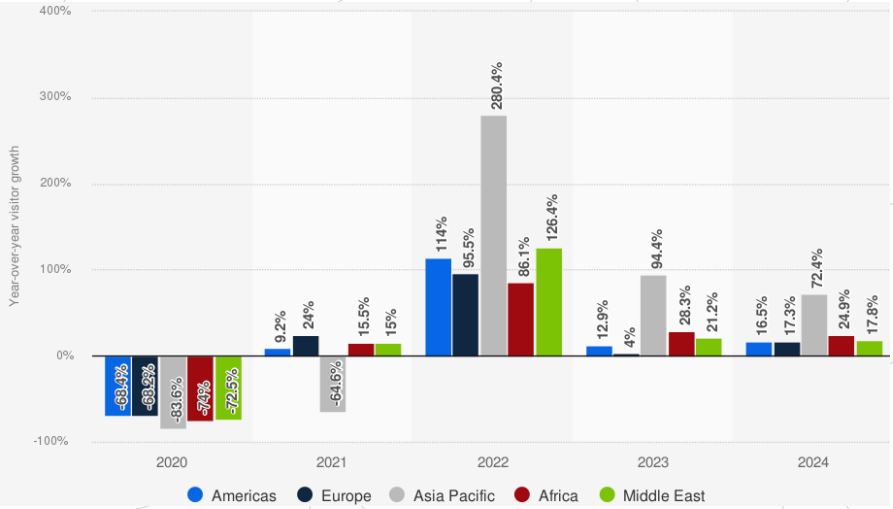


Source: Amadeus. (April 7, 2021). Main concerns of travellers related to the use of digital health passports during the coronavirus (COVID-19) pandemic worldwide as of February 2021 [Graph]. In *Statista*. Retrieved January 21, 2022, from https://www.statista.com/statistics/1228682/travelers-concerns-for-digital-health-passports-worldwide/

As the coronavirus (COVID-19) pandemic disrupted normal travel in 2020, several countries started to discuss the introduction of digital health passports in 2021, aiming to facilitate travel during the health crisis while minimizing the risk of spreading the virus. These passes were intended to be digital certificates issued on mobile apps to travellers who had been vaccinated against COVID-19, recently tested negative, or recovered from a COVID-19 infection. A February 2021 study asked travellers worldwide about their main concerns related to the use of digital health passports. Roughly 38 percent of respondents expressed concerns linked to security risks with personal information being hacked. Meanwhile, 30 percent of the survey sample was worried about the lack of transparency and control over the shared data. (Statista 2023).

We range COVID-19 into the factors of macroenvironment because it affects companies from the external environment, and it influences them to a large extent. After the termination of Covid 19 pandemic in 2022 and 2023 tourism will be widely opened, touristic destinations will be filled again as for example hotels, restaurants, attractions, bars, museums and cultural events.

Inbound tourism visitor growth worldwide in 2020, with a forecast until 2024, by region



Source: European Travel Commission. (February 7, 2023). Inbound tourism visitor growth worldwide in 2020, with a forecast until 2024, by region [Graph]. In Statista. Retrieved May 01, 2023, from https://www.statista.com/statistics/274010/inbound-visitor-growth-forecast-worldwide-by-region/

The volume of inbound travelers worldwide is expected to grow in 2023 and 2024, following a sharp drop with the onset of the coronavirus (COVID-19) pandemic and a rebound in 2022. As forecast, the Asia Pacific region is predicted to report the highest annual increase in 2023, with inbound travelers rising by around 94 percent over the previous year (Statista 2023).

Conclusion

The outbreak of COVID-19 pandemic caused that tourism and preferences of customers significantly changed. Innovations and modern technologies significantly change the process of functioning of the provision of services in tourism. In the interest of keeping competitiveness, companies acting in tourism must follow new trends and apply innovations in their performance. Innovation functions that can be proposed are online workshops on digital platforms as for example Microsoft Teams, Zoom, Meet, or livestream on Instagram, Facebook, or YouTube etc.

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OUTPUT AND PRODUCTIVITY GROWTH IN MONTENEGRO FROM 2007 TO 2021: THE SECTORAL APPROACH

Maja Baćović, PhD, Full professor, University of Montenegro, Faculty of Economics Podgorica, Montenegro, majab@ucg.ac.me

Abstract: Structural changes have occurred in Montenegro in recent decades. Once an industry-driven economy, Montenegro become a service-oriented economy in the XXI century. Historically, Montenegro had lower labour productivity and TFP growth rates than developed countries. While being a member of the SFR Yugoslavia (from 1945 to 1991), the average annual TFP growth rate in Montenegro was the lowest among federal republics. In recent decades, TFP growth has also been lower than in other Western Balkan countries. Labour productivity is also significantly lower than the average in the EU (27) (on average, 27% of the EU (27) average in the period 2007-2021), but it increased by 28% in the fifteen years (2.1% average annually). The analysis at the economic activity level shows that the most significant increase in labour productivity was observed in the energy sector (79%), science, technical, and business services (51%), trade (49%), mining (35%), manufacturing (34%), housing and catering (33%), construction (25%), transportation and communication (20%) and finance and insurance (19%). Labour productivity decreased in the agriculture (-15%), water and communal waste (-8%), administration (-17%), education (-9%), health (-3.6%), arts (-14.4%) and other services (-30.1%). By applying the growth accounting method, we decomposed the GDP growth rate for 2007-2021. The average annual GDP growth was 1.7%, capital stock growth was 1.8%, TFP growth was 1.12%, and employment growth was slightly negative. Lower productivity (labour and total factor productivity) compared to high-income and several medium-income European economies is an issue to be considered carefully. Among other determinants, this is influenced by insufficient technological development, quality of education, qualifications, and workforce expertise, and inadequate management and organization in companies. On the path of long-term stable growth, the Montenegrin economy faces a series of challenges, which require improvements for the economy to keep pace with the growing number of developed countries in Europe.

Keywords: Output growth, Labour productivity, TFP, Sectoral approach

Jel code: O47, O57

1. Introduction

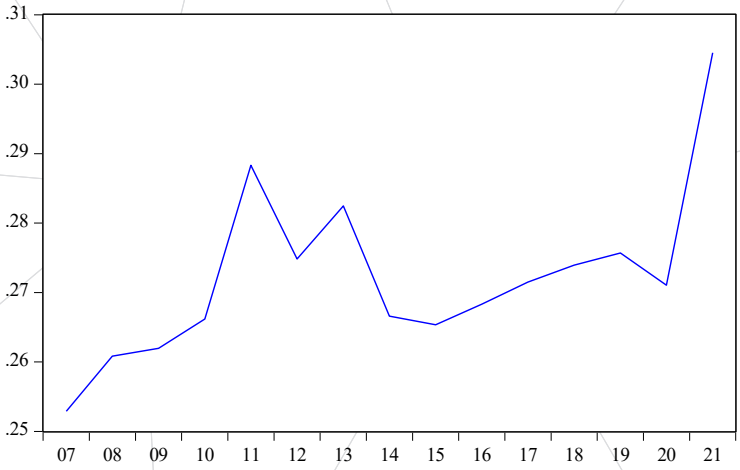
Structural changes have occurred in Montenegro in recent decades. Once an industry-driven economy (second half of the XX century), Montenegro become a service-oriented economy in the XXI century. The share of industry in the social product in the late eighties (XX c) reached 35%. Since 2000, the share of industry in GDP has declined from 17.4% (2000) to 11.2% (2007) and further to 10.4% in 2021. The share of gross value added in the services sector increased from 56.4% of GDP (2007) to 60.8% in 2021 (share in total gross value added increased from 71% to 72%). In addition to the overall expansion of the services sector, the share of gross value added in public services (government administration and defence, education, and health) in GDP increased from 12.9% (2007) to 15.6% (2021).

The expansion of the service sector and its growing relevance lead to the question of its impact on long-term growth, the most important of which is its impact on productivity. Bauer et al. (2020) studied labour productivity in the EU15, focusing mainly on service-based economies, and found that productivity growth in Europe is sluggish, with structural changes significantly affecting long-term labour productivity growth. The empirical analysis of OECD countries presented in OECD (2018) stresses that the shift to services, although moderate, persistently influences a decline in productivity growth. The analysis (OECD, 2018) shows that, on average, across OECD countries, labour productivity is about 40% lower in market services than in manufacturing, while TFP growth is also lower in services, averaging 0.7% per year against 1.4% in manufacturing.

Historically, Montenegro had lower labour productivity and TFP growth rates than developed countries. While being a member of the SFR Yugoslavia (from 1945 to 1991), the average annual TFP growth rate in Montenegro (1952-1987) was -1.2%, while in Slovenia, it was 1.5%. Labour productivity (average annual value in the period 1952-1987) was two and a half times lower than in Slovenia. In the last decades, TFP growth in Montenegro was also lower than in other Western Balkan countries (Baćović, 2021).

Montenegro's GDP per capita of € 8,000 in 2021 equals 24.6% of the EU (27) average. Labour productivity measured as output per worker in Montenegro is also significantly lower than average in the EU (27). Data from 2007 to 2021 shows that labour productivity (GDP in constant 2010 prices per employee) in Montenegro is at the level of 27% of the EU(27) average, although it has grown since 2007, from 25% to 30% in 2021 (Graph 1).

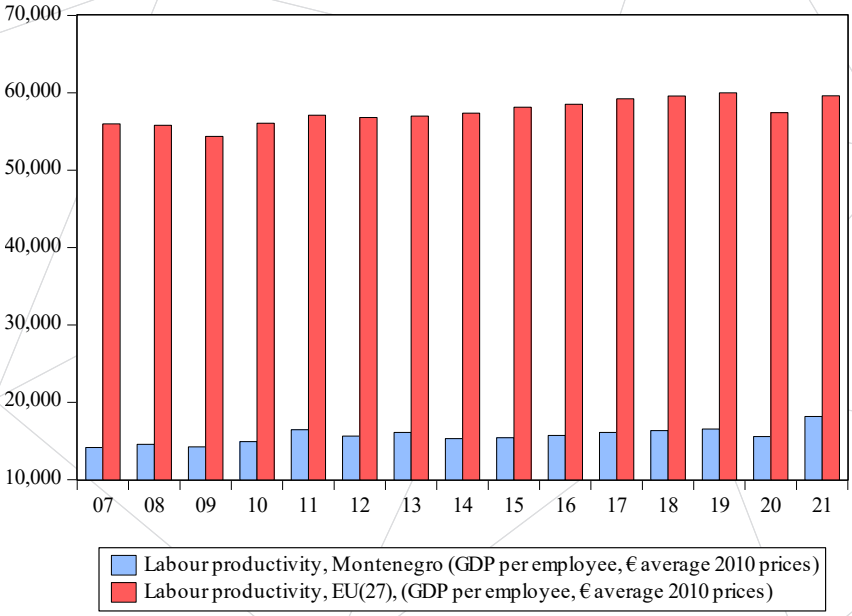
Graph 1. Labour productivity in Montenegro (% of EU (27) average), 2007-2021



Source: Author's calculations based on Eurostat data

The labour productivity in Montenegro has increased from € 14.1 thousand in 2007 to € 18.1 thousand in 2021. In the same period, labour productivity in the EU (27) increased from € 55.9 thousand to € 59.6 thousand (Graph 2). In the above mention period, labour productivity in Montenegro increased by 28%, while in Romania, for example, it increased by 56% and in Bulgaria by 40% (all are medium-income economies).

Graph 2. Labour productivity in EU (27) and Montenegro (€ constant 2010 prices), 2007-2021



Source: Author's calculations based on Eurostat data

Economic analysis generally accepts that productivity growth is a significant source of economic growth and welfare development, measured as labour or total factor productivity (TFP).

The research aims to investigate trends in labour productivity and total factor productivity in Montenegro from 2007 to 2021. We will apply a sectoral approach in the analysis of labour productivity.

This study has six sections. After the introduction, the second part provides an overview of the research available in the literature. The third section provides a detailed overview of labour productivity in Montenegro. The fourth part relates to the empirical results and the research methodology to estimate TFP growth. In the fifth part, the most important determinants of productivity were analyses and their trends in Montenegro. The discussion and conclusions of the research are presented in the final sections of the paper.

2. Literature review

The relevance of TFP and labour productivity in economic growth has been widely studied. Barro (1998) and Nelson (2000) emphasized the importance of TFP growth for economic growth, with technological progress as its crucial determinant. Margaritis, Scrimgeour, Cameron, & Tressler (2005) found that productivity growth was a significant determinant of GDP per capita growth in OECD countries over the last two decades of the XX century but also pointed out that productivity growth in services was lower compared to other sectors. Holtgrewe (2015), quoting Baumol (1967) and Scharpf (1986), stressed that the industrial mechanism of productivity increases and does not apply in the service sector and that in labour-intensive and interactive services, labour productivity cannot be easily increased. Studies by OECD (2018) and Bauer et al. (2020) also confirm the relevance of TFP growth. Antolin-Diaz et al. (2017) show that a decline in the labour productivity growth rate caused a decline in long-run output growth in the United States.

The structural changes have been intensively studied. Morro (2015) emphasized the adverse effects of a growing share of services in GDP on TFP and GDP growth. Foster-McGregor and Verspagen (2017) showed that in the New Member States, the average TFP growth was lower in services than in manufacturing. Amil, Giannoplidis, and Lipp-Lingua (2007) found that knowledge-intensive services. Within EU-27, they recorded more substantial employment and rate of turnover growth than other services. Leon-Ledesma and Moro (2020) investigated the effect of structural transformation on economic growth. They found that the structural transformation from goods to services generates an increase in the real investment rate, a decline in the real interest rate, the marginal product of capital, and the acceleration of investment-specific technologies change as the share of services increases. The post-war US economy's investment output and capital-output ratios display significant upward trends. In contrast, the GDP per capita growth rate displays a mild decline. Stiglitz (2016) emphasized the importance of structural transformation for sustainable economic growth in the United States and recommended the government's active role through active labour market policies. McMillan, Rodrik, and Verduzco-Gallo (2014) found that structural change has reduced growth in Africa and Latin America, with labour moving from low to high-productive sectors. Ngai and Pissarides (2007) found that different TFP growth across industrial sectors predicts sectoral employment changes with a shift in employment away from sectors with a high rate of technological progress toward sectors with low growth. Eventually, all employment converges to only two sectors: the sector producing capital goods and the sector with the lowest rate of productivity growth.

Baćović, Andrijašević, & Cerović Smolović (2022) show that labour productivity and TFP growth in thirty-one European countries (27 EU member countries and the United Kingdom, Iceland, Norway, and Switzerland) from 1995 to 2019 were lower in the service sector than in the goods sector but were higher in knowledge-intensive services than in other services.

3. Output and Labour productivity growth in Montenegro from 2007 to 2021 – an empirical analysis

Montenegrin's economy is dominantly services-oriented, with services participating in gross value added with 72%. The structure of Montenegrin GDP is presented in Table 1.

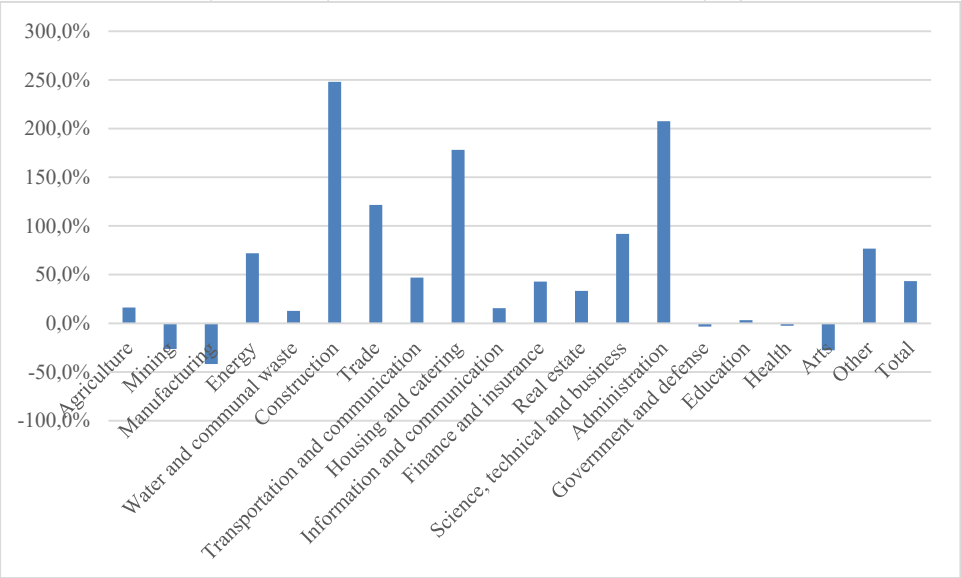
Table 6. Structure of GDP by economic activity, Montenegro, 2007-2021 (selected years)

	2007	2011	2015	2016	2017	2021
Agriculture, wood, and fishery	6.8	8.3	8.0	8.1	6.9	6.7
Mining	1.3	1.2	1.2	1.0	1.4	1.2
Manufacturing	5.5	4.9	4.0	3.8	3.9	4.0
Energy	3.3	3.0	3.7	3.5	2.6	3.5
Water supply	1.1	1.9	1.8	1.8	1.7	1.7
Construction	6.6	5.6	3.5	4.8	6.6	5.1
Trade	14.8	12.3	11.6	12.1	12.3	13.9
Transportation	4.5	4.4	3.6	3.7	4.1	3.8
Housing and catering	4.4	5.3	7.4	7.5	7.2	6.5
Information and communication	5.6	5.7	4.2	3.9	3.8	3.7
Finance and insurance	2.7	4.3	4.8	4.8	4.5	3.9
Real estate	8.7	6.0	6.4	6.2	5.7	5.7
Business, science, and technical services	1.4	2.4	2.9	2.6	2.7	3.8
Administration	0.4	0.9	1.0	1.1	1.9	1.6
Government, defence, and mandatory social insurance	5.8	8.1	7.2	7.3	7.1	7.2
Education	3.4	4.5	4.2	4.1	4.1	4.2
Health	3.7	3.6	3.7	3.6	3.8	4.2
Arts and Culture	0.7	1.0	1.4	1.4	1.4	1.4
Other	0.4	0.5	0.7	0.9	1.0	0.9
Total gross value added	81.0	83.9	81.3	82.2	82.7	83.0
Taxes less subsidies	19.0	16.1	18.7	17.8	17.3	17.0
GDP	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	100.0

Source: Monstat

Total output (gross value added) growth in Montenegro from 2007 to 2021 was 43.3% (Graph 3). The most significant growth was observed in construction (248%), administration (207%), housing and catering (178%), trade (121%), science, technical and business services (91%), the energy sector (72%) and other services (76%). Output growth was negative in mining (-26%), manufacturing (-41%), government and defence (-3%), health (-2%), and arts (-27%).

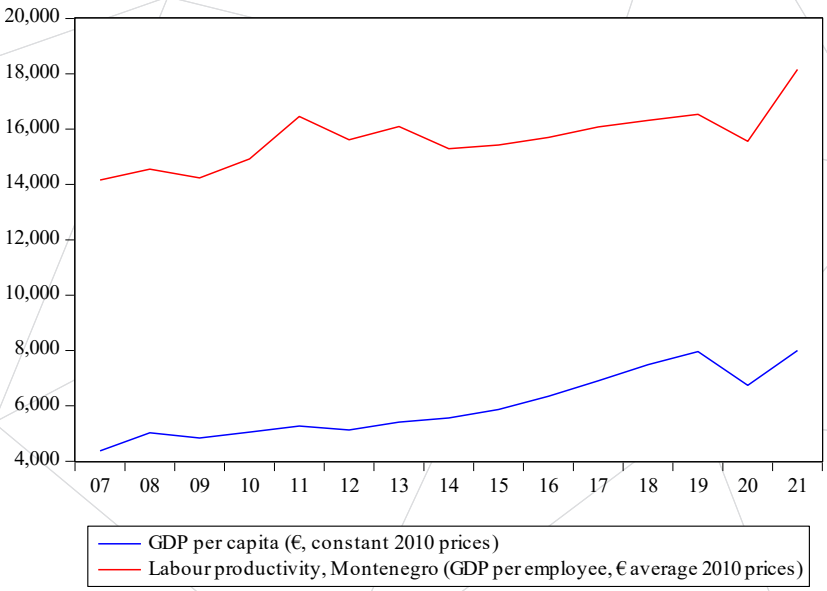
Graph 3. Output (gross value added) growth by economic activity in Montenegro, 2007-2021



Source: Monstat

The labour productivity in Montenegro increased from € 14.1 thousand in 2007 to € 18.1 thousand in 2021, or by 28% in fifteen years (2.1% average annually). In the same period, GDP per capita increased from € 4.3 thousand in 2007 to € 8 thousand in 2021, or by 86% (4.3% average annually).

Graph 4. Labour productivity and GDP per capita in Montenegro, 2007-2021



Source: Eurostat (GDP per capita); Author's calculations based on Eurostat data (labour productivity)

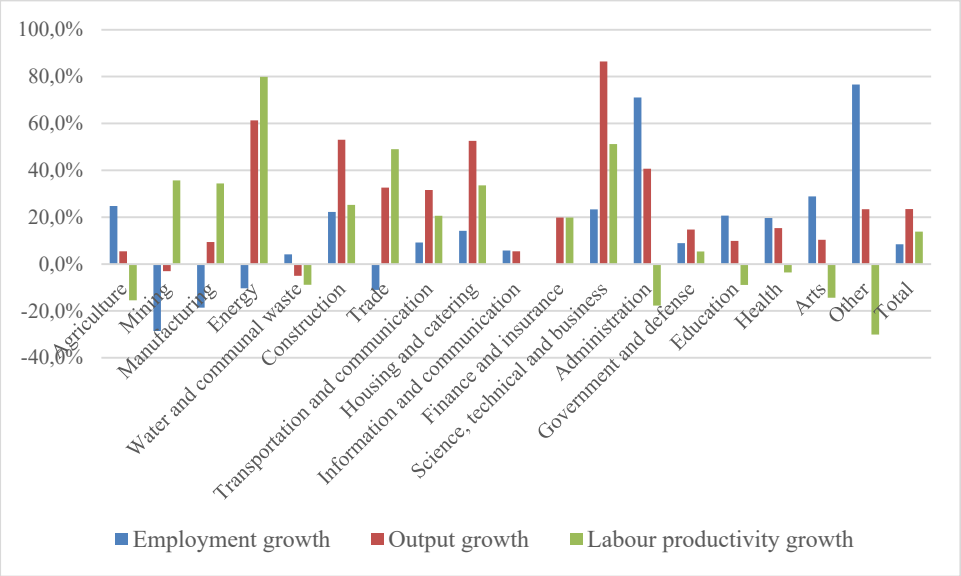
The analysis at the economic activity level (Graph 5), based on the labour productivity, measured as gross value added per employed persons, and the period 2011-2021, shows that total labour productivity increased by 13.8% in ten years. The most significant increase was observed in the energy sector (79%), science, technical and business services (51%), trade (49%), mining (35%), manufacturing (34%), housing and catering (33%), construction (25%), transportation and communication (20%) and finance and insurance (19%). Labour

productivity decreased in the following sectors: agriculture (-15%), water and communal waste (-8%), administration (-17%), education (-9%), health (-3.6%), arts (-14.4%), and other services (-30.1%).

The total gross value added increased by 23.5% in the same period. The most significant increase was observed in science, technical, and business services (86%), the energy sector (61%), construction (53%), housing and catering (52%), administration (40%), trade (32%) and transportation and communication (31%). Below the average, output growth was observed in finance and insurance (19%), government and defence (14.7%), health (15%), manufacturing (9%), arts (10%), education (9%), and agriculture (5%). Negative output growth was observed in mining (-3%).

In the period 2011-2021, employment increased by 8.5%. The most significant increase was observed in other services (76%), administration (71%), agriculture (24%), science, technical and business services (23%), construction (22%), housing and catering (14%), transportation and communication (9%). The number of employees declined in mining (-28%), manufacturing (-18%), the energy sector (10%), and trade (11%).

Graph 5. Output, employment, and labour productivity growth by economic activity in Montenegro from 2011 to 2021



Source: Author's calculations based on Monstat data

4. TFP growth estimation - methodology and empirical results

4.1. Data

The source of data used in the research was the Monstat database. The following indicators were used: Gross Domestic Product in constant 2010 €, gross fixed capital formation (constant 2010 €), and total employment. The capital stock was estimated as data were unavailable, applying the methodology explained in the next section of the paper.

4.2. Methodology

TFP growth was estimated by applying the growth accounting approach.

The starting point is the general specification of aggregate production function:

$$Y_t = A_t F_t(K_t, L_t) \quad (1)$$

The variable Y_t is output or value added in the period t; K_t is the capital stock available at the beginning of the period t; L_t is employment, and A_t is Total Factor Productivity (TFP).

If production function is time differenced and perfect competition and constant returns to scale are assumed, the growth rate of output is equal to:

$$\frac{\Delta Y_t}{Y_{t-1}} \approx (1-\alpha_t^k)\frac{\Delta L_t}{L_{t-1}} + \alpha_t^k \frac{\Delta K_t}{K_{t-1}} + \frac{\Delta A_t}{A_{t-1}} \quad (2)$$

The operator Δ denotes the first difference, and α_t^k is the output elasticity to capital utilized in the period t.

In this research, we applied constant estimates for output to capital elasticity, equal to 0.33, as suggested as a typical value by Romer (2001), on the total economy and sectoral level, assuming that:

$$\alpha_{t,i}^k = \alpha_t^k \quad (3)$$

The data for output and employment are available, but the data on the capital stock must be computed. We applied the perpetual inventory method (PIM), as Berlemann and Wesselhoft (2014) presented. Net capital stock K_t at the beginning of period t can be written as a function of the net capital stock K_{t-1} at the beginning of the previous period t-1, gross investment in the previous period I_{t-1} and consumption of fixed capital D_{t-1}:

$$K_t = K_{t-1} + I_{t-1} - D_{t-1} \quad (4)$$

Assuming geometric depreciation (δ) at a constant rate, the equation can be rewritten as:

$$K_t = (1-\delta)K_{t-1} + I_{t-1} \quad (5)$$

Repeatedly substituting this equation for the capital stock K_{t-1} at the beginning of period t-1 leads to the following:

$$K_t = \sum_{i=0}^{\infty}(1-\delta)^i I_{t-(i+1)} \quad (6)$$

The capital stock in period *i* is a weighted sum of the history of capital stock investment.

In implementing the PIM to construct capital stock data, methodological differences exist, especially regarding the method of the initial capital stock. Berlemann and Wesselhoft (2014) list three different approaches. In the steady state approach, output grows at the same rate as the capital stock; in the disequilibrium approach, in which the growth rate of investment can approximate the growth rate of capital stock; and synthetic time series approach, based on the idea of constructing an artificial, historical time series of investment.

Assuming the steady state,

$$g_{GDP} = g_K = \frac{K_t - K_{t-1}}{K_{t-1}} = \frac{I_t}{K_{t-1}} - \delta \quad (7)$$

The stock of capital in period t-1 is:

$$K_{t-1} = \frac{I_t}{g_{GDP} + \delta}\ . \quad (8)$$

The study assumed steady-state conditions and used output growth. However, as the estimate of the initial capital stock depends crucially on the investment and growth rate of output in a single year (Berlemann & Wesselhoft, 2014), to avoid the risk of short-term investment shock in the initial period, we used the averages of investment for the first three year period (2006-2008), as suggested by Berlemann and Wesselhoft (2014) and average output (GDP) growth rates for the total period from 2007 to 2021. It was decided to use average GDP growth for the total period to avoid business cycles and economic shocks.

4.3. Empirical results

Applying the methodology presented in the previous section, we estimated TFP growth in Montenegro but also decomposed GDP growth into three components: capital stick growth, employment growth, and TFP growth (Table 2).

Table 7. Output growth decomposition in Montenegro, 2008-2021

	GDP growth	Capital stock growth (0.33)	Employment growth (0.67)	TFP growth
2008	6.97%	0.68%	2.84%	3.46%
2009	-5.97%	1.15%	-2.55%	-4.56%
2010	2.70%	0.49%	-1.33%	3.54%
2011	3.18%	0.20%	-4.43%	7.41%
2012	-2.76%	0.11%	1.69%	-4.56%
2013	3.49%	0.08%	0.30%	3.11%
2014	1.77%	0.19%	4.62%	-3.04%
2015	3.33%	0.15%	1.65%	1.53%
2016	2.91%	0.28%	0.75%	1.87%
2017	4.61%	0.75%	1.51%	2.35%
2018	4.95%	1.02%	2.33%	1.61%
2019	3.98%	1.24%	1.78%	0.96%
2020	-16.61%	1.12%	-7.07%	-10.67%
2021	12.26%	0.82%	-2.11%	13.55%
Average	**1.77%**	**0.59%**	**0.00%**	**1.18%**

Source: Author's calculations

Average annual GDP growth in the period 2007-2021 was 1.7%, labour productivity growth was 2.1%, capital stock growth was 1.8%, TFP growth was 1.12%, and employment growth was slightly negative, while the average share of gross investments in GDP was 27% (Table 3).

Table 8. Average annual growth from 2007-2021, selected indicators

	GDP growth	Labour productivity growth	Capital stock growth	Employment growth	Gross investment, % of GDP	TFP growth
Mean	0.017718	0.021664	0.017904	-3.36E-05	0.272386	0.011832
Median	0.032558	0.018602	0.017674	0.016853	0.273525	0.017395
Maximum	0.122602	0.155870	0.037585	0.068894	0.361660	0.135540

Source: Author's calculations based on Monstat data

If we limit the analysis to 2007-2019 (pre-Covid), the average annual output (GDP) growth in Montenegro was 2.42%, while the labour productivity growth rate was 1.64%. The estimated TFP average annual growth was

1.1%, capital stock growth was 1.6%, and employment growth was 1.1%. The average share of gross investment in GDP was 26.5% (Table 4).

Table 9. Average annual growth from 2007-2019, selected indicators

	GDP growth	Labour productivity growth	Capital stock growth	Employment growth	Gross investment, % of GDP	TFP growth
Mean	0.024298	0.016423	0.015990	0.011372	0.265497	0.011403
Maximum	0.069738	0.102832	0.037585	0.068894	0.361660	0.074092
Minimum	-0.059698	-0.050455	0.002347	-0.066132	0.194615	-0.045641

Source: Author's calculations based on Monstat data

5. Determinants of productivity: Institutional development, physical infrastructure, investment in research, and development and education

Based on an extensive literature review, Kim and Loayza (2017) categorized TFP determinants into five components: innovations, education, market efficiency, physical infrastructure, and institutional infrastructure. Their research concluded that "variation of TFP across countries for the last three decades is explained the most by the physical infrastructure index, followed by the education index and the market efficiency index at a similar level, the innovation index and the institutional infrastructure index."

Therefore, we will analyse institutional development, infrastructure, education, and investment in R&D in Montenegro since 2006, or upon data availability.

The institutional indicators used in this study are six essential qualities of a sustainable market economy (EBRD, 2020), looking at whether economies are competitive, well-governed, green, inclusive, resilient, and integrated. We compared the values for 2016 and 2020 for Montenegro and found improvements in all categories (Table 5).

Table 10. EBRD: ATQ scores for six qualities of a sustainable market economy, 2016-2020

	Competitive		Well-governed		Green		Inclusive		Resilient		Integrated	
	2016	2020	2016	2020	2016	2020	2016	2020	2016	2020	2016	2020
Montenegro	5.28	5.6	5.86	6.27	5.08	5.44	5.99	6.07	6.33	6.83	5.84	6.29

Source: EBRD

Indicators of physical infrastructure (rail, road), investment in R&D, and human capital level (measured by tertiary educational attainment) show visible gaps compared to developed countries. Investments in R&D are significantly lower (0.63% of GDP) than the EU average (1.4% in 2017), also educational attainment (share of persons with tertiary education in the total population in thirty European countries was 28.81% in 2019 while 17.5% in Montenegro). Physical infrastructure is also less developed than in most developed European countries. For example, the road density in Slovenia is 1.92 km/km^2, while it is 0.57 km/km^2 in Montenegro (Table 6).

Table 11. Infrastructure and R&D indicators (average from 1996 to 2019, upon data availability)

Average for years available	Railroads density/km^2	Roads density/km^2	R&D, % GDP	Educational attainment, Tertiary 25+, total (%) (cumulative)
Montenegro	0.018	0.57	0.63%	17.5%

Source: Author's calculations based on World Development Indicators data; Knoema

We evaluated the quality of education in Montenegro using the World Bank's estimates of the human capital index (HCI) and some of its components, as presented in Table 7. For the comparisons, we also used data for Slovenia and Switzerland as high-income countries. The data show that the human capital index in Montenegro is significantly lower than in the two developed countries. The quality of education measured with harmonized test scores and learning-adjusted school years is also lower than in the same countries.

Table 12. Human Capital Index and Education Indicators

Country Name	Expected Years of School		Harmonized Test Scores		Learning-Adjusted Years of School		Human capital index	
	2018	2020	2018	2020	2018	2020	2018	2020
Montenegro	12.4	12.8	433	436	8.6	8.9	**0.62**	**0.63**
Slovenia	13.6	13.6	532	521	11.6	11.4	**0.79**	**0.77**
Switzerland	13.3	13.3	524	515	11.1	10.9	**0.77**	**0.76**

Source: World Bank, the Human Capital Index 2018, 2020

In the era of technological progress, frequent job changes, and fluctuations in the labour market, it is necessary to have a workforce with the skills and abilities to react to market changes. Traditional skills and knowledge are changing workers' values and importance, and younger staff have the advantage of having the skills needed to react to the changes. The solution to the lack of a workforce with skills and abilities under existing technological achievements can be seen in constant education and training.

An empirical analysis of a sample of 35 European countries for the period 2006-2021 shows that, on average, 10.8% of the EU (27) population aged 25-64 years participated in education and training programs in 2021, with the highest participation rate observed in Finland and Sweden (30.5% and 34.7%), and the lowest in the Balkan countries (1.8 in Bulgaria and 4.8% in Serbia in 2021, 2.7% in Montenegro and 2.6% in North Macedonia in 2020).

Estimated scores for the list of variables by WEF for the period from 2008 to 2017 The following indicators were analysed: property rights protection, intellectual property protection, judicial independence, wastefulness (efficiency) of government spending, the burden of government regulation, protection of minority shareholders, the strength of investor protection, quality of railroads, quality of roads, quality of electricity supply, institutions, infrastructure, macroeconomic environment, higher education and training, goods market efficiency, labour market efficiency, effects of taxation on incentives to work, technological readiness and innovations, as presented in Table 8.

Table 13. Selected indicators of the competitiveness

	Montenegro	
	2017	2017-2008
Global competitiveness index (rankings), 2008 and 2019	60.8 (73)	-8
Property rights	4.0	**-0.7**
Intellectual property protection	3.6	**0.7**
Judicial independence	3.6	**0.2**
Wastefulness (Efficiency) of government spending	3.8	**0.1**
The burden of government regulation	3.6	**0.6**
Protection of minority Shareholders	3.8	**-0.4**
Strength of Investors' Protection	6.3	**6.3**
Quality of roads	3.5	**1.3**
Quality of railroads	2.8	**0.9**
Quality of electricity supply	4.6	**1.6**

Institutions	3.9	**-0.2**
Infrastructure	4.2	**1.5**
Macroeconomic environment	3.7	**-1.8**
Higher education and training	4.5	**0.3**
Goods market efficiency	4.4	**0.2**
Labour market efficiency	4.2	**-0.3**
Effects of Taxation on Incentives to Work	4.0	**4.0**
Technological readiness	4.9	**0.9**
Innovations	3.2	**0.2**
The tax burden of GDP %	36.3	27.2

Source: World Economic Forum: Global Competitiveness Index 2019, 2017, 2008

Although aggregated competitiveness indicator in Montenegro declined in 2017 compared to its value in 2008, the analysis of the individual indicators shows improvements in most areas, such as intellectual property protection, judicial independence, the efficiency of government spending, the burden of government regulation, the strength of investors protection, quality of roads, railroads, electricity supply and overall infrastructure, higher education, technological readiness and innovations, goods marker efficiency and effects on taxation on incentives to work. The quality of institutions, macroeconomic environment, labour market efficiency, property rights, and protection of minority shareholders were evaluated with lower scores in 2017 compared to 2008.

Conclusion

After the declaration of state independence in 2006, the economy of Montenegro undoubtedly achieved positive results in many economic spheres. Income growth, along with the reduction of unemployment and wage growth on the one hand and the building of institutions of a modern state on the other, contributed not only to the growth of the standard of living in the economic sense but also to the overall growth of the quality of life in Montenegro, as evidenced by the growth in the value of the human development index. Nevertheless, the period from 2006-2021 was marked by two global crises, the financial crisis of 2007-2008 and the crisis caused by the COVID-19 pandemic in 2020. Both events harmed the economy and slowed down its potential growth.

Lower productivity (labour and total factor productivity) compared to high-income and several medium-income European economies is an issue to be considered carefully. Among other determinants, this is influenced by insufficient technological development, quality of education, qualifications, and workforce expertise, and inadequate management and organization in companies. In addition, low domestic accumulation and dependence on foreign sources of financing are chronic economic conditions. At the global level, the competitive position of the Montenegrin economy has not significantly improved in recent decades, although progress has been made in specific categories. This means that, despite the efforts and results achieved in Montenegro, other countries have achieved more.

Analysing the potential causes of the insufficiently rapid development of Balkan countries, Gligorov (2016) points out the following: "Due to frequent political and institutional changes throughout the 20th century, economic and political interests have not always been simultaneous, which slowed down the process of industrialization; investment in infrastructure was significant but insufficient to support a faster industrialization process; Balkan economies have a history of difficulties achieving macroeconomic equilibrium; underdeveloped entrepreneurial culture and the presence of corruption in economic transactions; internal Balkan integrations are relatively weak. It further indicates that the dominance of small and medium-sized, insufficiently internationalized companies with insufficient capacity and size of the market that would allow the use of the economies of scale slows down or, in a significant number of cases, prevents their growth and growth into large, internationally competitive enterprises."

On the further path of long-term stable growth, the Montenegrin economy will face a series of challenges, which come from the sphere of technology and knowledge (the expansion of new knowledge and technologies in

developed countries, which continuously increases their competitive strength on the global market), the demographic sphere (the aging of the Montenegrin population in 21st century), but also from the institutional and fiscal sphere in Montenegro, which require improvements for the economy to keep pace with the growing number of developed countries in Europe.

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FOREIGN DIRECT INVESTMENT, SUSTAINABLE GROWTH AND BILATERAL INVESTMENT TREATIES

Predrag Bjelić[1], Radovan Kastratović[2], Miloš Rajković[3]
([1]Department of International Economic Relations, University of Belgrade Faculty of Economics, Belgrade, Serbia, bjelic@ekof.bg.ac.rs; [2]Department of International Economic Relations, University of Belgrade Faculty of Economics, Belgrade, Serbia, kastratovic@ekof.bg.ac.rs; [3]Universal Capital Bank AD, Podgorica, Montenegro, milosra@t-com.me)

Abstact: Foreign direct investment is often considered to be an important driver of host-country economic growth. Additionally, the investment is associated with technological upgrading, which can often lead to positive effects on host-country environmental performances. Bilateral investment treaties, which seek to protect and promote foreign direct investment, increasingly include provisions related to environmental protection. This can encourage sustainable investment practices of foreign affiliates. For this reason, the well-defined and implemented bilateral investment treaties can serve as a tool for attracting foreign direct investment that leads to sustainable growth of host countries, by defining instruments for screening out the potentially harmful investment projects and support more sustainable ones. In this paper, we review the state of the literature on the relationship between foreign direct investment and the sustainable growth of host countries. In addition, we explore how bilateral investment treaties can contribute to achieving the goal of sustainable growth through environmental provisions. Finally, we present the results of the empirical study investigating the effectiveness of bilateral investment treaties in the case of Serbia.

Keywords: foreign direct investment (FDI), bilateral investment treaty (BIT), sustainable development, economic growth, environment

JEL classification: F21, F53, Q56

1 Introduction

There has been a rapid increase in the foreign direct investment flows since the 1980s. Foreign direct investment inflows often led to numerous positive effects on the host countries, including technology transfer, higher employment, and economic growth and development. However, the sustainability of foreign direct investment-led growth remains a controversial issue. While it could be argued that the technology transfer and diffusion promoted by foreign direct investment results in the application of the best environmental practices in the host economies, there is also evidence of foreign direct investment inflows being positively affected by lax environmental regulation, which could result in a sort of the race to the bottom.

In this paper, we provide a literature review of these two main stances dealing with the relationship between foreign direct investment and the environment. In addition, we consider the most recent statistical evidence of how foreign direct investment directly affects the development of the renewable energy sectors globally. Thereby, we determined the relative significance of various investment modes as well as the sectorial structure of the investment.

We also conceptually considered how the bilateral investment treaties could modulate the relationship between foreign direct investment and sustainable economic growth. We show how these treaties could serve as a type of mechanism to screen and steer the investment toward more sustainable practices. Thereby, we identified the particularly important sustainable development provisions in the bilateral investment treaties, which are increasingly gaining importance today.

Finally, we consider the case of Serbia in describing how the bilateral investment treaties could be employed to promote foreign direct investment inflows. Additionally, we consider how the standards defined in the bilateral investment treaties could support the implementation of more sustainable practices by foreign affiliates.

The remainder of this paper is structured as follows. In the following section we consider the nexus between foreign direct investment and the environmental performances of host countries. In Section 3, we discuss the implementation of environmental standards in bilateral investment treaties. Section 4 deals with the inquiry into the effectiveness of bilateral investment treaties in promoting sustainable foreign direct investment in Serbia. The final section concludes.

2 Foreign Direct Investments and the Environment

Foreign direct investments will affect the realization of the goals of sustainable development of the host country. If they achieve possible sustainable benefits, then they will be both ecologically sustainable in their effects and sustainable in growth. In order to make the most of the potential for sustainable development of the host country, a proper understanding of the relationship between foreign direct investments and the environment is necessary.

Due to strict domestic regulations and environmental protection, foreign investors move their production to selected countries. On the other hand, the host countries put growth first through their national policies, while sustainable development is neglected. In this way, the host country has more harm than good, because economic growth is based on the degradation of the environment.

During the realization of foreign direct investments, foreign investors are obliged to apply regulations in the field of environmental protection, rational use of natural resources, accounting for environmental protection costs within investment and production costs. If there are deviations, the state should work to prevent, control, reduce and rehabilitate all forms of environmental pollution.

Host countries are most often developing countries that accept FDIs that do not take environmental protection into account. In this way, the degradation of the environment is approved by supporting weak environmental standards. In these countries, "the scale effect is expected to contribute to increased pollution, waste and environmental degradation" (Doytch, 2020).

The results suggest a potentially positive relationship between foreign direct investment and agricultural greenhouse gas production, weakly supporting the pollution haven hypothesis. Such results could also be a consequence of the change in agricultural production technique which intensifies the emissions (Kastratović, 2019).

Many developing countries are trying to secure the inflow of FDI and bridge the development gap. State institutions have double standards, or by loosely applying regulations, they enable endangering the environment. A mild criminal policy is used in favour of foreign investors and signed agreements are violated.

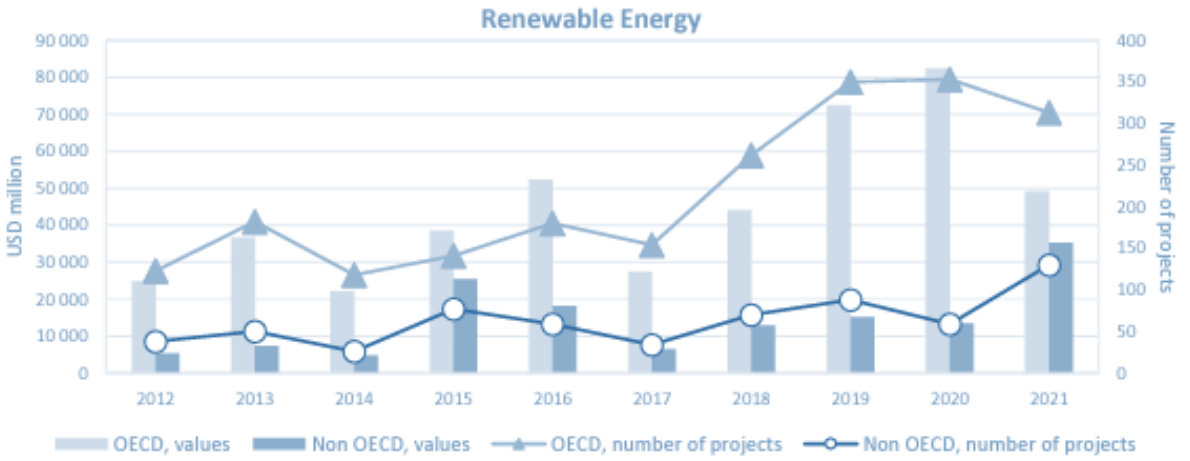
According to Gallagher and Zarsky (2003), foreign direct investment determines three types of greening effects: transfer of clean technologies - more efficient and less polluting in comparison with domestic production; technology leapfrogging – by transferring technologies to control pollution; spillovers to domestic firms – by transferring best practices in environmental management towards affiliates and domestic competitors and suppliers. FDI could be a useful tool in creating an enabling environment for ecologically sound economic and social development. In other words, FDI role is to support productive, social, regulatory and institutional local conditions and capacities (Zarksy and Gallagher, 2003).

Foreign direct investments can have an impact on the environment and, as in most previous cases, both positive and negative effects are possible. If they are accompanied by the transfer of "cleaner" technologies or if production is organized under pressure from consumers or due to adaptation to higher ecological standards of developed countries in a way that is less harmful to the environment compared to the methods applied by local companies, it can be expected that foreign direct investments contribute to the improvement of environmental performance of the host country. If, on the other hand, foreign direct investments are motivated by avoiding stricter environmental regulations in their home country, this may be accompanied by negative environmental effects.

Foreign direct investments can lead to the transfer of tangible technology or intangible technology what means production processes and techniques, knowledge, modern methods that would ensure higher yields.
FDI spillovers are pro-growth because they amplify the transmission of technology to host countries, invest more in infrastructure and expand more trade flows in order to FDI make full effects. FDI is an effective way for technology transfer, which stimulates economic growth of host countries in the economic region.

Relevant spillovers arising from trade and FDI play important roles in achieving economic growth, capital accumulation and economic well-being, providing a path for sustainable development (Zamani and Tayebi, 2022).

Figure 1. Greenfield Investment in Renewable Energy



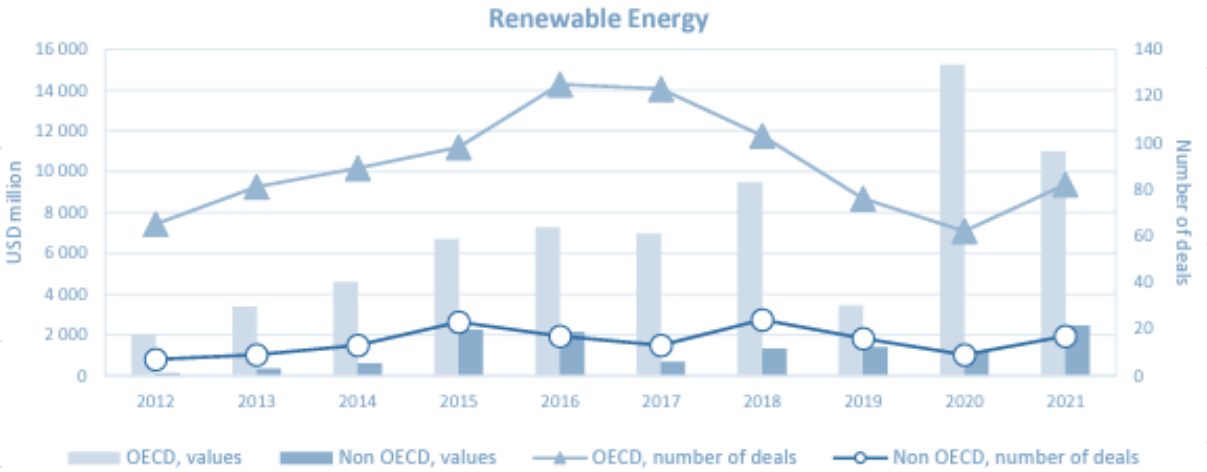
Source: (Knutsson and Flores, 2022)

The last decade is a period of growing trend of FDI in renewable energy sources, as evidenced by the data presented in Figure 1. The largest volume of investments is realized in America, Asia and Europe.
On balance, the more recent papers find that there are significant positive environmental spillovers from foreign to local firms and that on average FDI may have the effect of increasing energy efficiency (hence lower pollution levels) (Cole et al., 2017).

In the period 2012-21, the top investors of greenfield investment into renewable power came from France, Germany, Italy and Spain (41% of total greenfield investment in renewables).5 The top recipients of renewable energy FDI were Australia, Chile, the United States and the United Kingdom (accounting for 46% of all announced greenfield investment projects in renewable energies in 2012-21). For fossil fuels, in the same period, over half (53%) of announced capital expenditure originated in China, Japan, the Netherlands and the United States, whereas most new FDI in fossil fuels went to Canada, Kazakhstan, the United Kingdom and the United States (42%), possibly reflecting the availability of natural resources in these countries (Knutsson and Flores, 2022).

Cross-border M&A activity in the renewable power sector is substantially more contained than in fossil fuels (Figure 2). In 2021, fossil energy accounted for 3% of total cross-border completed M&A deal values, whereas clean energy represented less than 1%. However, the number of deals in fossil fuels has been falling and total deal values have been shrinking since 2016, at least in OECD economies, where the total value of foreign M&A in fossil fuels peaked at USD 132 billion.6,7 In contrast, deal making in renewables remained quite stable over time, both in terms of values and the number of transactions. As with greenfield investment, 2020 was the record year for cross-border M&A in renewables for a total deal value of USD 16 billion between OECD and non-OECD economies (Knutsson and Flores, 2022).

Figure 2. Cross-border M&A in Renewable Energy Sector



Source: (Knutsson and Flores, 2022)

The environmental Kuznets curve is a graphical representation of the relationship between economic growth and environmental degradation. It indicates that environmental degradation increases as countries industrialize. However, at the tipping point, the deterioration begins to decrease.

Foreign direct investments contribute to the stabilization of inflation, the growth of the gross domestic product and the improvement of the balance of payments. In order to realize FDI, the transfer of technology, as well as knowledge and skills, is needed. The business and competitiveness of the entire economy is improved. The influence of institutions that monitor the entire process is of great importance to establish sustainable economic growth. Whether the country will be attractive and achieve the maximum effects of FDI depends on the application of regulations and the attitude towards foreign investors, as well as domestic resources.

3 Bilateral Investment Treaties and the Environment

Important part of economic cooperation between states, apart from trade, is the investment cooperation. In modern times this interstate investments are sourced from privet capital and not like centuries ago that they are state investments. In contemporary world in investment relations between states the main task for states is to create the framework for safe and mutually beneficial exchange of private investments between countries. This regime created by states is known as investment regime, and usually is bilaterally created. The Multilateral Agreement on Investment, negotiated under the auspices of Organisation for Economic Cooperation and Development (OECD), did not had much success (OECD, 2023). The investment law have developing rapidly after 1950, but in the last decades it is specially gaining grown in developing countries.

Main instrument for creation of this investment regimes are bilateral investment treaties (BITs) concluded between states. The main aim of these agreements is to reduce the risks for investors and to safeguard the host country economic interests. First bilateral investment treaty has been signed in 1959 between Pakistan and Germany, and until 1990 it was 500 BITs globally. Today UN Conference on Trade and Development (UNCTAD) keeps a detailed database on BITs and it lists 2827 BITs globally, with 2217 them in force (Shoaf, 2013). Most important form of global private investments is foreign direct investment (FDI) since they represent a long-term commitment of the investor.

Due to the lack of capital globally many countries today compete for FDI and form its investment policies to attract the FDI. UNCTAD follows the annual changes in national investment policies and in 2012 we see that countries still introduce more measures in favour of investors (58) compared to the measures less favourable (42) (UNCTAD, 2022). In modern BITs one of the most important provisions are national treatment clause which gives same right to the foreign investor compared to domestic ones. Developing economies are now taking the prime role of attracting foreign investment into the country, and since the competition is fierce they even offer financial subventions for the foreign investors. One of the major incentives when the investor is in heavy-polluting industries is the more liberal environmental regulation in developing countries than strict anti-pollution

regimes of the developed countries. This is the reason why many heavy-polluting industries move their operations to developing countries.

But the pollution is a global problem that leads to many consequences that are manifested both in develop and developing countries. Economic growth and alleviations out of poverty have been main goals of economic development of the world. Now the emphasis is on the "sustainability" of this global development. The concept of sustainable development refers to the state's efforts to achieve development that will be long term, but with the inclusion of environmental concerns into economic development (Levashova, 2011). The new term was born – sustainable development.

A study from 2011 analysing the sample of 1,623 BITs shows that only 8% of them at that time included references to environmental concerns. It is considered that the first BIT to include environmental provisions is China-Singapore BIT from 1985 (Gordon and Pohl, 2011). Most BITs singed after 2005 all include environmental protection provisions. It was first the developed countries which included this provisions in their model BITs. In the US model BIT from 2004, in article 12, paragraph 2, it is stipulated that Parties to Treaty can adopt measures "to ensure that investment activity in its territory is undertaken in a manner sensitive to environmental concerns" (US Trade Representative, 2004). On the other side, the European Union (EU) has adopted a model of mixed-agreements that incorporate investment protection and promotion provisions in preferential trade agreements encompassing sustainable development commitments. Since 2009, the EU has been handling foreign direct investment policies on a centralized basis on behalf of all EU Members, and has initiated negotiations with major trading partners with an aim to conclude Comprehensive Economic Agreements that include both trade and investment provisions (Gehring and Tokas, 2022).

So the host countries in their BITs more and more address other issues and public interests, including environmental protection, but foreign investors that invested in host country might object to or consider unfavourable these provisions, and this can lead to investment disputes. Most of these disputes are resolved in investment arbitration, and majority of cases are ruled in favour of investors (McLaughlin, 2022).

According to UNCTAD multi-country analysis new generation investment policies place inclusive growth and sustainable development at the heart of efforts to attract and benefit from investment. These policies address specific investment policy challenges. At the national level, these include integrating investment policy into development strategy, incorporating sustainable development objectives in investment policy and ensuring investment policy relevance and effectiveness. At the international level, there is a need to strengthen the development dimension of BITs and balance the rights and obligations of States and investors. These policies are characterized by (UNCTAD, 2015):

1. a recognition of the role of investment as a primary driver of economic growth and development and the consequent realization that investment policies are a central part of development strategies;
2. a desire to pursue sustainable development through responsible investment, placing social and environmental goals on the same footing as economic growth and development objectives;
3. a shared recognition of the need to improve the effectiveness of policies to promote and facilitate investment."

Sustainable development is becoming a major principle in guiding the development strategies of more and more countries in the world. Also the promotion of investments is using the environment protection as a major criterion in FDI selection for more and more countries and this is reflected in BITs countries sign.

4 Bilateral Investment Treaties and Foreign Direct Investment

With the increased activities of multinational companies in the world economy, there was an increase in interest of foreign investors to protect their assets in host countries. This interest was backed by developed countries of origin, which initiated conclusions of bilateral investment treaties with the main goal of reducing the risk exposure of their investors. Developing countries also increased interest in bilateral investment treaties. Their main expectation from the conclusion of the treaties, was to increase attractiveness for foreign investors, thereby addressing the problem of the capital scarcity and, oftentimes, sluggish economic growth.

For host countries, bilateral investment treaties are an important instrument for attracting foreign direct investment. Through the provisions of the bilateral investment treaties, host countries provide the investors with concessions. Furthermore, the conclusions of bilateral investment treaties serve as an important signal of the institutional stability of the host country and the readiness of the host country to protect the interest of foreign investors. However, increased inflows of foreign direct investment in host countries of, otherwise, insufficient institutional development, poses threats various aspects of its economy, including the negative changes in the market structure and environmental degradation (Kastratović, 2018, Kastratović et al., 2019, Kastratović, 2019).

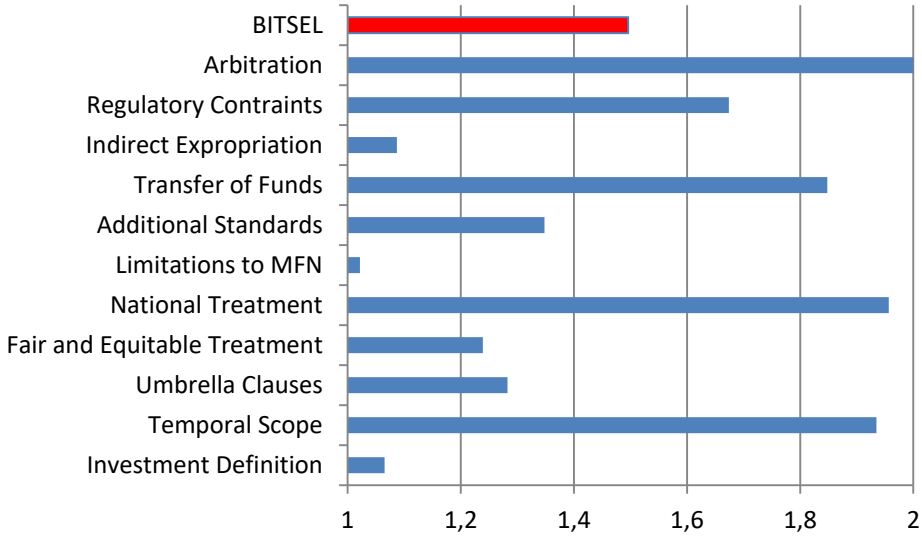
Economic theory suggests that bilateral investment treaties decrease fixed costs of conducting foreign direct investment. This reduces the minimal level of productivity required to successfully enter the foreign market for the aspiring internationalising firms. The marginally productive firms are, thus, enabled to establish foreign affiliates, which are reflected in the increased foreign direct investment flows (Egger and Merlo, 2007). The recent empirical studies support this theoretical conclusion (Li and Zhao, 2021, Bhagwat et al., 2021). More broadly, the systematic overview of the existing literature that empirically analyses the relationship between bilateral investment treaties and foreign direct investment indicates that the effects of bilateral investment treaties on the investment inflows are generally positive, albeit of low intensity (Brada et al., 2021). The contents of the bilateral investment treaties is, for the most part, neglected in the related literature, providing little insight on how the bilateral investment treaties could modify the relationship between foreign direct investment and sustainable growth.

Serbia provides an interesting case study of the relationship between bilateral investment treaties and foreign direct investment. Since the mid-1990s Serbia ratified 37 bilateral investment treaties, significantly increasing its bilateral investment treaties network. The result of these activities are reflected by the fact that nearly 80% of foreign direct investment inflows in the country are covered by bilateral investment treaties (Kastratović and Bjelić, 2022). Compared to the other economies of the West Balkans region, Serbia has the most developed network of bilateral investment treaties. Namely, at the moment, Serbia has 47 ratified and active bilateral investment treaties, whereas the region average stands at 37.

The introduction of environmental clauses in bilateral investment treaties by Serbia is supported by recent developments. The countries in the region, including Serbia, adopted standards of negotiating bilateral investment treaties under the support of Regional Cooperation Council and the European Union. The adoption of the aforementioned standard is the result of efforts aimed at harmonising the relevant regulatory framework of the economies in the region with the European Union. The adopted standards particularly relevant for the topic of this study are the ones dealing with the sustainable development and environmental protection. Serbia committed to introduce the sustainable development standards and the environmental protection standards in the preambles and clauses of all the future bilateral investment treaties. It is likely that the existing bilateral investment treaties are going to be updated in order to include these clauses.

The increasing use of the environmental standards could negatively affect the attractiveness of the host country for foreign investment, due to additional obligations imposed of foreign affiliates and possible conflicting provisions with the internationally adopted standards of protection. The method to analyse this is the application of the BITSEL indicator, which enables us to quantify various aspects of attractiveness in the currently active bilateral investment treaties (Chaisse and Bellak, 2015). The indicator value range goes from 1 to 2, and the higher value indicates greater level of liberalisation and, thus, attractiveness of the host country. The average values for Serbia for the period from 2010 to 2019, is presented in Figure 3.

Figure 3. BITSEL Values for Bilateral Investment Treaties Ratified by Serbia (2010-2019)



Source: Authors, based on the data from the study of Kastratović and Bjelić (Forthcoming).

The existing bilateral investment treaties in Serbia could be characterised as moderately-to-high quality. Certain aspects, such as their temporal scope, national treatment and arbitration clauses are routinely defined in bilateral investment treaties in a way which maximizes the investment liberalization. The additional standards concerning the environment affects the decrease of the average value of the BITSEL index component, indicating increasing constraints placed upon foreign investors. However, no drastic changes in this regard were evidenced in the observed period.

The empirical evidence examining the effects of bilateral investment treaties and their quality on foreign direct investment based on the sample of Serbia and its 198 partner economies observed in the period between 2010 and 2019 indicate that bilateral investment treaties effectively promote the investment inflows (Kastratović and Bjelić, Forthcoming). Furthermore, the bilateral investment quality is shown to positively affect the inflows. However, this also indicates that the increasingly demanding environmental standards could limit foreign direct investment inflows in Serbia. Still, it should be noted that the mere quantity of the investment is the only goal in promoting efforts. What matters more is their quality and their effect on a wide range of parameters of the host economy. Higher quality investment, screened by the increased demands in the provisions of bilateral investment treaties, could, therefore, lead to the sustainable growth and improvement of the ecological performances of the country.

5 Conclusions

In this study, we examined the effects of foreign direct investment on sustainable development. Additionally, we consider how bilateral investment treaties could affect this relationship. The results of our study indicate that foreign direct investment has significant potential in contributing to the sustainable development of host countries.

The direct positive environmental effects of foreign direct investment inflows stem from intra-firm technology transfers, diffusion of environmental standards and related spillovers, and the development of green industries, such as renewable energy production. However, the final environmental effects of foreign direct investment are contingent upon the circumstances in which the investment is conducted and, in particular, the conditions in the host country. For instance, the discussed positive effects are the most likely in developed countries and least developed countries. In middle-income countries, it is more likely that the investment would lead to environmental degradation.

We identified a potential for bilateral investment treaties to promote the positive effects of foreign direct investment on sustainable development. This, however, requires careful design of standards and provisions included in the treaties, as well as a sufficiently developed and robust institutional framework in order to practically implement the provisions. New standards in this regard are increasingly being used in the negotiations concerning bilateral investment treaties in the West Balkans region.

Finally, we considered the case of Serbia. We found evidence of the effectiveness of bilateral investment treaties in attracting foreign direct investment in this context. Thereby, we showed that not only the existence but also the quality of bilateral investment treaties matter. Higher levels of liberalisation and protection of foreign investors' interests have a significant positive effect on foreign direct investment inflows. However, increasingly stringent environmental standards are placing additional burdens on foreign investors, which, in the concrete context of Serbia, could potentially lead to limiting the foreign direct investment inflows.

The results imply that the policymakers seeking to improve foreign direct investment inflows could rely on bilateral investment treaties. However, increased inflows do not necessarily lead to sustainable growth. In these circumstances, bilateral investment treaties provide interesting opportunities for promoting a higher quality of investment, which, despite potential negative effects of the inflows quantity, could result in the sustainable development of the host country.

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BUSINESS

III BUSINESS

STRATEGIC MANAGEMENT TOOLS AND GOVERNANCE IN SMALL AND MEDIUM ENTERPRISES (SMEs)

Ana Marija Alfirević[1] , Sabina Đonlagić Alibegović[2], Darko Rendulić[3]
([1]Marko Marulić Polytechnic Knin, Petra Krešimira IV 30, 22300 Knin, Croatia, Email: amalfirevic@veleknin.hr; [2]University of Tuzla, Faculty of Economics, Univerzitetska 8,75000 Tuzla, Bosnia & Herzegovina, Email: sabina.djonlagic@untz.ba; [3]Karlovac University of Applied Sciences, Trg J.J. Strossmayera 9, 47000 Karlovac, Croatia, Email: darkorendulic1@gmail.com)

Abstract: This paper aims to identify the strategic management tools, most often used in small and medium enterprises (SMEs) in the County of Split-Dalmatia, in the Republic of Croatia, and to analyze their potential relationship with the determinants of SME governance and professionalization. After reviewing the existing research on this topic, we discuss the empirical research methodology and present its empirical results. Regarding the strategic management tools, we analyze the strategic analysis tools, as well as those used in the subsequent stages of strategy formulation, implementation, and control. Based on the results of empirical research, we present the assessment of strategic management tools maturity in the analyzed SMEs. The governance analysis focuses on the owners' and managerial decision-making in SMEs, owners' awareness of the company performance, and managers' rewards and bonuses for the achieved business performance. We further provide the empirical analysis of the relationship between the two constructs and discuss the implications of empirical results for improving the existing business practice and developing good practices in strategic management and SME governance in the broader region of Dalmatia in the Republic of Croatia. In addition, we identify the opportunities for future research of the SMEs' strategic management and governance, with a particular emphasis on using strategic management tools, other indicators of SME management professionalization, and the indicators of SME governance development.

Keywords: small and medium enterprises (SMEs), management professionalization, strategic management tools, Croatia.

JEL classification: G39, L26

1. Introduction

In circumstances of rapid market changes and increasing competition, many companies, especially small and medium-sized ones, need to be flexible, respond quickly to environmental challenges and adequately direct their strategic action to survive in the market. These business characteristics require the professionalization of management and imply the use of various tools in all management segments, especially within strategic management. This is a particular challenge for small and medium-sized enterprises in the transition phase between the entrepreneurial and professional (managerial) management model.

The governance issue is a research topic characteristic of large companies in which the separation of ownership and managerial functions has been carried out (Demirag, Sudarsanam, & Wright, 2000). At the other hand, governance is not considered a significant topic for SMEs, where managerial and entrepreneurial roles overlap. However, professionalization of management is essential for development of SMEs, as entrepreneurs may have a greater or lesser inclination to use professional managerial tools and approaches, characterizing the work of professional management. In this paper, using quantitative research methodology on a sample of 26 SMEs from Split-Dalmatia County in Croatia, application of strategic management tools and techniques is analyzed, as well as their connection with the essential characteristics of governance.

2. Literature review

A company's sustainability in a competitive environment is possible with continuous investment in the development and application of appropriate strategic management tools and techniques. According to Stenfors and Tanner (2007), tools can represent a method, model, technique, tool, technology, framework, methodology,

or approach to overcome complex market demands or achieve competitive advantage. The tools managers use most often include concepts, processes, practices, and analytical frameworks (Rigby & Bilodeau, 2018). Managerial tools also include various ideas, approaches, and techniques used in different phases and activities of strategic management (Knott, 2006). Many companies, to survive in a changing environment and become competitive, use different approaches, methods or tools, and techniques as support for business decision-making, analysis of the internal and external environment, and obtaining helpful information including market information - about the product and customers, costs, etc. (Afonina & Chalupský, 2012), as well as in assessing organizational performance and efficiency (Wright, Paroutis & Blettner, 2013).

Achieving organizational efficiency through appropriate strategic management tools and techniques is an important goal of strategic enterprise management (Stonehouse & Pemberton, 2002). However, there are not enough sources or empirical studies in the literature to confirm the findings on the connection between organizational efficiency and managerial tools and techniques (Afonina, 2015). An empirical study conducted by the author above on a sample of Czech companies of different sizes shows that more than 50% of surveyed companies use strategic management tools and techniques to a large extent (14 out of the offered 19: SWOT analysis, customer satisfaction analysis, price analysis, cost-effectiveness analysis, market share analysis, employee satisfaction analysis, customer complaint analysis, Porter's model of 5 competitive forces, service analysis, PEST analysis, customer profitability analysis, benchmarking, portfolio analysis method. The same study's findings show a significant statistical connection between the use of strategic management tools and techniques and organizational performance measured by financial and non-financial indicators.

Many studies have attempted to explain how managers' behavior patterns develop and how managers' performance is valued through the life stages of a company's development. Haire (1959) was among the first to advocate the company's life cycle theory. However, the logic of the same can be identified in classical research on the relationship between the strategy and structure of American corporations. The classic conceptualization of life cycle phases refers to the entrepreneurial phase of creating a company, the growth and development phase, in which business formalization takes place, and the maturity phase, as shown in Table 1.

Table 1. Typical company life cycle stages

Company characteristics	**Entrepreneurial phase (company birth)**	**Growth and development phase**	**Maturity phase**
Organizational structure	Entrepreneurial (informal)	Formalized and centralized	Formal and decentralized
Rewarding	Personal and subjective	Systematic and objective	Formal and entirely objective
Communication and planning process	Informal, personal, with a little planning	Partially formal based on budgeting	Very formal, with a long-term perspective, based on rules
Obeying formalization/rules	Low level of formalization	High level of formalization and acceptance of rules	High level of formalization, with a low level of acceptance of rules
Decision making	Entrepreneurial individual planning	Professional managerial decision-making by using analytical tools	Professional managerial decision-making with limitations in office politics and estimating
Top management structure	Generalists	Specialists	Strategists and planners
Growth rate	Inconsistent	Fast growth	Weak growth or decline
Age and size of the company	Small new company	An older and larger company	The eldest large company

Adapted from: Smith, Mitchell, & Summer (1985, p. 802).

This research focuses on studying companies in the first and second phases of the life cycle, where SMEs are typically located, typically facing the transition from entrepreneurial orientation toward a professionally managed organization. In previous research, these typical forms of managerial behavior have not been linked to the use of strategic tools and formal governance as critical features of a company's growth and development.

Wright, Paroutis & Blettner /2013), managers are expected to have the necessary knowledge, especially in an increasingly complex and uncertain environment, which has led to the creation of many managerial techniques and tools for strategic management. In doing so, it is emphasized that managers need to understand the purpose and benefit of their use, aiming to achieve greater efficiency and satisfactory performance (Afonina & Chalupský, 2012). A study by Bain & Company (Rigby & Bilodeau, 2018) analyzed managers' attitudes towards empowering professional management through strategic management tools and techniques. It is not surprising that strategic planning (48%) is one of the most commonly used tools as a support for strategic management, while customer relationship management (48%) takes second place (focused on better understanding customer needs and desires).

The use of strategic management tools and techniques facilitates strategic management for decision-makers but does not guarantee a positive outcome of the chosen strategy (Kotler, Berger & Bickhoff, 2015). According to Stenfors & Tanner (2007), managers can use different forms or types of tools in their work that are designed and adapted as support for solving different and demanding business situations but also to help a company to position itself and maintain its advantage in a competitive environment. Strategic tools are designed to provide helpful information to managers (Hussey, 1997), most often as a framework for determining priority areas of action in a company. Analyzing these definitions implies that the goal of using managerial tools can be different, whether it is assessing or predicting one's business portfolio or the future development of a company (Afonina & Chalupský, 2012).

In previous studies, the number of used tools was analyzed and classified in different ways, while other authors (Elbanna, 2008); (Suklev & Debarliev, 2012) considered their use in terms of potential efficiency and connection with the formalization of strategic planning. One such study (Berisha Qehaja, Kutllovci & Shiroka Pula, 2017) investigated the level of use of strategic management tools and techniques globally depending on the level of development of a country in companies of different sizes. The results showed that developed economies use more strategic management tools and techniques than developing countries.

According to the results of the study above, the most used strategic management tool is the SWOT analysis, which is also confirmed by empirical findings of other studies (Stenfors & Tanner, 2007; Afonina & Chalupský, 2012; Nedelko, Potočan & Dabić, 2015; Afonina, 2015). Other techniques used include benchmarking, customer satisfaction analysis, core competency analysis, fundamental success factor analysis, price analysis, cost-effectiveness analysis, Porter's five forces model, PEST analysis, and "what-if" analysis. Nedelko, Potočan & Dabić (2015) considered the acceptance and use of strategic tools on a sample of different sizes of Croatian and Slovenian companies. According to their findings, outsourcing is most accepted and used in Slovenian companies, while mission and vision statements are most accepted and used in Croatia. The other two strategic tools that are equally accepted and used in the observed countries are benchmarking and core competency analysis. Similar findings were obtained by Pasanen (2017), who analyzed strategic management tools and techniques in manufacturing and service SMEs, confirming that company growth and management professionalization support the use of strategic management tools.

This paper will empirically test the hypothesis about the primary motivation of managers to use professional techniques and tools only if it is formally checked and rewarded through a system for measuring company and management performance. The sample and specific characteristics of the SME sector in the researched geographical area will limit the obtained results. Still, they may be interesting, given the absence of similar previous research.

3. Research methods

Empirical research should answer the following question: How do the professionalization of management and the introduction of governance mechanisms in SMEs affect the use of strategic management tools and techniques?

The research question is based on the logic that arises from the company's life cycle model (Smith, Mitchell & Summer, 1985), which views the growth and development phases of a company (which, in its initial development phase, certainly falls into the category of SMEs) in analogy with the development of living beings. Within this model, critical points of organizational change are found related to the characteristics of structuring and managing an organization leading to a company's transition into the next developmental phase of the life cycle.

The research is exploratory to analyze fundamental empirical trends in the population of SMEs in Split-Dalmatia County to determine guidelines for future theoretical and empirical research. As a research instrument, a questionnaire was used formulated based on previously presented empirical studies consisting of three parts:

- Introductory part with five particles/questions related to essential characteristics of a company (legal form and activity it deals with age and ownership structure);
- Part of the questionnaire trying to detect patterns of behavior in governance (separation of entrepreneur's role from company management - professional management active involvement of entrepreneur in strategic and operational decision-making, their influence on lower level management, and existence of formal evaluation/evaluation of management work as well as performance-based managerial compensation for achieved results);
- Part of the questionnaire evaluating forms of formally prescribed use, informal use, or non-use of 14 strategic management tools selected based on previously presented literature.

The questionnaire was posted on Google Forms, and invitations to fill it out were distributed via email using the database of SMEs in Split-Dalmatia County available through Croatian Chamber of Commerce and personal contacts.

The research was conducted on a convenience (non-random) sample of SMEs in Split-Dalmatia County. Out of the total number of small and medium-sized enterprises covered by research (N=1815), 26 questionnaires were received, which is not enough to test theoretical models but is satisfactory for exploratory type research aimed at determining fundamental trends and preparing guidelines for future research.

4. Research hypotheses

Based on findings from previous research, it can be expected that during the professionalization phase, when the separation between operational, managerial work, and ownership/entrepreneurial position occurs, and the first forms of governance appear intensity and form of use of strategic management tools will increase, i.e., statistically significant differences between groups entrepreneurs-owners SMEs separated according to previously described characteristics will be observed following hypotheses are set:

Hypothesis H1. Professionalization of management and introduction of governance mechanisms in SMEs in Split-Dalmatia County significantly affects the use of strategic management tools and techniques.

Hypothesis H2. Involvement entrepreneurs in strategic or operational management SMEs in Split-Dalmatia County significantly affect the use of strategic management tools and techniques.

Hypothesis H3. Involvement entrepreneurs in delegating tasks to middle and lower-management SMEs in Split-Dalmatia County significantly affects the use of strategic management tools and techniques.

Hypothesis H4. The introduction of formal performance evaluation in SMEs in Split-Dalmatia County significantly affects the use of strategic management tools and techniques.

Hypothesis H5. Performance-based managerial compensation in SMEs in Split-Dalmatia County significantly affects the use of strategic management tools and techniques.

4. Results

4.1. General characteristics of the sample

Regarding the legal form of business, the sample is dominated by limited liability companies (22 companies or 84.6%). In comparison, there is a negligible number of simple limited liability companies (2 companies or 7.7%) and joint stock companies (1 company or 3.8%), as well as crafts (1 company or 3.8%).

A little less than half of respondents operate in the manufacturing industry (42.3%). A third of companies operate in other activities such as hospitality (15.4%), construction (15.4%), and professional scientific and technical activity (11.5%). A negligible percentage are those companies whose activity is related to real estate business (3.8%), financial insurance (3.8%), and agriculture fisheries and livestock farming (7.7%).

Most surveyed companies are owned by a single entrepreneur (69.2%), while a slightly smaller number is owned by several individuals with different ownership shares (19.2%). The sample includes a small number of business entities that are owned by another business entity (7.7%) as well as a majority owned (75% or more) by an individual (3.8%). Most surveyed companies fall into small companies (80.8%), while a significantly smaller share refers to medium-sized companies (15.4%). The average age of companies is 19.22 years.

4.2. Use of strategic management tools

Tools and methods of strategic management whose use was researched were taken from previously analyzed theoretical works, and results of their use in SMEs in Split-Dalmatia County are shown in Tables 2 and 2a. In research, formal/organizationally regulated use of strategic management tools and methods was separated from informal based on individual managerial initiative and education, considering that only the formal use of strategic tools and techniques indicates organizational changes and philosophy about business professionalization.

As Tables 2 and 2a present, popular methods for analyzing a company's external and internal environment (PEST and SWOT analysis) are also frequently accepted strategic management tools in this research. Research results show that surveyed managers mostly use cost-benefit analysis (53.8%) and customer satisfaction analysis (50%). They are followed by forecasting, the Balanced Scorecard (balanced matrix of company performance viewed through financial results, customer satisfaction, business processes growth, and employee learning), and mission and vision statement used to a slightly lesser extent (38.5%) as well as TQM and benchmarking (26.9%) and company resource analysis (15.5%) as least used tools.

Table 2. Strategic management tools and methods

		Mission, vision	**Customer satisfaction analysis**	**TQM**	**Benchmarking**	**PEST analysis**	**SWOT analysis**	**Resource analysis**
		%	%	%	%	%	%	%
	Do not use	34.6	23.1	46.2	46.2	46.2	38.5	50.0
	Use informally	23.1	26.9	23.1	23.1	19.2	26.9	30.8
	Use formally	38.5	50.0	26.9	26.9	30.8	30.8	15.4
	Total	96.2	100.0	96.2	96.2	96.2	96.2	96.2
	No answer provided	3.8		3.8	3.8	3.8	3.8	3.8
Grand total		100.0		100.0	100.0	100.0	100.0	100.0

Source: Empirical research.

Table 2a. Strategic management tools and methods

		Cost-benefit analysis	Balanced Scorecard	Forecasting	Porter's Value Chain	Porter's Five Forces	BCG matrix	Outsourcing
		%	%	%	%	%	%	%
	Do not use	11.5	38.5	19.2	61.5	76.9	69.2	61.5
	Use informally	34.6	19.2	38.5	15.4	11.5	19.2	15.4
	Use formally	53.8	38.5	38.5	19.2	7.7	3.8	19.2
	Total	100.0	96.2	96.2	96.2	96.2	92.3	96.2
	No answer provided		3.8	3.8	3.8	3.8	7.7	3.8
Grand total		100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Empirical research.

An index variable was created to quantify the use of strategic management tools, i.e., a summary scale was formed. Form of use was evaluated by different number index points assigned to the form of use the analyzed 14 strategic management tools (1 point - not used at all; 2 points - used informally; 3 points - used in the formally prescribed manner), indicating that this formed index variable is measured on a scale that can take the theoretical minimum empirical value of 14 maximum value of 52. Considering the empirical values in the range of 14 to 41, with an average of 25.46 and a standard deviation of 8.22 (see Table 3), it can be said that the use of strategic management tools and methods in the observed companies is average and that there is still plenty of room for improvement. According to the research results (shown in Tables 2 and 2a), the most popular and frequently used tools belong to the field of strategic analysis. Generally, it can be said that they do not deviate significantly from the results of previous research.

Table 3. Strategic management tools usage

	N	Min.	Max.	Mean	Stand. Dev.
Strategic management tools usage	24	14.00	41.00	25.4583	8.21970

Source: Empirical research.

4.3. Relationship between the use of strategic management tools and governance in SMEs

Before testing any relationships, normality of variables was performed, which deviated from the assumption of normal distribution, due to small sample size. For this reason, a non-parametric test (Mann-Whitney U) was used to test the significance of differences between arithmetic means of several respondent groups.

Table 4 shows the analysis of hypothesis H1, which assumes the existence of statistically significant differences between companies that have introduced professional management and those still managed by the founding entrepreneurs. Since empirical significance ($z = -1.383$ $p=0.167$) is larger than the conventional value of 5% ($p>0.05$), hypothesis H1 is rejected.

The role of an entrepreneur in the company's life stage, characterized by the growth and development of SMEs and the introduction of professional management, will undoubtedly be marked by a gradual transition from typical entrepreneurial management oriented towards complete involvement of entrepreneur in strategic and operational decision-making and management towards delegating managerial tasks to a professional manager or managerial team. It can be expected that this process will begin with operational tasks and activities. As a company grows and develops, entrepreneurs will have less knowledge and competencies and probably also

interest in tasks and activities related to strategic management and will be motivated for management professionalization. A series of statistical tests have been performed using the Mann-Whitney non-parametric test, based on the theoretical pattern of management professionalization in the growth stage of SMEs.

Table 4. Differences in strategic management tools usage concerning the introduction of professional management to SMEs

	Introduction of professional management to SMEs	N	Mean rank	Rank Sum
Strategic management tools usage	Entrepreneurial management	7	8.36	58.50
	Professional management	14	12.32	172.50
	Total	21		

	Strategic management tools usage
Mann-Whitney U	30.500
Wilcoxon W	58.500
Z	-1.383
Asymp. Sig. (2-tailed)	.167
Exact Sig. [2*(1-tailed Sig.)	.172
a. Grouped according to Introduction of professional management to SMEs	

Source: Empirical research.

Hypothesis H2 was tested in Table 5. Empirical results (z = −1.875 p=0.061) of the Mann-Whitney U test show that obtained value is greater than 5% (p>0.05), indicating that the level of involvement entrepreneurs in strategic decision-making does not affect the use of strategic management tools and techniques.

Table 5. Differences in strategic management tools usage concerning entrepreneur's influence on strategic decision-making in an SME

	Entrepreneur's influence on strategic decision-making in a SME	N	Mean rank	Rank Sum
Strategic management tools usage	No influence exerted	4	6.00	24.00
	Influence exerted	18	12.72	229.00
	Total	22		

	Strategic management tools usage
Mann-Whitney U	14.000
Wilcoxon W	24.000
Z	-1.875
Asymp. Sig. (2-tailed)	.061
Exact Sig. [2*(1-tailed Sig.)]	.066
a. Grouped according to Entrepreneur's influence on strategic decision-making in an SME	

Source: Empirical research.

As previously, using the non-parametric Mann-Whitney U test, the results (z = −0.421, Asym. Sig.; p=0.674), at a level of 5% (p>0.05) significance, shown in Table 6, also show that there is no difference between the group of respondents, i.e., that the involvement of entrepreneurs in operational decision-making does not affect the use of strategic management tools and techniques. Considering the results of both conducted statistical tests, it is concluded that hypothesis H2 needs to be rejected.

Table 6. Differences in strategic management tools usage concerning entrepreneur's influence on operative decision-making in an SME

	Entrepreneur's influence on operative decision-making in an SME	N	Mean rank	Rank Sum
Strategic management tools usage	No influence exerted	6	11.00	66.00
	Influence exerted	17	12.35	210.00
	Total	23		

	Strategic management tools usage
Mann-Whitney U	45.000
Wilcoxon W	66.000
Z	-.421
Asymp. Sig. (2-tailed)	.674
Exact Sig. [2*(1-tailed Sig.)]	.708
a. Grouped according to Entrepreneur's influence to operative decision-making in an SME	

Source: Empirical research.

Table 7 shows the results of the Mann-Whitney U test ($z = -1.773$, $p=0.0764$), which exceed the significance level of 5% ($p>0.05$) and show that there is no difference between the group of surveyed SMEs in the use of strategic management tools and techniques between SMEs that implement delegation, as a critical technique of professional management, compared to SMEs oriented towards entrepreneurial management. Therefore, previously obtained empirical results are confirmed, and hypothesis H3 is rejected.

Table 7. Differences in strategic management tools usage concerning entrepreneur's influence on middle and lower SME management

	Entrepreneur's influence on middle and lower SME management	N	Mean rank	Rank Sum
Strategic management tools usage	No influence exerted	6	7.50	45.00
	Influence exerted	16	13.00	208.00
	Total	22		

	Strategic management tools usage
Mann-Whitney U	24.000
Wilcoxon W	45.000
Z	-1.773
Asymp. Sig. (2-tailed)	.076
Exact Sig. [2*(1-tailed Sig.)]	.083[b]
a. Grouped according to Entrepreneur's influence to middle and lower SME management	

Source: Empirical research.

Hypothesis H4 was tested in Table 8, where the results of the Mann-Whitney U test ($z = -3.502$, $p=0.000$), at a reliability level of 5% ($p<0.05$), show that companies, introducing the performance measurement use strategic management tools and techniques more than companies that do not systematically manage performance. Hypothesis H4 is, therefore, accepted.

Table 8. Differences in strategic management tools usage concerning the introduction of a performance evaluation to an SME

	A performance evaluation introduced to an SME	N	Mean rank	Rank Sum
Strategic management tools usage	Yes	9	18.17	163.50
	No	14	8.04	112.50
	Total	23		

	Strategic management tools usage
Mann-Whitney U	7.500
Wilcoxon W	112.500
Z	-3.502
Asymp. Sig. (2-tailed)	.000
Exact Sig. [2*(1-tailed Sig.)]	.000[b]
a. Grouped according to: Has a performance evaluation been introduced to an SME	

Source: Empirical research.

When observing the performance evaluation in SMEs, empirical results of the Mann-Whitney U test ($z = -2.053$, $p=0.040$) show that companies that have a developed performance evaluation use strategic management tools and techniques more than those that do not have a developed performance evaluation for management. Accordingly, hypothesis H5 is accepted.

Table 9. Differences in strategic management tools usage concerning the introduction of performance-based managerial compensation to an SME

	Introduction of performance-based managerial compensation to an SME	N	Mean rank	Rank Sum
Strategic management tools usage	Yes	14	15.00	210.00
	No	10	9.00	90.00
	Total	24		

	Strategic management tools usage
Mann-Whitney U	35.000
Wilcoxon W	90.000
Z	-2.053
Asymp. Sig. (2-tailed)	.040
Exact Sig. [2*(1-tailed Sig.)]	.042[b]
a. Grouped according to: Has a performance-based managerial compensation been introduced to an SME	

Source: Empirical research.

Referring to the results of the analysis of hypotheses H4 and H5, it would be logical to expect that with the transition from entrepreneurial to professional management, business requirements will grow, and it can be expected that there will be greater use of strategic management tools and techniques as a response to more complex business conditions. However, research results show that analyzed sample respondents in SMEs in Split-Dalmatia County are motivated to use strategic management tools and techniques by introducing performance evaluation and material rewards based on business results.

5. Discussion

The results of empirical research show that the use of strategic management tools and methods in observed companies is average and that there is still plenty of room for improvement or greater/intensive use of them. The most popular and frequently used tools belong to strategic analysis, and empirical results largely do not deviate from results in previous research. There is no significant empirical difference between entrepreneurially and professionally managed SMEs, concerning the use of strategic management tools/methods, although this would be expected, with a transition from entrepreneurial to professional management. In addition, entrepreneurs' involvement in making strategic and operational decisions does not affect the use of strategic management tools and techniques, confirming that management professionalization in observed SMEs is not related to the assumed increase in the use of strategic management tools. Research further attempted to answer whether there are managerial motives for professionalization, based on performance assessment and performance-based compensations. Research results show that companies with performance evaluation and performance-based managerial compensation use strategic management tools more.

6. Conclusion

This paper found some interesting trends, which indicate that one of Croatian SMEs' problems might be related to the motivation and patterns of management professionalization. Empirical results show that the introduction of performance-based evaluation and compensation might be helpful in this context.

This research has certain limitations related to the size and method selection sample. Namely, if the research were based on a representative sample of SMEs, it would enable a more detailed analysis of professional management development, viewed in the context of the causality between SME strategic management and governance.

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ANALYSING DIFFERENCES IN ATTITUDES REGARDING THE USE OF THE INTERNET: EMPIRICAL STUDY FROM SERBIA

Zoran Drašković[1], Đorđe Ćelić[2], Viktorija Petrov[3], Slavica Mitrović Veljković[2]
([1]Faculty of Economics and Engineering Management, University Business Academy, Novi Sad, Republic of Serbia, zoran.draskovic@fimek.edu.rs; [2]Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Republic of Serbia, celic@uns.ac.rs, mslavica@uns.ac.rs; [3]Faculty of Economics, University of Novi Sad, Novi Sad, Republic of Serbia, viktorija.petrov@ef.uns.ac.rs)

Abstract: The widespread usage of digital technology has transformed the business landscape, particularly in B2C commerce, generating significant interest among academics and industry professionals alike. Given that many business trends originate in developed economies, it is crucial to analyze and monitor these trends in such countries. One trend that has emerged with the digitalization of commerce is online shopping. This study examines the attitudes of California's Generation Y towards the use of the internet and mobile internet. We measured attitudes using standardized instruments for ubiquity, instant gratification, product variety, and riskiness. Our research hypotheses were tested using data collected from 234 California residents. We analyzed statistically significant differences in attitudes towards the internet and mobile internet based on respondents' gender and education level. This research is valuable not only to the scientific community, but also to professionals seeking to understand the attitudes of Generation Y towards digital technology, which is essential for developing effective marketing strategies.

Keywords: Generation Y, Internet marketing, Ubiquity, Instant Gratification, Product Variety, Riskiness.

1 Theoretical framework

Millennials are a generation often referred to as Generation Y. They have various other synonyms including Generation Why, Generation Search, Generation Next, the Net generation, the digital natives, the dot.com generation, the Einstein generation, and Echo Boomers. It's worth noting that many individuals in this generation prefer not to be labeled (Valentine and Powers, 2013). The demographic of Generation Y encompasses individuals born roughly between 1980 and 2000 (Gurău, 2012). According to some studies, the millennial generation exhibits distinct values, traits, and behaviors that differ from those of previous generations (Eastman and Liu, 2012; Gurău, 2012). Generation Y is larger than baby boomer generation (Lancaster and Stillman, 2002; Nowak et al., 2006), Many marketers perceive this particular group to possess notable spending power, estimated to make up 50% of worldwide consumption in 2017 (Martin and Turley, 2004; Wolburg and Pokrywczynski, 2001; Eastman et al., 2014; Moreno et al., 2017). Studying the behavior of millennials has become crucial due to their unique characteristics that distinguish them from other generations. Therefore, they have become an impressive group to be analyzed and understood (Smith, 2011). Some individuals may have a tendency towards seeking instant gratification and have a shorter attention span, often referred to as "stimulus junkies". When they come up with an idea, they may feel compelled to act on it right away (Bergh and Behrer, 2011).

The Millennial Generation is known for prioritizing relationships, both in the workplace and in their personal lives. They are on track to become the most educated generation in American history, with a higher rate of undergraduate degrees than any previous generation. This group is often described as trustworthy, tolerant, individualistic, and highly skilled in technology, setting them apart from their predecessors (Furlow, 2012; Moreno et al., 2017). Many have given the label of open-minded, social, innovative, energetic, ambitious, reliable, motivated, and intelligent to the millennial generation (Ordun, 2015; Moreno et al., 2017).

Millennials grew up with technology, and use it to communicate with family and friends. They enjoy interactive media and value both its functional and enjoyable aspects. The Theory of Uses and Gratifications helps to understand why they prefer digital media (Rahman, 2015; Moreno et al., 2017).

Millennials drive e-commerce growth with their love for online socializing and shopping. High-quality graphics attract their attention, and they prefer competitive pricing and reliable shipping rates (Smith, 2011). Compared to previous generations, millennials tend to spend more on products and services but are less loyal to particular brands. This lack of brand loyalty may be attributed to their increased exposure to price promotions. Additionally, they seek out products and brands that align with their personality, lifestyle, and social and

community values. For millennials, brands are a means of self-expression, helping to create a desired image and communicate personal values (Moreno et al., 2017).

Many individuals from this generation have incorporated technology into their daily routines for marketing purposes. They utilize their mobile devices and the internet to connect with retailers or brands (Moore, 2012). Small online retailers have greatly benefited from the purchasing power and technological capacity of this important segment of consumers.

However, they tend to be highly responsive to electronic word-of-mouth advertising. This form of advertising is deemed more reliable than traditional advertising since it is viewed as having undergone scrutiny from "people like me" (Allsop et al., 2007; Moreno et al., 2017).

Numerous authors have been researching the attitudes towards internet usage (Kukar-Kinney et al., 2009; Schlosser et al., 2006; Okazaki et al., 2009). However, there is not much research related to the attitudes of Generation I in the most developed economies, also known as knowledge economies, for which the state of California is an ideal representative. The results of this research could be a benchmark basis for future research.

In this paper statistically significant differences in respondents' attitudes regarding use of internet and mobile internet were analyzed according to gender, and education level. The research questions posed were:

- Do differences in attitudes using the internet depend on ***gender***?
- Do differences in attitudes using the internet depend on ***education level***?

According to research questions, the following research hypothesis have been defined:

- H_1: There is statistically significant difference between ***genders*** in their attitudes towards internet and mobile internet usage.
- H_2: There is statistically significant difference between respondents of different ***education level*** in their attitudes towards internet and mobile internet usage.

This paper examines the perspectives of mainly Generation Y individuals in California regarding Perceived ubiquity, Immediate gratification, Product variety, and Internet usage riskiness. The study analyzed data gathered from 234 participants from California to test research hypotheses.

2 Research methodology

2.1 Instrument

This section examines the perspectives of Generation Y internet users and provides an overview of the literature on the constructs used in the analysis. To gather data on internet user views, we created a structured questionnaire that used constructs and items from existing studies. The questionnaire was divided into two parts: the first part collected general demographic information such as gender, age, and education level, while the second part contained questions about attitudes towards internet and mobile internet usage. The second part included 21 items that measured four constructs: Perceived Ubiquity (5 items), Immediate Gratification (4 items), Product Variety (5 items), and Internet Usage Riskiness (Content) (7 items). All attitude-related questions were evaluated on a 7-point Likert scale, ranging from strongly disagree (1) to strongly agree (7), to allow for more accurate determination of their attitudes. All items were positively worded.

2.1.1 Perceived Ubiquity

A questionnaire was created by Okazaki, Li, and Hirose in 2009 to measure attitudes towards the ubiquity of the mobile internet. The section of the questionnaire pertaining to time flexibility was adapted from the research conducted by Mathwick, Malhotra, and Rigdon in 2002.

Two items in this instrument measure to which degree person believes that possibility to access internet via mobile phone gives him time flexibility (Mathwick et al., 2002):

I1 - Using mobile Internet is an efficient way to manage my time;
I2 - Browsing mobile Internet sites fits with my schedule.

The questions in this survey assess the extent to which individuals believe that accessing the internet via a mobile phone provides them with spatial flexibility. This instrument includes three items and was developed by Okazaki, Li, and Hirose in 2009.

I3 - Using mobile Internet enables me to find information at any place;
I4 - Browsing mobile Internet gives me an ability to overcome spatial limitations;
I5 - Browsing mobile Internet sites fits any location, wherever I go.

2.1.2 Immediate Gratification

Research has shown that shopping online can often result in a more enjoyable experience than shopping in physical stores. Factors such as pleasure and personal motivation can also influence purchasing decisions and shopping behavior (Arnold and Reynolds, 2003; Bellenger, 1980; Ridgway et al., 1990). In fact, Kukar-Kinney, Ridgway, and Monroe (2009) developed a tool that measures instant gratification, based on four specific criteria:

I 6 - I can satisfy my urge to shop and buy faster
I 7 - I can get more immediate pleasure from buying.
I 8 - Internet buying can get me out of a bad mood faster
I 9 - The Internet shopping experience is more exciting

2.1.3 Product Variety

With the internet, consumers can access a wide range of stores and brands, something that is not possible with traditional brick-and-mortar stores. In fact, Kukar-Kinney et al (2009) found a positive correlation between motivation to buy and shopping online. Kukar-Kinney, Ridgway, and Monroe (2009) created a scale and other measures to gain insight into compulsive buying and online shopping. These findings can aid in customer segmentation and understanding the motives behind choosing online or offline sales channels.

The scale related to product variety consist of the folowing items (Kukar-Kinney et al., 2009):

I10 - There are more product choices;
I11 - There are more choices of where to shop;
I12 - It is easier to find things I like available in the right size.
I13 - I like to see a lot of products in a short time;
I14 - I can gather a lot of information in a short time.

2.1.4 Internet Usage Riskiness

This metric assesses how much an individual perceives their internet actions as a potential risk to their privacy, specifically when making online purchases. The Likert-type scale consists of seven items and rates the extent to which a person views different online activities as potential threats to their security and privacy when buying items. This scale was developed by Schlosser, White, and Lloyd in 2006:

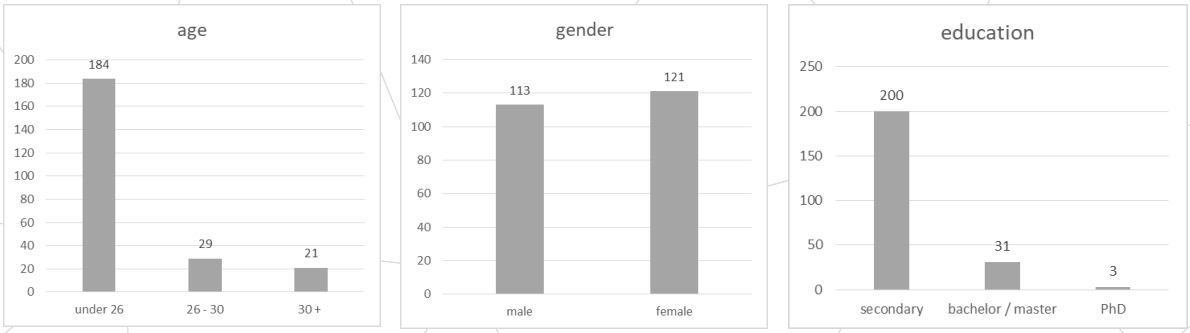
I15 - Shopping online is risky.
I16 - Providing credit card information online is risky.
I17 - Providing personal information (e.g., social security number and mother’s maiden name) online is risky.
I18 - Purchasing items online is risky.
I19 - Providing my e-mail address and phone number online is risky.
I20 - Registering online is risky.
I21 - It is riskier to shop online for a product than to shop offline for it.

2.2 Sample

An online questionnaire was created and College of Business Administration, California State University, San Marcos students were invited to participate through MailChimp's marketing platform. Of all responses received, 234 were found to be valid (Drašković, 2019).
Demographic characteristics of sample are presented in Table 1. Out of the total number of respondents, 184 (78.6%) were below the age of 26, while 29 (12.4%) were between the ages of 26 and 30. The remaining 21 (9%) respondents were above the age of 30. In terms of gender distribution, 113 (48.3%) respondents were male,

and 121 (51.7%) respondents were female. Regarding educational background, 200 (85.5%) respondents had completed their secondary education, while 31 (13.2%) held Bachelor's or Master's degrees, and only 3 (1.3%) had obtained a PhD.

Table 1: Demographics of the sample



Source: authors

4 Results

This study utilized theoretical concepts derived from scientific literature as the foundation for its research. Attitudes towards internet and mobile internet usage were measured by analyzing and confirming the primary components through factor analysis, using the KMO and Bartlett tests to assess their suitability.

A Principal Components Factor Analysis with Promax rotation and Kaiser Normalization was performed to assess the underlying structure for the 21 items measuring 4 constructs related to attitudes towards the usage of the internet and mobile internet. The analysis confirmed the existence of 4 constructs, with all items having significant factor loadings, thus indicating appropriate construct validity for individual subscales (Drašković et al., 2023).

From the Figure 1 it can be seen that in all dimensions of attitudes in regards to internet usage, except for Product and Information Variety, female respondents have higher average scores than male respondents.

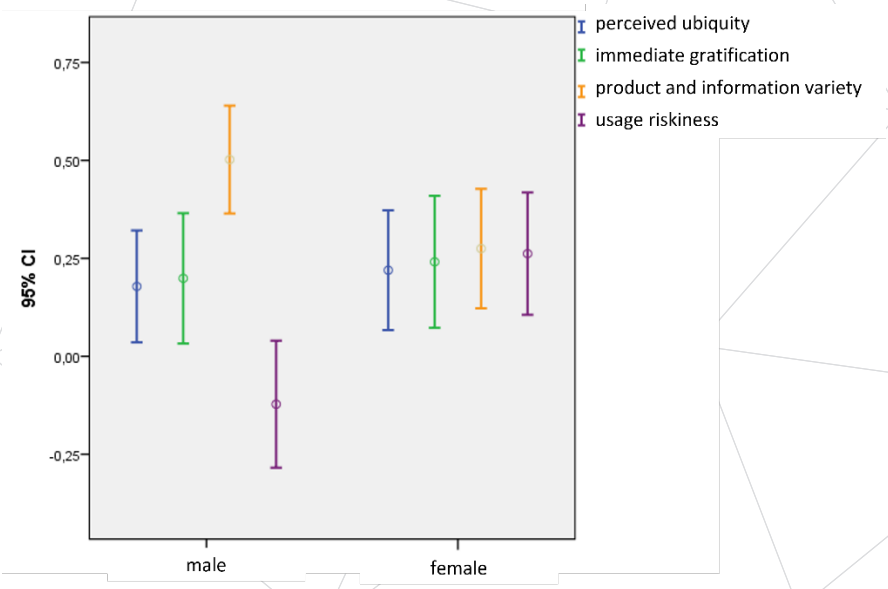


Figure 1 - 95% confidence intervals for average scores calculated for all dimensions of the internet and mobile internet usage for male and female respondents

To test the proposed hypothesis that:

H_1: There is statistically significant difference between ***genders*** in their attitudes towards internet and mobile internet usage,

the analyses of given scores with Levene's test for testing equality of variances, as well as the t- test were conducted.

- By using t-test for independent samples we found significant gender differences in the average scores calculated for two dimensions of the attitudes towards the usage of internet and mobile internet: Product and information variety (t=2.181, df=232, p=0.03), Usage riskiness (t=-3.380, df=232, p=0.001), (Table 2).

Table 2: Independent samples t-tests for gender comparisons with Levene's test for testing equality of variances for Generation Y's respondents

Dimensions of Attitude	Levene's Test		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Perceived Ubiquity	,954	,330	-,391	232	,696
Immediate Gratification	,263	,609	-,352	232	,725
Product and Information Variety	1,204	,274	2,181	232	**,030**
Usage Riskiness	,219	,641	-3,380	232	**,001**

Source: authors

Results presented in Table 2 support the hypothesis H1.

From the Figure 2 it can be seen that in all dimensions of attitudes in regards to internet usage respondents with bachelor's degree have higher average scores than the respondes with high school/college degree.

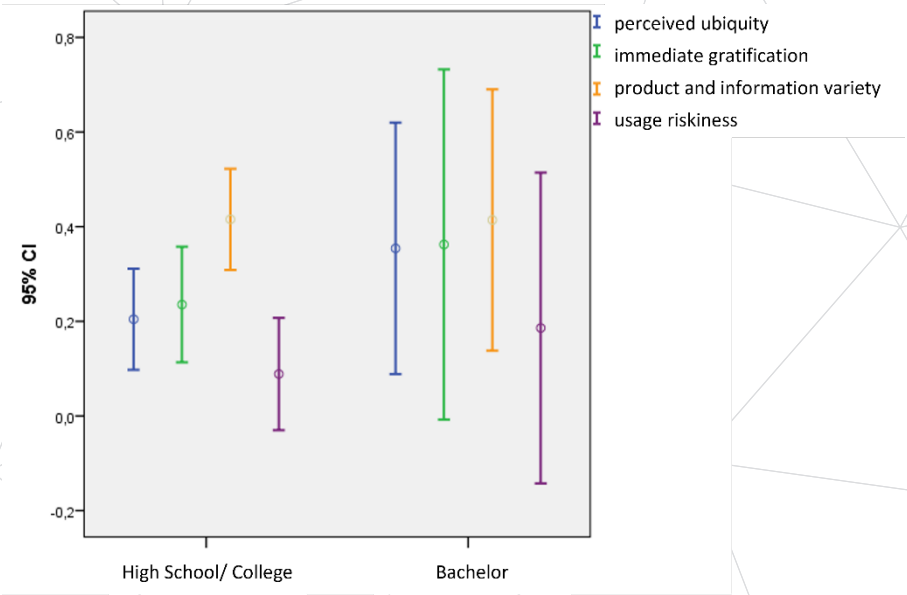


Figure 2 - 95% confidence intervals for average scores calculated for all dimensions of the internet and mobile internet usage for respondents with complited high scool/college or bachelor's degree

To test the proposed hypothesis that:

H_2: There is no statistically significant difference between respondents with ***high school/college*** and ***bachelor's*** education level in their attitudes towards internet and mobile internet usage,

the analysis of given scores with Levene's test for testing equality of variances, as well as the t- test were conducted.

Table 3 - Independent samples t-tests for education level comparisons with Levene's test for testing equality of variances for Generation Y's respondents, those with high school/college degree and bachelor's degree.

Dimensions of Attitude	Levene's Test		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Perceived Ubiquity	,110	,740	-,993	227	,322
Immediate Gratification	,731	,393	-,719	227	,473
Product and Information Variety	,097	,756	,009	227	,992
Usage Riskiness	,027	,870	-,574	227	,567

Source: authors

According to Table 3, there are no significant statistical variations between individuals with a high school/college degree and those with a bachelor's degree in the average scores for all aspects of attitudes towards internet and mobile internet usage. As a result, the hypothesis H2 was not supported.

5 Conclusions

This paper explores how young internet users from California belonging to Generation Y perceive certain characteristics of websites. We analyzed user opinions in relation to their attitudes towards internet and mobile internet usage, including perceived ubiquity, immediate gratification, product variety, and internet usage riskiness (content). We also conducted statistical tests to determine if there were significant differences in attitudes among Generation Y respondents based on their gender and level of education.

It has been proven that the female respondents have higher average scores than the male respondes in all dimensions of attitudes in regads to internet usage, except for Product and Information Variety. These differences have been proven to be statistically significant in the following two analysed dimensions: Product and Information Variety, and Usage Riskiness. Although, in all dimensions of attitudes in regards to internet usage respondents with bechelor`s degree have higher average scores than the respondents with high school/college degree, it has not been established that these differences are statistically significant.

Based on the results, it can be inferred that gender has a significant impact on how individuals perceive internet and mobile internet usage. It's worth noting that our study only included first-generation participants from a highly developed knowledge economy. Therefore, our findings may not be applicable to generation Y respondents from an economy in transition (Ćelić et al., 2018).

Further research is needed to explore these differences more thoroughly and gain a deeper understanding of this particular consumer segment. The insights gained from studying the attitudes of young internet and mobile internet users from California could be beneficial to businesses worldwide, not just in California.

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ANALYSIS OF THE MANAGEMENT STYLE IN THE HEALTHCARE INSTITUTION

Slavica Mitrović Veljković[1], Olga Ivetić[2], Predrag Vidicki[1], Eda Ribarić Čučković[3], Aleksandra Perić[1]
([1]Department of Industrial Engineering and Management, Faculty of Technical Sciences, University of Novi Sad, Serbia, mslavica@uns.ac.rs vidicki@uns.ac.rs aleksandraperic@uns.ac.rs, [2]Department of Psychiatry and Medical Psychology, Medical Faculty, University of Novi Sad, Serbia, olga.ivetic@mf.uns.ac.rs, [3]Polytechnic of Rijeka, Rijeka, Croatia, eribaric@veleri.hr)

Abstract: Healthcare is a complex and highly regulated industry that requires strong leadership to provide high-quality patient care. Healthcare leaders should be aware of the strengths and weaknesses of each management style and must be able to adapt their management style to the specific needs of their team and their patients to provide the best possible care. While some management styles may be more effective than others, Autocratic, Delegative, Participative, and Parental management styles are all used in healthcare, with varying degrees of success. Previous research suggests that the use of different management styles in healthcare institutions can have a significant impact on patient outcomes, employee satisfaction, and organizational culture. The use of different management styles in healthcare depends on the situation and the needs of the organization and on the skills and motivation of the employees. The goal of this research is to determine which management style is present in the investigated healthcare organization, as well as to investigate the level of adequate relationship between management and employees. We examine the attitudes of employees on issues related to management styles, and on the state of the relationship between management and employees in the organization. We tried to identify how much employees consider management style and the relationship between management and employees to be important in the operation of the organization. If managers care about and take care of employees, if managers have adequate communication with employees or if employees have freedom and autonomy in performing their job tasks. The research was conducted in a clinic within a tertiary healthcare institution from the public sector in Serbia. The questionnaires were distributed among the 43 clinic's employees from different sectors and levels of the organizational structure, from managers to staff. Based on the results of the conducted research, it can be concluded that, in the organization in which the research was conducted, the managers have a desirable management style. However, the results showed that in the examined organization, the managers do not have an adequate communication with the employees, and based on that some suggestions and practical solutions are proposed.

Keywords: Management style, Healthcare institution, Employee satisfaction

1 **Introduction**

The Griffiths report (Piercy, 1984) aligned healthcare organizations to the corporate sector and fundamentally changed how healthcare organizations are run. Nowadays healthcare organizations are managed by executive boards, charged with making recommendations on organizational development and policy that are implemented by middle managers who should work closely with clinicians (Kumar, 2013). Increasingly overburdened healthcare system, in an pursuit of increased efficiency and productivity, requires effective leadership at all levels within the healthcare organizations to improve the quality of healthcare provision. There has been the need to invest in and promote the development of clinical leadership programmes and the drive for clinicians to assume leadership roles at all levels within healthcare organizations.

Management style is a crucial aspect of leadership that determines the way a leader handles the organization, employees, and its stakeholders. Management style can be defined as the interaction and relationship established between leader and employees that influences, motivates or empowers employees in the achievement of certain goals (Wojciech Łukowski, 2017; Reed, Klutts and Mattingly, 2019). Healthcare is a complex and highly regulated industry that requires strong leadership to provide high-quality patient care. Management styles of the health organization play a vital role in promoting workplace empowerment, organizational commitment and job satisfaction at hospital settings (El-Jardali *et al.*, 2009). Significant positive associations between effective styles of leadership and high levels of patient satisfaction and reduction of adverse effects have been reported (Wong, Cummings and Ducharme, 2013)

Healthcare systems are composed of numerous professional groups, departments, and specialties with nonlinear interactions between them; the complexity of such systems is often unparalleled as a result of constraints relating to different disease areas, multidirectional goals, and multidisciplinary staff (Al-Sawai, 2013).

A number of leadership approaches can be adapted to the healthcare setting to optimize management in this highly complex environment. Autocratic, Delegative, Participative, and Parental are the four most commonly studied management styles (Likert, Rensis and Likert, 1976; Taucean, Tamasila and Negru-Strauti, 2016).

Autocratic management style is characterized by a leader who makes decisions without involving subordinates. The leader makes decisions based on their judgment and authority, and they expect compliance from their subordinates. Autocratic management style can be effective in situations where quick decisions are needed, such as in emergency situations. However, it can lead to low morale and job dissatisfaction among employees, which can lead to high turnover rates. In the early twentieth century, autocratic management style was popularized by Frederick Taylor, who believed that managers should have complete control over their workers and should use strict rules and procedures to maximize productivity. This style of management was prevalent in the manufacturing industry during the Industrial Revolution, where workers were viewed as interchangeable parts in a machine (Goss, 2015). This management style is not commonly used in healthcare as it can lead to negative outcomes such as low employee morale and poor patient care. However, in emergency situations where quick decision-making is necessary, an autocratic style may be needed to ensure the safety of patients (Khajeh, 2018).

Delegative management style is also known as laissez-faire management style. In this style, the leader delegates decision-making power to subordinates and provides minimal guidance. The leader is hands-off and allows employees to make decisions independently. This style can be effective in situations where subordinates are highly skilled and motivated. However, it can lead to confusion, lack of direction, and low productivity when employees are not clear about their roles and responsibilities. Delegative management style, emerged in the mid-twentieth century as a response to the limitations of autocratic management style. Delegative management style was popularized by management theorist Douglas McGregor, who believed that employees are self-motivated and that managers should provide minimal guidance and direction. This style of management was popular in creative industries such as advertising, where employees were given autonomy to develop innovative ideas. This style of management is not typically used in healthcare due to the high level of responsibility and accountability required for patient care and if used previous research show that the outcome factors of laissez-faire styles leadership like willingness to exert extra effort, perception of leader effectiveness and satisfaction with their leader is weaker and less positive than in other management styles (Spinelli, 2006). Healthcare professionals must be highly skilled and trained to make decisions and provide care to patients, and they need clear guidance and support from their leaders.

Participative management style, also known as democratic management style, involves collaboration and joint decision-making between the leader and subordinates. The leader solicits input from employees and considers their opinions before making decisions. This style can increase employee morale, job satisfaction, and commitment to the organization. However, it can be time-consuming and can result in slow decision-making processes. Participative management style emerged in the 1950s as a response to the limitations of both autocratic and delegative management styles. Participative management style was popularized by Kurt Lewin, who believed that leaders should involve employees in decision-making and seek their input and feedback. This style of management was popular in industries where employee engagement and participation were seen as critical to success. This style of management is widely used in healthcare, particularly in areas such as patient safety and quality improvement. Leaders who use a participative management style involve their employees in decision-making and seek their input and feedback, which can lead to improved patient outcomes and higher employee satisfaction. It have been reported that the more participative the nurses perceived their managers' leadership style to be, the more satisfied they were (Upenieks, 2003).

Parental management style is characterized by a leader who acts like a parent figure to their subordinates. The leader provides guidance, support, and advice, and encourages employees to grow and develop. This style can create a supportive work environment, which can lead to high levels of employee satisfaction and loyalty. However, it can also lead to dependency, lack of initiative, and complacency among employees. Parental management style emerged in the 1970s as a response to the changing nature of work and the increasing importance of employee motivation and satisfaction. Parental management style was popularized by management theorist Douglas McGregor, who believed that leaders should act like parents to their subordinates and provide guidance, support, and advice. This style of management was popular where employee well-being and job satisfaction were seen as critical to providing high-quality care. This style of management is also used in healthcare, particularly in areas such as employee development and wellness. Leaders who use a parental

management style provide guidance, support, and advice to their employees, which can lead to increased job satisfaction and a more engaged workforce. However, this style can also lead to employees feeling micromanaged or infantilized, so it must be used judiciously.

There are many other styles of leadership, among them the more common are: transformational, transactional, task-oriented, and relationship-oriented leadership (Sfantou *et al.*, 2017). Previous research findings provide evidence that a combination of leadership styles is needed to attain desired goals in the healthcare institutions (Aboshaiqah *et al.*, 2014).

2 **Research**

The subject of this research is the analysis of management style in a healthcare organization and the state of the relationship between management and employees in the organization. The objective of the research is to determine which management style is present in the healthcare organization and to establish the level of established relationship between management and employees by examining the attitudes of employees on issues related to management style and approach and the relationship between employees and managers.

2.1 Research method and the sample

The research was conducted in accordance with one of the general scientific methods, which is a questionnaire survey. The questionnaire was developed for the purposes of this research and contains precisely and unambiguously formulated statements. The questionnaire contains 10 questions related to basic demographic information about the employee and 12 questions related to the subject of the research. Next to each item, there is a scale with ratings (Likert scale) from 1 to 5, which should be circled according to the degree to which the respondent agrees with the given statements

The research was conducted in a Clinic within a tertiary healthcare institution from the public sector.. The sample consisted of 43 participants. The questionnaires were distributed among the Clinic's employees, and in order to obtain more objective results, the research included employees from different sectors and levels of the organizational structure, from managers to staff. The selection of respondents was not based on any specific criteria, but the research was conducted on a random sample principle.

In terms of gender and age distribution, out of the 43 participants in the research, 44.00% or 19 participants are male, while 56.00% or 24 participants are female. The largest group of participants falls within the age range of 35 to 40 years, accounting for 35% of the participants. The second-largest group is the age range of 40 to 45 years, representing 28% of the participants. There are 4 participants who are over 50 years old, accounting for 9% of the total. There are no participants in the age groups below 20 years and between 45 and 50 years.

Regarding work experience, the largest group of participants, accounting for 42% of the total, has a work experience of 10 to 20 years. They represent a significant portion of the experienced staff in the organization's business field. The next group is comprised of participants with 5 to 10 years of work experience, representing 28% of the total. A slightly smaller percentage, 16%, consists of participants with 1 to 3 years of work experience. There are a total of 4 participants with over 30 years of work experience, accounting for 9% of the total.

In terms of educational qualifications, the distribution among the participants is as follows: 33% have completed secondary education, 5% have completed vocational college, 39% have completed higher education (bachelor's degree), and 23% have specialized, master's, or doctoral degrees. The majority of participants, 81%, stated that their occupations fall within the field of natural sciences. 12% identified their occupations as being in the technical field, while 7% associated their occupations with social sciences.

The job positions of the participants in this research are divided into levels. 19% of the participants belong to the higher level, the majority of participants, 53%, belong to the middle level, and 26% belong to the worker level.

Regarding career progression within the organization, 56% of the participants responded that they have been promoted during their tenure in this organization. On the other hand, 19 participants, representing 44% of the total, stated that they have remained in the same position while working for this organization. None of the participants reported a regression in their positions within this organization.

Among the participants, the Medical Technician role has the highest percentage at 23.26%. Both the Medical Resident and Organizational Medical Technician of the Department positions have an equal percentage of 16.28%. The General Practitioner position has a lower percentage of 2.33%. The Administrative Staff and Other categories both account for 9.30% of the participants.

2.2 The analysis of various aspects of leadership behavior

When asked whether the management is concerned about the professional development of employees, in question number 1, 51% of respondents answered that they are undecided, meaning they neither agree nor disagree. 28% of respondents agreed with this statement, while 16% disagreed, and 5% strongly disagreed. None of the respondents answered that they fully agree with this question (Graph 11).

This means that only 28% of the respondents agree that the management is concerned about the professional development of employees, which is less than one-fourth of the respondents. A concerning fact is that 51% of them are uncertain or undecided about this question. Within this percentage of respondents, there is an opportunity to increase the extent of professional development through certain improvement measures. These improvement measures include investing in continuous education, investing in higher levels of education, and attending professional training in the areas relevant to the healthcare organization's operations.

When asked in question number 2, whether the manager regularly shares important information with colleagues, 42% of respondents answered that they are undecided, meaning they neither agree nor disagree. 32% of respondents agreed with this statement, while 14% disagreed. The smallest percentage, 5% of respondents, strongly disagreed with this statement, while 7% of respondents fully agreed with it.

Sharing important information is crucial for the functioning of any institution, especially a healthcare institution. Communication and the flow of information between management and employees are key to the success of any organization. From the questionnaire results, we can see that a large percentage of respondents answered that they neither agree nor disagree with this question. The problem in state organizations is that information flows from top to bottom, and the distribution of that information is not adequate for all employees. In order for the management to improve the flow of important information to all employees, they need to change the policy of distributing important information. This includes organizing daily meetings within departments, sectors, and clinics, as well as regular monthly group meetings where all employees are present and can hear important information and share their opinions with others.

Regarding the question number 3 if management offers assistance if someone is overwhelmed, 7% of respondents fully agree, while 23% of them agree. 19% of respondents disagree with this statement, and 7% strongly disagree. Similarly to the previous question, the largest percentage of respondents, 44%, stated that they are undecided, meaning neither agreeing nor disagreeing with this question.

Each employee in an organization has a defined job description. Since 19% of respondents disagreed and 7% strongly disagreed, along with a significant number of undecided respondents, the management of this healthcare organization needs to work on redistributing tasks so that everyone receives an equal share, meaning that everyone works in accordance with their job description but also sets an example by helping others.

In order to create an atmosphere where employees support each other, the management needs to select a neutral staff that is not influenced by external factors. They also need to create an environment where employees have shared short-term and long-term goals and achieve positive business results through collaboration and teamwork.

On question number 4, if that management allows employees to rely on their own judgment, knowledge, and abilities in problem-solving, 44% of respondents expressed indecisiveness, meaning neither agreeing nor disagreeing. 32% of respondents agreed, while 19% disagreed. The smallest percentage, 5% of respondents, fully agreed with the statement. None of the respondents answered that they strongly disagreed with this question. Considering that the majority of employees in this healthcare organization are specialists (10) and residents (7), it is crucial that they rely on their own judgment, knowledge, and abilities in problem-solving. Continuous improvement and development of knowledge and skills are necessary to keep up with modern advancements in the medical field and to improve the overall health status of the people in the region where this healthcare

organization operates. The management should be receptive to enhancing the knowledge of their employees as it can provide a competitive advantage and deliver exceptional medical care.

Regarding the statement in question number 5, that managers hold productive meetings, 49% of respondents expressed indecisiveness, meaning neither agreeing nor disagreeing. 12% of respondents agreed, while 37% disagreed, and 2% strongly disagreed. None of the respondents answered that they fully agreed with this statement.

Meetings in organizations are a crucial aspect of business progress. Each meeting aims to propose and improve future activities, address any arising issues, and so on. Conducting productive meetings is an important element in business operations, and every management team should practice it. The reason for this is to ensure that every employee is aware of current matters and that important information is conveyed in an adequate and direct manner. During meetings involving all employees and the management, it is necessary for each employee or group of employees to express their opinions or raise any issues.

In response to question number 6, whether functions in the organization are clearly defined, 49% of respondents disagreed with this statement, while 23% agreed. Additionally, 23% of respondents were undecided, neither agreeing nor disagreeing. The smallest percentage, 5% of respondents, fully disagreed with this question.

A function represents a set of activities that contribute to the achievement of a goal in the process of organizational success. Functions and roles in an organization can only be effectively performed through coordinated and interconnected efforts of people and service components. Therefore, their interconnectedness within the organization is a crucial condition for its operation, functioning, and sustainability. The majority of respondents believe that functions in the organization are not clearly defined. In order to operate adequately, functions in this organization need to be clearly defined. Considering that it is a healthcare institution, a proposed measure is to define functions in this organization according to vertical functional division.

When we talk about vertical functional division, it implies that the highest hierarchical level in this healthcare organization is occupied by the management function. This function defines the organization's goals and strategy. The leadership function represents the second level of vertical functions in the organizational structure of this organization. This function would involve implementing strategies and developing objectives into tasks. The execution function would represent the lowest level in the structure of this organization and would involve carrying out immediate tasks and specific jobs.

Regarding the question number 7 about of whether responsibilities are precisely defined in the organization, 56% of respondents disagreed with this statement, while 35% neither agreed nor disagreed. Additionally, 4% of respondents disagreed completely, while 5% agreed.

By analyzing the data from the questionnaire, it is clear that responsibilities are not clearly defined in the healthcare organization. The need for clear job definitions and responsibilities exists in all business segments. Introducing professional managers who can bring innovation and redistribute responsibilities within a healthcare organization can be a solution. Innovation, flexibility, respect for the experience and knowledge of employees at all positions in the institution, leadership, a vision for potential organizational progress towards goals, fostering teamwork, and effective communication among all organizational levels and employees, as well as incentivizing individuals and groups for quality work and achieving set plans and strategies, are qualities necessary for a quality healthcare manager. Building an internal quality improvement and safety system and better healthcare services management, with the primary goal and motivation being patient satisfaction, depend solely on the quality of work and patient satisfaction.

When asked whether managers insist on tasks being completed within a specific timeframe in the question number 8, 72% of respondents agree with this statement. Among them, 14% completely agree, while 5% disagree. The group of respondents who neither agree nor disagree accounts for 9%.

Insisting on completing tasks within a specific timeframe is one of the techniques for motivating employees. When combined with rewards, these two motivation techniques are key elements in increasing productivity. According to the questionnaire results conducted in a healthcare organization, it can be seen that the management insists on tasks being completed within a specific timeframe, and employees are satisfied with

that. Every employee will be satisfied and motivated if they know exactly what is expected of them, the timeframe in which it is expected, and the goals set. It is necessary to clearly define the organization's strategy, goals, vision, and mission to inspire and motivate employees to carry out their tasks. Greater success would be achieved if the management in the healthcare institution rewarded successfully completed tasks and achieved goals. Monetary incentives are often the most effective motivator in Serbia, but besides material rewards, there are other non-material forms of rewards that can strengthen the sense of belonging to the organization. Just as success can be praised and rewarded, attention can also be drawn to failure, but never through punishment, rather by finding appropriate solutions to the problem.

In response to question number 9 regarding whether the organization's goals are clearly defined, 51% of respondents expressed uncertainty in relation to this question. 16% of respondents agree with the statement, while 28% disagree with it. The smallest percentage, 5% of respondents, completely disagree, and none of the respondents answered that they completely agree with the statement.

Clear definition and determination of goals are crucial for the competitiveness of an organization in the market. Each goal must be clearly and individually defined. The results of the question about clearly defined goals indicate that the management has not focused on methods to effectively and simply communicate the goals to employees. There are several methods that can be applied to bring goals closer to employees. The basic method involves defining, implementing, monitoring, and evaluating goals. Through clear definition, employees will know which goals are short-term and which are long-term. Understanding the organization's mission and vision will help employees better understand the goals. The management should participate together with employees in achieving the goals by assigning tasks, monitoring their implementation, and rewarding progress towards achieving the goals. At the end of the goal-approaching process, the management should conduct an evaluation to check the extent to which tasks have been fulfilled and goals achieved.

Regarding question number 10 about whether management allows employees the freedom to approach their work in their own way, 44% of respondents neither agree nor disagree with the statement. 28% of respondents agree with it, while 14% of respondents disagree. 9% of respondents completely agree, while the smallest percentage, 5% of respondents, answered that they completely disagree with the statement.

Freedom in performing tasks represents excellent motivation for employees. Considering that the nature of this institution's activities relates to providing healthcare services, freedom in delivering these services is crucial for their adequate and successful execution. The management should provide maximum support to employees in approaching and performing their work, allowing them as much freedom as possible. This creates a positive atmosphere among people and adequately motivates them for further improvement and finding new methods, ultimately leading to a significant increase in organizational productivity.

On question number 11, whether management resolves conflicts when they occur among employees, 49% of respondents neither agree nor disagree with the statement. 35% of respondents answered that they disagree with the statement, while 14% of respondents agree with it. 2% of respondents completely disagree with the statement.

The survey results are expected because the management alone should not directly participate in resolving conflicts between employees. The highest hierarchical level of conflict resolution should involve the immediate supervisor. Every organization is familiar with conflict and its resolution. If the conflict relates to daily minor verbal disputes between workers, they are resolved through discussions with the immediate supervisor. Through dialogue and collaboration, a solution can be reached. When resolving a conflict, it is important for the conflicting parties to let go of the winner-loser mentality. The management should monitor the conflict and, if necessary, propose a resolution if it does not naturally emerge.

In response to question number 12, whether management strongly insists on increasing efficiency at work, 44% of respondents agree with the statement. 30% of respondents neither agree nor disagree, while 19% of respondents disagree with the statement. The smallest percentage, 7% of respondents, completely agree with the statement, and none of the respondents answered that they completely disagree.

The effectiveness of a healthcare institution, in a broader sense, can be defined as the institution's ability to acquire necessary resources and utilize them efficiently to achieve its goals. The narrower understanding of

effectiveness in a healthcare institution can be defined as the degree to which its goals are achieved. Insisting on increasing work efficiency in a healthcare institution aims to improve the quality of healthcare, enhance the quality of healthcare services, and increase the quality of preventive care for the population. With reasonable resource allocation and operational efficiency in the healthcare institution, goals can be achieved more quickly and clearly.

3 Conclusion

Based on the results of the conducted research, it can be concluded that the managers have a desirable management style. The majority of respondents, through their answers to questions 1, 2, 3, and 4, have shown agreement with the statement that managers care about their employees. From the respondents' answers to questions 5, 6, and 7, it can be concluded that most respondents believe that managers do not have adequate communication with employees. Through the analysis of the answers to these questions, it has been concluded that managers have adequate communication only with certain employees, which is certainly a problem that needs to be addressed. Through the answers to questions 8, 9, 10, 11, and 12, it can be seen that employees usualy have freedom and autonomy in performing their job tasks.

The results obtained through the conducted research indicate that managers do have a desirable management style, and that the things that need to be worked on are: organizational goals need to be clearly defined, meeting productivity should be increased, the way conflicts are resolved within the organization should be improved, and functions and responsibilities within the organization should be more precisely defined.

However, the most common problem in conducting research is low discrimination in practice, unrealistic answers from respondents, and their lack of interest in cooperation. This was also demonstrated in this research, as a large number of respondents answered their questionnaires as undecided, or uncertain about whether the questioned action is being implemented or not within the organization. Such a high percentage of undecided responses can create a false image of the organization in which the research was conducted.

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IMPACTS OF ORGANISATIONAL MATURITY ON DOCUMENT MANAGEMENT SYSTEM USE – CASE ANALYSIS

Simona Sternad Zabukovšek[1], Sandra Jordan[1], Vujica Lazović[2], Sunčica Vuković[2], Samo Bobek[1]

([1] University of Maribor, Faculty of Economics and Business, Maribor, Slovenia; [2] University of Montenegro, Faculty of Economics, Podgorica, Montenegro)

Abstract: The digitalisation of processes opens new ways for the daily operations of organisations and offers a competitive advantage for organisations. A document management system (DMS) is an effective way of managing the digitalisation of processes, as it enables paperless processes. As such, the use of DMS represents many advantages. We used the PEMM model to assess the company's maturity level concerning the DMS life cycle and use. The research was based on a questionnaire and collected data from Slovenian organisations using DMS. We used PLS path modelling, which is one of the SEM procedures based on the analysis of variance, where we have to assess the measurement and structural models. Tool SmartPLS was used for further analysis. A more in-depth study was done by case research in middle-size financial institutions where structured interviews interviewed employees to clarify organisational maturity's impacts on DMS use.

Keywords: digitalisation of processes, document management system (DMS), organisational maturity, process maturity

1. Introduction

The modern environment forces companies to be more and more efficient, which is why the digitisation of documents is crucial (Sternad Zabukovšek *et al*., 2020). That is why companies began to realise that they can continue and grow their successful operation only by reorganising work and making changes in business processes, which requires better management of business information and processes. That also includes developing and implementing various information technologies (IT), which enable quick and more structured generation of different documents (Mukhopadhyay, Kekre and Kalathur, 1995). Limanowski (1983) pointed out the need to manage unstructured content, leading companies to develop the first document systems or electronic document archives. However, documents represent the basis of almost every business process, which is why the management of document systems also means the management of a company's business processes.

A business process is a combination of activities with a certain input at the beginning and an outcome at the end of a process. In contrast, digitisation of the business process means changing a set of inputs and outcomes of a process into electronic or digital ones (Karna, 2016). The purpose of digitisation is to eliminate the repetitive tasks in the company but still enable employees to complete the tasks that are crucial for the operation of the company (Khare, 2016) and support achieving higher efficiency, profitability and better productivity, with the aim of reducing business costs (Ensiger, Fischer and Früh, 2021). The digitalisation of processes opens new ways for companies and offers a competitive advantage over other institutions/companies (Ernst & Young, 2021). Every information system (IS)/IT manager faces the challenges of managing the new technologies that emerge daily and how they can be integrated into the organisation's changing needs (Haider, Aryati and Mahadi, 2021).

A document management system (DMS) is an effective way of managing processes' digitalisation, as it prevents the paper from losing its importance. The use of DMS represents many advantages such as a collection of documentation in one place, faster work processes, less use of paper, savings in work time and costs for the employer, which can be profitably used with the help of this technology etc. (Adeneye and Ahmed, 2015; Andriansyah and Elmi, 2020). One of the possible factors for a successful DMS could also be the company's maturity, which can be assessed using one of the maturity models. The idea of evaluating maturity models is increasingly used in IS and management as a continuous improvement approach (Ahern, Clouse and Turner, 2004; Mettler, 2011). Assessing a company through one of the maturity models is a common technique that has proven valuable in evaluating business processes or certain parts of organisations, as it characterises a path to a more organised, systematic way of doing business (Proença and Borbinha, 2016). Through maturity model assessment, we are able to measure the level of maturity in an organisation, allowing stakeholders to clearly

identify areas needing improvement and accordingly prioritise what to do to achieve higher maturity levels (Ahern, Clouse and Turner, 2004; Mettler, 2011).

The following sections are structured as follows. Section 2 has theoretical starting points regarding DMS and the connection of organisational maturity with DMS. In Section 3, the research study is presented with results. Section 4, conducted case research in the selected financial organisation, is shortly presented as follows up of the research study. The article is concluded with a discussion and conclusion section.

2. Theoretical background

2.1. Document Management Systems

Bjork (2003)divided documentary systems into two groups: archival document systems and systems for the electronic management of documents and processes (DMS). Archival document systems are limited exclusively to document management, meaning they capture documents equipped with metadata, archive them, and do the basic search and review possible (Bjork, 2003; Sutton, 1996). In addition to everything an archival documentary system enables, DMS supports creating and editing documents, tracking changes, and managing the flow of events (Bjork, 2003). The DMS also supports capturing data/documents and their storage, sending/distributing documents, document processing and storage of documents in electronic form (Zantout and Marir, 1999). Therefore, companies have directed all their activities to select and implement DMS to automate business and decision-making processes (Babkin *et al.*, 2019). Using DMS allows companies to improve and renovate business processes. Here, the company's key role is implementing DMS, both organisational aspects and process changes, as well as compliance with regulations and legislation (Abu Naser and Al Shobaki, 2017). It also enables a more effortless flow of documents within companies and long-term storage of documentation (Connertz, 2003). Sprague (1995) highlights the importance of easier access to documents, their updating, as well as easier user cooperation and shortening the life cycle of documents.

The main advantages of DMS are cost-saving, time-saving, improvement of processes, compliance with the regulations and electronic audit trail (Canteli, 2021). Managing large amounts of documents represents high financial costs for any company. With DMS, a company can automatically, easily, and quickly facilitate the management of certain processes, which reduces costs - printing, use of human resources, etc. - which can be used for more profit-making business processes. The next advantage is time-saving, which represents the ability of DMS to provide quick access to information without having to go to the office. It will benefit all DMS users and offer them more time for other activities they need to do in their work. DMS makes finding data, information, files, and processes easy. A good DMS also improves work processes because it makes it possible to reduce the number of steps required to carry out a procedure, which directly contributes to increasing the efficiency of work processes, as company employees will find the information or documents they need for their work faster. Also, an advantage is a compliance with regulations, meaning compliance with legal norms and updates is essential for all businesses. Fulfilling all obligations can be complicated, especially in organisations subject to legal provisions. A suitable DMS will support the implementation of regulatory and legal frameworks and protect data and information. DMS enables recording all steps necessary to perform a certain activity within the DMS (Adam, 2007). Based on case studies, Adam (2007) pointed out that the benefits of DMS can be further divided into measurable and non-measurable benefits.

2.3. Organisational maturity and DMS use

Maturity is a criterion for evaluating areas of capacity connected to processes, process management or process orientation (Willaert *et al.*, 2007). Blondiau, Mettler and Winter (2016) and Proença and Borbinha (2016) expose that maturity models are recognised as a tool to show moderate but systematic development and/or improvement of companies' general skills, processes, structures, or conditions. Gibson and Nolan (2023) are considered the founders of the maturity model, as they created a model that was the first to use computer resources in companies. Since 2002, the number of publications on maturity models has increased tremendously, indicating that the topic has become much more important for individual research (Proença and

Borbinha, 2016). The use of the maturity model certainly appeared in the field of business informatics. Still, its use fairly quickly spread to other fields as well, such as the field of medicine (McCarthy *et al.*, 2014), supply chain management (Lockamy III and McCormack, 2004), education (Marshall, 2012), e-governance (Fath-Allah *et al.*, 2014), project management (Kwak and Ibbs, 2002), business process management (Tarhan, Turetken and Reijers, 2016) and maturity model for Industry 4.0 (Schumacher, Erol and Sihn, 2016).

According to Helgesson, Höst and Weyns (2012), it is the company that decides which improvements need to be implemented, which is one of the main reasons why maturity models are used when a process is changing. In other words, maturity models are used to evaluate and improve an organisation's processes, capabilities, and overall performance. Maturity models also help companies evaluate the strengths and weaknesses of their business processes and compare processes with the quality standards and best practices of other companies (Albliwi and Antony, 2014).

Khoshgoftar and Osman (2009) and Proença & Borbinha (2016) have summarised the main features of different maturity models. They research 22 different maturity models. Five maturity models are mostly used in the field of business information solutions, namely Crosby's quality management maturity model (Willis and Rankin, 2012), the Process and Enterprise Maturity Model (PEMM) (Power, 2022), the Capability Maturity Model (CMM) (Crowston and Qin, 2010), the integration of the capability maturity model (Capability Maturity Model Integration - CMMI) (O'Regan, 2011) and business process maturity model (Business Process Maturity Model - OMG BPMM) (Van Looy, 2014). The most common goal of many studies has been to develop practice-based maturity models. Despite the great popularity of maturity models, they still receive a lot of criticism. One of the criticisms is that maturity models are introduced gradually and lack empirical foundations (Röglinger, Pöppelbuß and Becker, 2012). Roglinger Poppelbuss and Becker (2012) claim that, despite the great similarity of the various models, the documentation for their implementation is still not satisfactory. Cronemyr and Danielsson (2013) argue that maturity models are very demanding and complex to use, but the methods of assessing the level of maturity are very simple.

Based on the analysis of the above-mentioned five models, we assume that the PEMM model introduced by Power (2022) is the most suitable for assessing the company's maturity level in connection with the DMS life cycle. The PEMM model includes a process or business model of maturity whose purpose or goal is to create a framework that would help management plan, evaluate, and understand the business processes. Compared to the rest of the models, the PEMM model contains precise criteria and appropriate improvements in assessing the maturity of companies. The distinctive feature of the model is the distinction between organisational maturity (OM) and process maturity (PM) and between the process and business models (Power, 2022; Hammer, 2007). The business model distinguishes between four capabilities and four maturity levels (Power, 2022; Hammer, 2007), which are:

1. Leadership
2. Culture
3. Knowledge
4. Management

The process model distinguishes between five capabilities and four maturity levels:

1. Design
2. Performers
3. Owner
4. Infrastructure
5. Metrics

Maturity models can be particularly important in the context of DMS because they provide a way to evaluate and improve the processes and capabilities associated with managing and maintaining documents. Some of the key areas where maturity models can be used in the context of DMS include:

- Governance: Maturity models can help organisations to establish clear policies and procedures for managing documents.
- Security: Maturity models can help organisations to ensure that their DMS is secure.

- Compliance: Maturity models can help organisations ensure that their DMS complies with relevant regulations and standards (i.e. ISO 27001, SOC 2, HIPAA).
- Retention: Maturity models can help organisations to manage their documents over their entire life cycle.
- Collaboration: Maturity models can help organisations improve collaboration and knowledge sharing by providing a centralised document repository.

Maturity models can provide a framework for evaluating and improving the overall effectiveness and efficiency of an organisation's DMS life cycle.

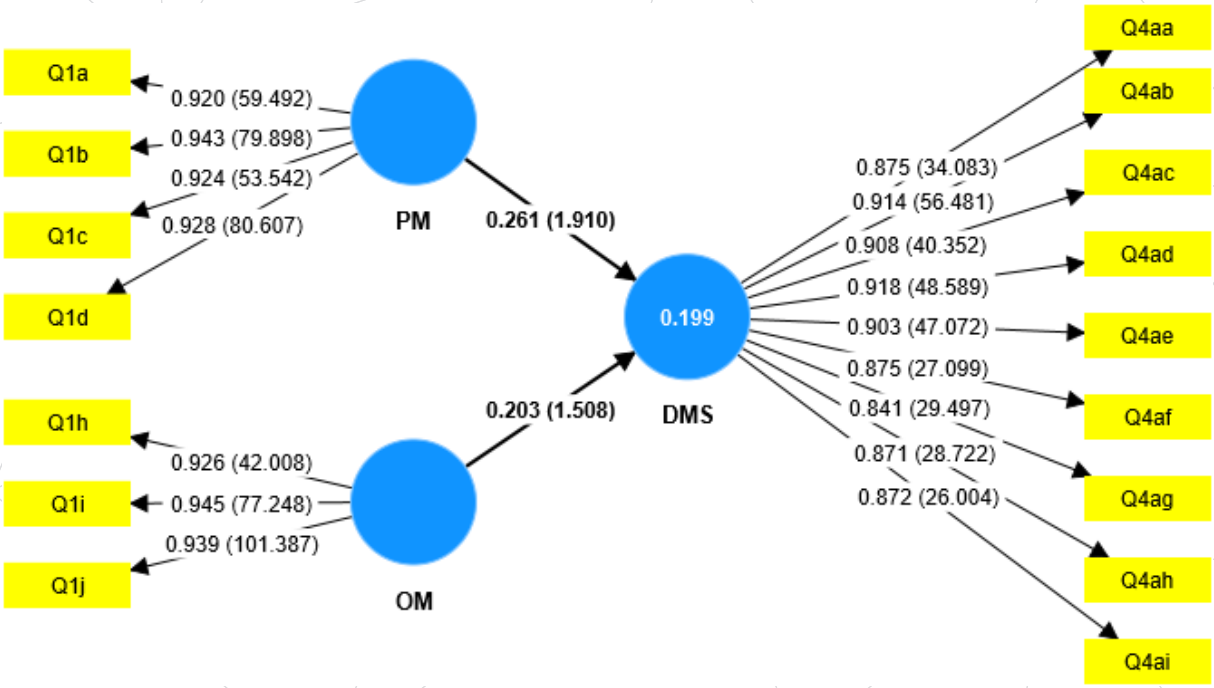
3. Methodology and Research

The research aimed to identify if the company's maturity level influences DMS use. Our research question was: "Does the company maturity level affect the use of the DMS?" According to the maturity model PEMM (described in Section 2.3), in our research model, we divided company maturity into process maturity (PM) and organisational maturity (OM). Research hypotheses have been:

- H1: Process maturity (PM) has a positive impact on DMS.
- H2: organisational maturity (OM) has a positive impact on DMS.

We developed a questionnaire and sent it to the Slovenian organisations which use DMS. We got 165 responses (sample size), where 130 (79 %) responses were from financial institutions. Among respondents, 88 (55 %) were male, and 71 (45 %) were female. Most of them are managers (58 %). They are employed in the company for 8.9 years on average and in this work position on average 5.7 years. We used PLS path modelling, which is one of the SEM procedures based on the analysis of variance, where we have to assess the measurement and structural model. Tool SmartPLS (Ringle, Wende and Becker, 2022) was used for further analysis (see Figure 1).

Figure 1: Structural model analysis



The statistical significance of each path coefficient was tested through bootstrapping (5000 sub-samples) by performing *t*-tests. From Figure 1 can be seen that process maturity (PM) has a statical significant positive impact on DMS ($\beta = 0.206$, $t = 1.919$, $p < 0.05$). In contrast, organisational maturity (OM) has no statistically significant positive impact on DMS ($\beta = 0.203$, $t = 1.508$, $p > 0.05$). The process of questionnaire validation and the results of the steps of the PLS-SEM technique are available from the authors.

4. Case research

For in-depth analysis, we conducted several case studies. The case study method is used to achieve this research's aim. Crowe *et al.* (2011) pointed out that the case study approach is especially valuable to utilise when there is a requirement to find an in-depth understanding of a problem, result or phenomenon of concern in its real-life perspective and typically involving a person, group, or organisation. The case study approach aims to understand a complex phenomenon within its real-life context and identify important factors that may add to it (George and Bennett, 2005; Yin, 2009). Yin (2019) pointed out that case studies are used to explain, describe or investigate phenomena or events in the daily situations in which they appear. Case studies can be quantitative or qualitative and include various data collection methods, such as document analysis, observations and interviews (Crowe *et al.*, 2011; George and Bennett, 2005). The case study approach can add additional understanding into what differences exist in its approach or why one strategy could be selected over another. Pearson *et al.* (2010) point out that this can refine theory or improve progress.

One of the researched organisations included as a case in this paper was a financial institution in Slovenia. For financial institutions, digitalisation primarily means supporting business processes with the help of available IT (Zillmann, 2023). The researched financial institution was a medium-sized organisation with approximately 220 employees. It was a subsidiary of one of the leading financial institutions in Austria and CEE. The financial institution was also an advanced user of digital services as it invested a lot in the lean processes of all its subsidiaries. Looking at its maturity level according to the model PEMM, we concluded that the financial institution corresponds to the maturity phase 3 of the PEMM model (described in Section 2.3), as we could see that the management developed the vision of the company and processes and has well-distributed responsibilities and knowledge of processes, process owners were responsible for supervising the implementation of the change, teamwork was at a high level, employees' felt responsible for the company's results and supported the changes in the company. The processes were organised in a way that they served to optimise the work in the company, process documentation was made in such a way that it also covered intermediate phases, employees were trained and authorised to make decisions that were required of them, the owners' processes were extremely dedicated, and the process measurements had a strategic basis.

DMS they used was a standard solution to meet a specific client's need. Used DMS was able to offer many advantages for users. In times of rapid changes and the need to adapt to the needs of the market and regulators, the implementation of ready-made solutions for financial institutions can be a key advantage.

Gains with DMS used in financial institution are:

- documents can be viewed online,
- documents can be captured from the source,
- documents are accessible to the business network promptly,
- the possibility of automated capturing of documents from information systems used in institution,
- simple and fast adjustments when needed,
- user rights are managed faster and applied in information systems and DMS and
- the implemented solution enable institution to operate without paper and become more socially responsible and sustainable.

Financial institution emphasises the following functionalities of the DMS they implemented (HRC, 2023):

- Capturing documents that are in paper form: digitisation of documents (scanning), conversion to a suitable format for long-term storage (PDF/A), determination of metadata and notes, with the help of which documents can be efficiently searched later in the e-archive system,
- importing electronic documents into the e-archive system, conversion to a suitable format and capturing electronic signatures,
- storage and search of documents through a single interface (in/out interface),
- digital signing and, if necessary, timestamping of documents,
- management of electronic documentation in a way that complies with the law, regulations, and recommendations,

- storage of documents in accordance with their classification and grouping into logical groups (e.g., credit folder),
- the subsequent modification of metadata (e.g., the archiving period for credit documentation),
- elimination of documents (transfer to the state archive or destruction),
- required maintenance work in electronic archiving (re-timestamping and signing),
- access rights management for e-archive documents (based on rights in Hibis) and controlled transmission of the document (separate rights for printing and e-mail),
- audit trail on the system (accesses to the system) and document level (history of coverage, insights, and controlled intervention)

4. Discussion & Conclusion

Companies are increasingly looking towards digitisation as they have realised that this is the only way they can be competitive in the market (Sternad Zabukovšek *et al.*, 2020; Mukhopadhyay, Kekre and Kalathur, 1995 and Ernst & Young, 2021). The use of DMS, otherwise known as the paperless business, is key for every company nowadays, not only for the reason of reducing costs but also for enabling work from different locations, storing documents in one place, and controlling access to documentation (Mukhopadhyay, Kekre and Kalathur, 1995; Adeneye and Ahmed, 2015; Andriansyah and Elmi, 2020; Canteli, 2021). DMS offers companies many advantages. We have summarised the most important ones (Canteli, 2021; Jordan and Sternad Zabukovšek, 2023):

- Cost savings: Managing large documents brings a long high financial cost for any company. With DMS, a company can automatically, easily, and quickly facilitate the management of processes, which helps to significantly reduce costs - printing, human resources, etc., which can be used more efficiently for profitable business processes.
- Time-saving: DMS enables quick and easy access to information without having to go to the office, which benefits all DMS users and offers them more time for other activities they have to do in their work. A simple DMS makes finding data, information, files, and processes easy.
- Improvement of work processes: A good DMS makes it possible to reduce the number of steps required to carry out a procedure or procedures, which directly contributes to an increase in agility and efficiency of work processes, as company employees will be able to find the information or documents they need for their work faster.
- Regulatory compliance and audit trail: Ensuring compliance with legal norms and regulations and ensuring updates are essential for all businesses. Fulfilling these obligations can be complicated, especially in companies that are also subject to legal provisions. A suitable DMS will support the implementation of the regulatory and legal framework, protecting data and information. One of the consequences of the last financial crisis was the increase in internal and external audits that many companies had to undergo to confirm that they had implemented all necessary regulations. DMS enables recording all necessary steps to carry out a certain activity within the DMS.

Through maturity model assessment, we can measure the current level of maturity of a particular aspect of an organisation in a meaningful way, allowing stakeholders to identify strengths and areas of improvement and prioritise what to do to achieve higher maturity levels (Ahern, Clouse and Turner, 2004; Mettler, 2011). Presented PEMM and other maturity models (e.g., CMM, CMMI and IMG BPMM) show a useful way to evaluate a company (Albliwi, Antony and Arshed, 2014). All models have their advantages and disadvantages. We consider the utility value of the PEMM model to be the greatest in the use of DMS, as the model consists of a business and process model and contains precise criteria and appropriate improvements in assessing the company's maturity.

From conducted empirical research study, we can conclude that process maturity (PO) has a positive statistically significant impact on DMS (which confirms H1). In contrast, organisational maturity (MO) has no statistically significant impact on DMD (which does not confirm H2).

From conducted case research, we can conclude that researched financial institution's maturity level, according to the model PEMM, belongs to the maturity phase 3 of the PEMM model (described in Section 2.3), as we could

see that the management developed the vision of the company and processes and has well-distributed responsibilities and knowledge of processes, process owners were responsible for supervising the implementation of the change, teamwork was at a high level, employees' felt responsible for the company's results and supported the changes in the company. The processes were organised in a way that they served to optimise the work in the company, process documentation was made in such a way that it also covered intermediate phases, employees were trained and authorised to make decisions that were required of them, the owners' processes were extremely dedicated, and the process measurements had a strategic basis. The case study also shows an advanced level of DMS use which was somehow expected regarding the maturity stage of financial institution. In future, we intend to expand research in more countries and conduct more case studies to develop a taxonomy of DMS use levels.

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THE IMPORTANCE OF TRAINING ON INTERCULTURALITY OF EMPLOYEES IN THE TOURISM SECTOR

Jelena Vujadinovic
University of Kragujevac, The Faculty of Hotel and Tourism Management in Vrnjačka Banja, Serbia,
j.vujadinovic15@gmail.com

Abstract: The tourism sector, by its very nature, involves interactions between people from different cultures, and therefore employees are expected, in addition to knowing a foreign language, to have a certain level of cultural sensitivity. Intercultural training has numerous advantages, some of them are that it enables effective communication and interaction with guests from different cultures, affects the satisfaction and loyalty of service users, promotes cultural understanding and tolerance. Also, investing in intercultural training for tourism employees can lead to the long-term success of the tourism organization and create a positive impact on the wider community. There are numerous studies that show that employee training on intercultural issues is extremely important for front-line employees to provide high-quality service and guest satisfaction. The lack of this training represents a significant challenge for tourism employees. Therefore, the goal of this research is to analyze the importance of intercultural training of employees in tourism, as well as all the benefits it has for both employees and guests. The methodology includes a review of relevant literature with an analysis of available data. The results of the research show that training on interculturality has a positive impact on the quality of services, as well as those organizations that have included this training program achieve greater competitiveness compared to those that have not yet done so.

***Keywords**: tourism sector, intercultural communication, training, cultural diversity, employees.*

Introduction

Tourism is a global and socio-economic phenomenon, which has a significant contribution to the economic growth and development of the destination. According to the World Travel and Tourism Council 2019, tourism sector is considered an important industry accounting for 10.3% of global GDP and accounting for 3.9% of total employment. One of the key effects of tourism on the economy is the influence of realized tourist consumption stands out. The multiplicative effects of tourism on the economy are exclusively related to the effects that arise as a result of the consumption of foreign tourists. The development of international tourism contributes to the transfer of funds from one tax system to another, which has a positive economic effect on the destination visited by tourists (Vujadinović, 2022). It is an effective instrument for improving the economic situation, especially in developing countries, such as the Republic of Serbia. In addition to economic effects, tourism can also contribute to the social development of the destination. Increased tourism activity can contribute to the promotion of local culture, tradition and cultural heritage. The tourism and hotel industry development policy in the Republic of Serbia is based on the Tourism Development Strategy of the Republic of Serbia for the period from 2016 to 2025, the main goal of which is to improve the tourism sector in Serbia through various activities and measures. . The central focus of this strategy, among other things, is aimed at attracting more foreign tourists. In order to achieve this, it is necessary for tourism companies to recognize the importance of investing in the education of employees in terms of knowing the specifics of different cultures. This paper examines the importance of training and the relationship between the interculturality of employees and the quality of services. Although the issue of cultural diversity is not a new phenomenon, this topic is very little represented in domestic literature. By reviewing the relevant existing literature, it can be concluded that no specific study has been done in Serbia so far and that this is the first scientific paper that empirically examines the importance of training and the connection between training on the interculturality of employees and the quality of services. The initial hypothesis in this paper is: Training on the interculturality of employees in tourism has a positive effect on the quality of services, that is, employees who attended intercultural training are ready to provide a higher quality of service to guests. This empirical research was conducted during March 2023 in several multinational 4- and 5-star hotels operating in the territory of Belgrade on a sample of 78 front-line employees and 53 foreign tourists. A unique questionnaire was created for the purposes of this research. The collected data were processed using Microsoft Office and SPSS software packages.

1. Literature review

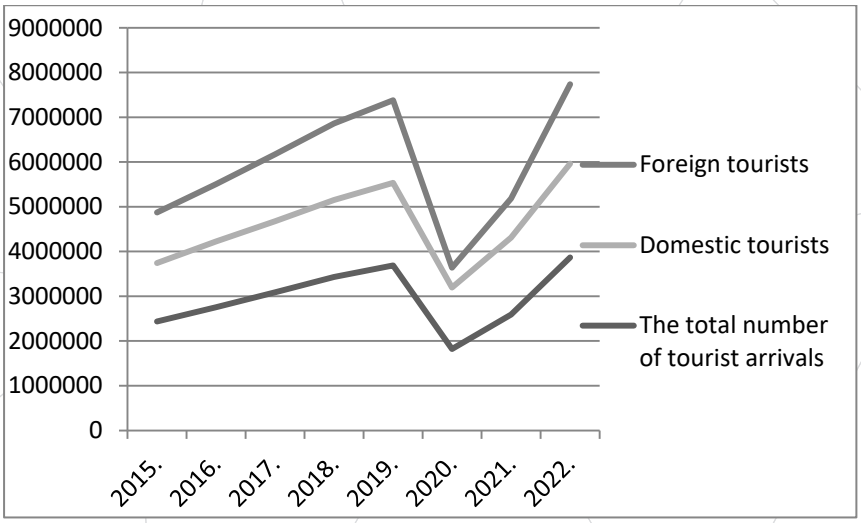
The tourism sector is connected to people and most depend on human resources. Only a highly-skilled workforce can ensure competitiveness and thus create jobs in tourism. In accordance with the new requirements, there is

a need to improve the education system and involvement of intercultural learning because the new environment increasingly seeking employees who are multi-qualified, flexible, and educated (Milićević, et al., 2013). The need for employee education arose due to accelerated changes caused by technological development, globalization, and increased competition because formal education lags behind changes in the labor market. This is reflected in the function of education and training in the organization, as a supplement to formal education, and takes over the function of human resource development. Development implies much more than preparation for a specific job, primarily adaptation to changes in the labor market, as well as preparation for future working conditions (Bahtijarević-Šiber, 1999). Employee training implies a planned effort by the organization to improve the performance of employees at the workplace, changes in specific knowledge, abilities, skills, attitudes, or behavior of employees, and implies the temporal dimension of the present. (Goldstein, I.L., & Ford, K.J. 2002). Training is a planned activity of training employees for the successful performance of work or activities. It is mainly aimed at acquiring specific knowledge, skills, and techniques necessary to perform a specific job, as well as increasing its success. Human resources, as an organization's potential, represent its greatest creative and driving force. In addition to employees occupying a key place in the process of providing services, they are also important bearers of changes and new ideas, they create additional value, increase the company's business performance, and therefore are the drivers of the organization's future performance and gaining a competitive advantage. This is especially pronounced in the tourism and hotel sector, as a highly labor-intensive activity, the importance of which is reflected in the fact that employees are in direct contact with numerous tourists and that the quality of service largely depends on their actions.

Modern business conditions prevailing in the global market require employees, who are in direct contact with foreign tourists, to possess not only formal education, knowledge of one of the foreign languages, and readiness to provide high-quality services, but also a deep understanding of the culture and customs of the tourists' home country. This is essential in order to meet their needs adequately and deliver a higher quality of service. Therefore, today, in the modern business world, more and more companies are interested in intangible investments and investing in human capital as a way to gain a competitive advantage. Training and development can help a company's competitiveness because it can directly increase the value of the company through the contribution of intangible investments. Intangible assets have been shown to affect a company's competitive advantage because they are difficult to copy or imitate (Barney & Wright, 1998). The influence of culture is present at global, national, organizational, and individual levels (Milovanović, 2015).The modern way of doing business today implies an increase in multiculturalism both inside and outside the organizations themselves and interactions between employees in tourism, the local community, and tourists from different cultures are becoming more frequent. (Langović-Milićević, Cvetkovski, Langović, 2011; Milicevic, Cvetkovski, Langović, Pazun, Ocokoljic, 2013). The influence of culture on people's behavior can best be seen if you compare the culture of one country (for example, Serbia) with the culture of another country (for example, China) (Cvetkovski, Milićević, 2018). In the beginning, it can be seen that there are significant differences in attitudes, values, language, and manner of behavior, as well as in other aspects (Pavlović, 2016). The study of intercultural communication first began in the United States of America in the 1960s, and the concept was proposed to meet the needs of a multicultural society (Qiu, & Qi, 2020). Its main purpose is to understand the nature and process of intercultural communication and how to avoid and solve cultural barriers, and cultural conflicts and promote mutual communication. (Qiu, & Qi, 2020). For successful communication with members of other cultures, knowledge of the language alone is not enough, but a good knowledge of the specifics of other cultural characteristics and dimensions is also important (Milicevic, Cvetkovski, Langovic, Pazun, Ocokoljic, 2013). Among other things, managers and employees in tourism are expected to be well informed, to know the characteristics of another culture, to be tolerant and respect different cultural values, as well as to develop the ability to communicate. Knowledge of non-verbal communication in intercultural communication, as well as in business communication, is also extremely important for the success of business negotiations because research has shown significant differences in the behavior, i.e. non-verbal communication, of business people around the world (Bašić, 2014; Langović-Milićević, 2014; Pavlović, 2016), otherwise, misunderstanding may occur (for example, continuously looking into the eyes of the interlocutor during communication is considered uncultured in many parts of Asia and Africa, while the reverse is accidental in Western countries) (Lončar, 2015). Tourism companies must be aware that different cultures appreciate and value different values (Milićević-Langović, 2014). Companies that gravitate towards other regions, which have different cultural characteristics, must educate their employees and thus prepare them for the opportunities they will encounter in the encounter with another culture, otherwise, problems may arise, such as xenophobia, ethnocentrism, stereotypes, prejudice, racism and the like (Prnjat, 2013).

2. Analysis of tourist traffic in the Republic of Serbia

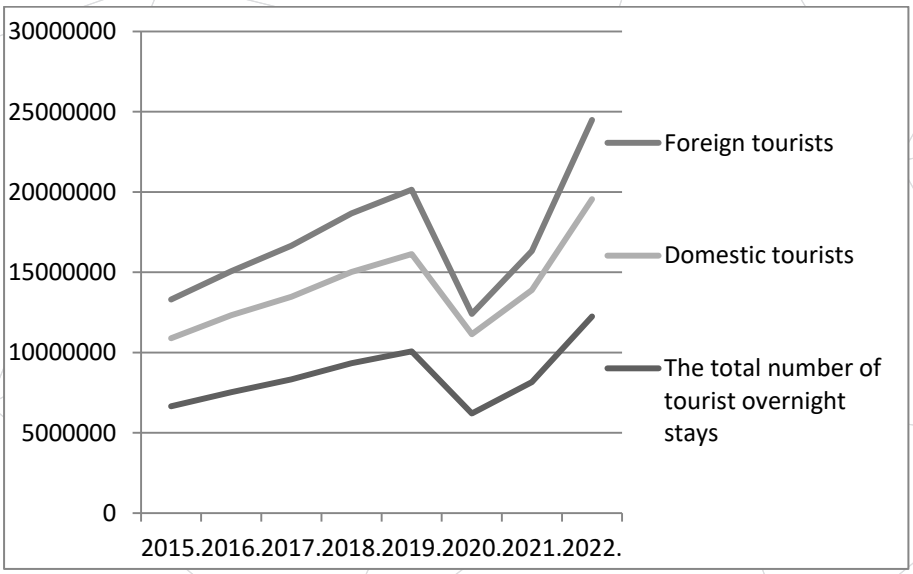
Graph1. The number of tourist arrivals in the Republic of Serbia from 2015 to 2022



Source: Author based on data from the Statistical Yearbook of the Republic of Serbia, 2018, 2019, 2020, 2021,2022.

Graph 1 shows that year after year, until 2019 and the outbreak of the Covid-19 pandemic (Vujadinović, Vujadinović 2022), Serbia recorded an increase in the number of arrivals of domestic and foreign tourists. Also, in the observed period, the number of foreign tourist arrivals shows a growing tendency. The largest number of tourist arrivals was achieved in 2019 with a total of 1,846,551 tourist arrivals. According to trends, that number is expected to increase in 2023 (Vujadinović, 2022).

Graph2. The number of tourist overnight stays in the Republic of Serbia from 2015 to 2022



Source: Author based on data from the Statistical Yearbook of the Republic of Serbia, 2018, 2019, 2020,2021,2022.

From Graph 2, it can be seen that Serbia records an increase in the number of overnight stays by tourists from year to year. Although the dominant participation of domestic tourists is noticeable, the number of overnight stays by foreign tourists shows a tendency to increase from year to year. The highest number of overnight stays was achieved in 2019 with a total of 9,387,488 tourist overnight stays. Traditionally, the largest number of arrivals and overnight stays in the Republic of Serbia are made by tourists from Bosnia and Herzegovina,

Montenegro, Slovenia, and North Macedonia, as well as from other important emission markets such as Russia, China, Italy, Greece, Great Britain, Turkey, Germany, and Austria (Ministry of Tourism and Youth of the Republic of Serbia).

3. Research Methods and Results

3.1. General characteristics of the sample

This paper analyzes the importance of training on interculturality for employees in the tourism sector. Although the issue of cultural diversity is not a new phenomenon, this topic is very little represented in domestic literature. By reviewing the relevant existing literature, it can be concluded that no specific study has been done in Serbia so far and that this is the first scientific paper that empirically examines the importance of training and the connection between training on the interculturality of employees and the quality of services. For this study, data was collected in the Belgrade region, one of the most visited tourist destinations by foreign tourists with almost a million arrivals and 2,681.852 overnight stays in 2022 (https://www.stat.gov.rs/). In this research, front-line employees and foreign tourists from 4 and 5-star hotels operating in the city of Belgrade participated.

Socio-demographic characteristics of employees

Table1. Distribution of respondents with regard to gender

Gender	Frequency (f)
Male	37
Female	41
Total	78

Source: Author

From Table 1, it can be seen that the majority of respondents are female, 41 of them, while 37 are male.

Table2. Distribution of respondents by age

Age	Frequency (f)
Up to 27	19
28-38	33
39-49	17
49 and more	9
Total	78

Source: Author

Table 2 shows that the largest number of respondents are between the ages of 28 and 38, there are 33. Then, come respondents aged up to 27 years old 19 and between the ages of 39 and 49, them 17. In the case of respondents aged 49 and older, there are 9 respondents.

Table3. Distribution of respondents with regard to the level of professional education

The level of professional education	Frequency (f)
High school	19
College	27
Faculty	32
Total	78

Source: Author

According to the level of education, almost half of the surveyed employees have completed university, there are 32, 27 respondents have completed college, while 19 respondents have completed high school.

Table 4. Distribution of respondents according to years of service in the company

Years of service	Frequency (f)
Up to 3	12
3-6	18
6-10	25
10 and more	23
Total	78

Source: Author

When it comes to the length of work experience, the largest number of respondents were employees with a work experience of 6 to 10 years, there are 23, followed by employees with 10 or more years of work experience, 23, 18 respondents have work experience of 3 to 6 years, while 12 respondents have up to 3 years.

General characteristics of tourists

Table5. Distribution of respondents according to the countries they come from

Country	Frequency (f)
Turkey	3
Germany	4
Russia	15
China	17
West Balkan	14
Total	53

Source: Author

From Table 5, it can be seen that the largest number of respondents were tourists from China (17), followed by tourists from Russia (15), tourists from the Western Balkans, 14 of them, and the least number were from Germany (4) and Turkey (3).

Table6. Distribution of respondents according to the length of stay in the hotel

The length of stay in the hotel	Frequency (f)
Up to 2 nights stay	21
2-4 nights stay	18
4 and more	14
Total	53

Source: Author

The largest number of surveyed tourists stay in the hotel for up to 2 nights, there are 21. Then from 2 to 4 nights (18) and 14 respondents stay in the hotel for 4 nights or longer.

3.2. Analysis of the relationship between employees' training on interculturality and service quality

For the purposes of this research, in order to assess the degree of a linear relationship between the variables of employees' education on interculturality and service quality ratings, *the Pearson correlation coefficient* was used. In statistical research, *the Pearson correlation coefficient* (r) is the most common way of measuring a linear dependence between two sets of data. It is the ratio between the covariance of two variables and the product of their standard deviations; thus, it essentially measures the strength and direction of the relationship between two variables, such that the result always has a value between −1 and 1. As with covariance itself, the measure can only reflect a linear correlation of variables (Lai & Balakrishnan, 2009). A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association; that is, as the value of one variable increases, so does the value of the other variable. A value less than 0 indicates a negative association; that is, as the value of one variable increases, the value of the other variable decreases.

The sample correlation coefficient r:

$$r = \frac{\sum_{i=1}^{n}\left((x_i - \bar{x})(y_i - \bar{y})\right)}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2 \sum_{i=1}^{n}(y_i - \bar{y})^2}} \quad (1)$$

Where is:

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n};\ \bar{y} = \frac{\sum_{i=1}^{n} y_i}{n}$$

For the purposes of this research was used *the Pearson correlation coefficient*, in order to assess the degree of a linear relationship between the variables of employees' education on interculturality and service quality ratings.

Table7. *The Pearson correlation coefficient*

	Training employees on interculturality	The quality of services
Training employees on interculturality	1	
The quality of services	0,84077886	1

Source: Author

Table 7 shows the obtained value of *Pearson's correlation coefficient* r = 0.803 indicating a high positive correlation between the education of employees on interculturality and service quality ratings. This high value of the correlation coefficient suggests that there is a strong relationship between the level of education of employees about interculturality and the perception of the quality of the services they provide to guests.

Conclusion

The research results clearly indicate a significant relationship between the education of employees and the quality of services in tourism. By analyzing the collected data and applying appropriate statistical methods, it was determined that there is a statistically significant positive correlation between the education of front-line employees and the level of service quality. It is particularly important to emphasize that research indicates the key role of educating employees about interculturality in improving the quality of services in the tourism sector. Employees who have undergone intercultural training possess knowledge, skills and awareness of different cultures, which enables them to successfully communicate and understand the needs of guests from different cultural backgrounds. Implementing an intercultural education program for employees can bring numerous benefits, including increasing guest satisfaction, improving intercultural communication, reducing misunderstandings and conflicts, and creating a positive image of the destination. Therefore, tourism companies should recognize this type of training for their employees as an investment in the future, instead of an expense. Education about interculturality can be a key factor in creating a competitive advantage in the tourism market and ensuring high quality services, which will contribute to the success and sustainability of destinations in the long term.

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LEADERSHIP IN THE ERA OF DIGITAL TRANSFORMATION AND DISRUPTIVE INNOVATIONS

Dušan Marković[1], Ana Đurović[2]
([1] Business Economy and Management, Faculty of Economics and Business, Belgrade, Serbia; [2] Brain Code, Podgorica, Montenegro)

Abstract: In the era of digital transformation and AI, effective leadership requires a unique skill set that goes beyond mere technical expertise. The success of organizations in navigating complex and rapidly-changing technological environments hinges on the abilities of their leaders. Effective leaders prioritize the development of their "soft skills" in order to adapt to the evolving needs of their organizations and thrive in the era of digital disruption. As organizations strive to stay competitive in an increasingly disruptive landscape, it is imperative that leaders prioritize the development of these skills to effectively manage change, drive innovation, and achieve sustainable growth. Using surveys, interviews, and an extensive literature review, we have confirmed the hypothesis that developing “soft skills” is crucial for leaders in the digitalization and AI era. These skills include but are not limited to, emotional intelligence, communication, creativity, critical thinking, and problem-solving. We have found that leaders who prioritize the cultivation of these skills are better equipped to navigate the challenges of digital disruption, build and maintain high-performing teams, foster innovation, create a culture of continuous learning and improvement, and inspire their teams to achieve greater success. Furthermore, our research indicates a strong link between leadership and the capability of a company to generate disruptive innovations. Effective leaders, in this context, are not only capable of managing change but also initiating it and driving it forward. Their unique combination of hard and soft skills allows them to anticipate and capitalize on emerging trends, identify opportunities for innovation, and create new value for their organizations.

Keywords: Digital transformation, leadership, “soft skills“, „disruptive innovation“, sustainable growth.

Introduction

The process that has shaped today's business environment is globalization. Although it was believed that this process was so strong that we would witness full globalization in the near future, the world today is in a phase of semi-globalization and more regional rather than global integration (Kolk, 2010). The main drivers of globalization are cited as technological innovation, business innovation, growing consumer needs, and government measures in liberalizing the movement of goods and capital (Daniels, Radebaugh, and Sullivan, 2019, p. 51). All of this has led to increased interdependence between national economies, hyper-competition, and faster diffusion of innovation. The consequence of these processes is a high degree of technological and marketing uncertainty in the global market for companies and management. In this way, innovation leads to the "thawing" of industry structures, which necessitates the need for repositioning (Porter, 2001). In the face of radical and frequent changes that can result in the disappearance or complete restructuring of certain industries (Downes and Nunes, 2013), the necessity of leadership becomes significant.

Hyper-competition and a high degree of business uncertainty have also affected approaches to human resource management and leadership. Therefore, the concept of transformational leadership is often explored in practice, referring to the effectiveness of managing organizational change within a company (Carter et al., 2013). Sudden and unpredictable changes in the business environment often require organizational restructuring, making it necessary for leaders to effectively communicate the purpose of business restructuring and the outcomes of that process to employees, emphasizing the importance of "soft skills." The significance of these dimensions of transformational leadership increases during the rapid development of digital technologies, resulting in the digitalization of processes within companies, the development of new marketing practices, as well as the creation of new types of services and products.

The subject of this study is to analyze the importance of transformational leadership for business restructuring due to the impact of digital innovations. In addition to the introduction, the paper consists of three sections. The next section provides a brief review of the literature on digital business and soft skills. The second section presents a brief description of the data collection method and displays the obtained results. The final section will discuss the obtained results and draw conclusions.

1. Literature review

The penetration of technology into all segments of society has led to changes in business processes, the development of new products and services, easier access to remote markets, and the rapid entry of new competitors into existing industries (Christensen et al., 2018). Companies operating in technology and capital-intensive industries initially felt protected from challengers but eventually faced declining financial performance due to disruptive innovations (Abbosh et al., 2017). Innovative digital solutions have created opportunities for the development of new industries and products. However, it has been shown that in the face of rapid technological changes and preferences, it is impossible to maintain a pioneering advantage (Suarez and Lanzolla, 2007). In order to compete with challengers who possess innovative capabilities, existing competitors combine existing technological and innovative solutions, thereby slowing down the speed of diffusion (Furr and Snow, 2015).

Digitalization affects various aspects of business. However, not all companies and industries are equally exposed to the effects of digitalization. Companies need to assess the aspects of their business where digitalization can contribute to operational efficiency or how it can contribute to generating additional demand or charging premium prices. To achieve these goals, digitalization needs to align with the competitive strategy that the company employs (Kraus et al., 2021). Digitalization has contributed to changes in business ecosystems, requiring companies to have not only digital capabilities but also dynamic capabilities to quickly adopt and develop digital

In order to successfully achieve digital transformation within a company, it is essential to have transformational leaders. Transformational leaders possess a business vision that inspires employees (inspirational motivation), charisma that motivates employees (idealized influence), and they are dedicated to addressing individual needs while fostering the development of employees' competencies and their ability to perceive problems in new ways (Sitkin and Pablo, 2005). Previous research has shown that transformational leadership has a positive impact on various business performance measures (Carter et al., 2013; Braun et al., 2013).

The relationship between transformational leadership and digital transformation is multifaceted. Specifically, digital transformation within a company must be initiated by top management, focus on people, and be implemented through soft skills (Frankiewicz and Chamorro-Premuzic, 2020). When it comes to the focus on people, it is important to consider that modern business teams are increasingly composed of individuals from diverse cultures, who communicate primarily through digital channels rather than in-person, are located in remote locations from each other, and often change companies or projects they work on (Haas and Mortensen, 2016). Considering the broader aspect of digital transformation, it is clear that it must be systematically executed and directly communicated to employees. In addition to digital competencies, the person leading the transformation must also possess leadership abilities; otherwise, the process may result in imposed solutions that employees do not understand or resist (Philip, 2021). To successfully carry out digital transformation, it must align with the company's mission, and the transformational leader must possess soft skills to motivate employees to adopt new ways of working, align with the mission, and share acquired knowledge with others due to new technological solutions (Porfirio, et al., 2021). This approach raises competencies throughout the entire organization and facilitates the diffusion of knowledge within the system. Although digital transformation is based on investing in technological solutions, for these investments to contribute to business performance, they must be supported by the soft skills of leaders, which motivate employees to participate in business restructuring (Caputo et al., 2019).

The success of digital transformation is directly linked to the dominant corporate culture within the organization. In order for digital transformation to contribute to improving business performance, it is essential for the company to have a corporate culture that encourages and rewards knowledge sharing (Garcez, Franc and Silva, 2022). Additionally, corporate culture must be based on agility and emphasizing the importance of responding quickly to changes in the environment (AlNuami et al., 2022).

2. Data and results

The aim of the study is to demonstrate the extent to which the soft skills, which characterize transformational leaders, are crucial for the process of efficient business restructuring. To achieve this goal, data on the attitudes

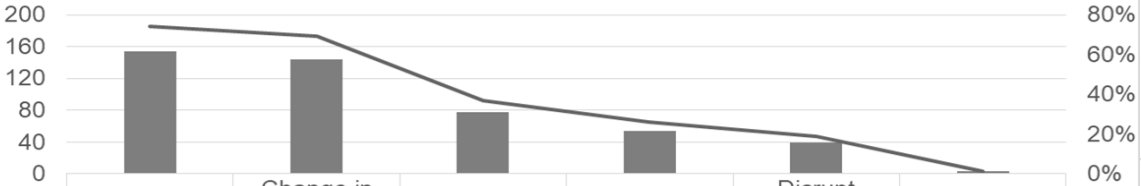
of 208 employees from various industries regarding the soft skills that leaders need to possess in order to effectively carry out the process of digital transformation were collected through an online survey. The analysis of 208 online survey attendees revealed the following key insights: 82% of the participants were from the target region, 8% represented EU countries and 10% were from other parts of the world. Gender distribution indicated 58% female, 37% male, and 6% undisclosed. An impressive 92% of the attendees possessed a university degree or higher qualification. Furthermore, 71% of the participants fell within the age range of 35 to 58 years. Among the respondents, 37% reported having more than 10 years of leadership experience, while 16% had no prior leadership experience. The attendees represented various occupations, including finance, education, IT/technical, marketing/PR, consultant/coach, sales, strategy/business development, human resources, medical, and legal.

Based on the collected data, we have tested two research questions:

- Digitalization will lead to the restructuring of business models and ways of performing tasks.
- In order to implement the digital transformation of business operations, leaders must have a clear vision of the business and highly developed "soft skills."

The first step in the research was to determine how familiar the respondents are with the processes of digitalization. For our research, it is very important that over 60% of respondents have experience in projects related to digitalization. In addition, over 95% of respondents believe that they have managed to adapt to modern digital technologies and that technologies are adequately used in their work. Significantly 99% answered that they are comfortable with new technologies (54% are very comfortable and 44% are somewhat comfortable and rely on colleagues or training programs to learn new tools). The next step was to reveal respondents' views on how DT affects the industry in which their companies operate.

Question 1. How digital transformation will impact your industry

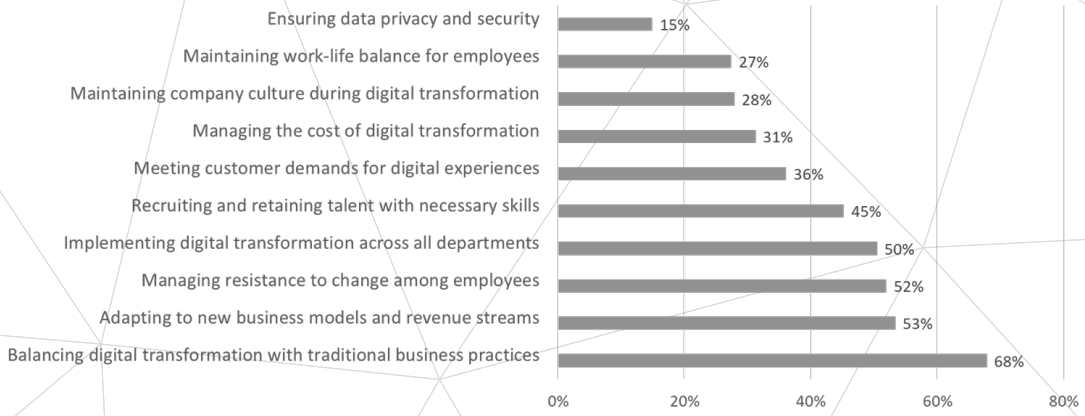


	Increase automation and efficiency	Change in job roles and responsibilities	Create new job opportunities	Increase competition	Disrupt current business models and practices	It will not have much impact on the industry
No.	154	144	77	54	39	3
% of people	74%	69%	37%	26%	19%	1%

The most significant impact of Digital Transformation (DT) will manifest in three key aspects, as revealed by the survey participants: an increase in automation and efficiency (74%), change in job roles and responsibilities (69%), and creation of new job opportunities (37%). From these data we can conclude that DT will have the greatest impact on the process of performing work, either through a reduction in the participation of human labor, or through the requirement for the development of new competencies.

All this indicates that in the future, the success of digital transformation will depend on leadership. However, changed business relationships and social relations will further negatively affect the leadership process. Therefore, we asked the respondents what are the main challenges that leaders will face during the digital transformation.

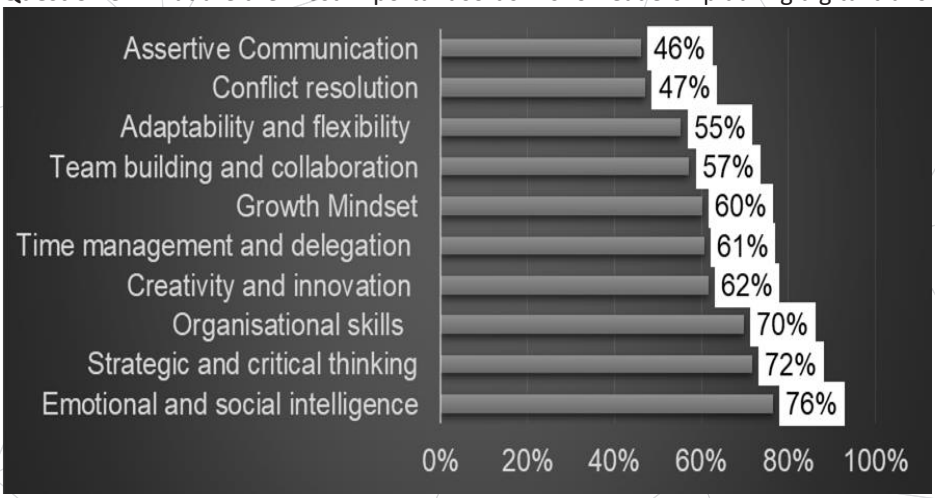
Question 2. What are the key challenges for leaders during digital transformation of a company?



The results show that the key challenges for leaders during DT process are: balancing DT with traditional business practices, adopting to new business models and managing resistance among employees. It is also important to implement DT across all departments and to hire talents with needed skills. Based on this, we can conclude that the main task of leaders in the future will be to motivate employees to change their business habits and develop digital competencies. To achieve these goals soft skills will be more important for leaders in the future.

Almost 100 % of respondents recognized that soft skills are important for success in DT era, out of them 36% consider them as crucial, while an overwhelming 49% view soft skills as highly essential. More than 94 % of respondents believe that theirs job requires strong communication skills, while 97 % faced with a situation at work that required conflict resolution skills. Due to that, we asked respondents "What are the most important soft skills for leadership during digital transformation?".

Question 3. What are the most important soft skills for leadership during digital transformation?

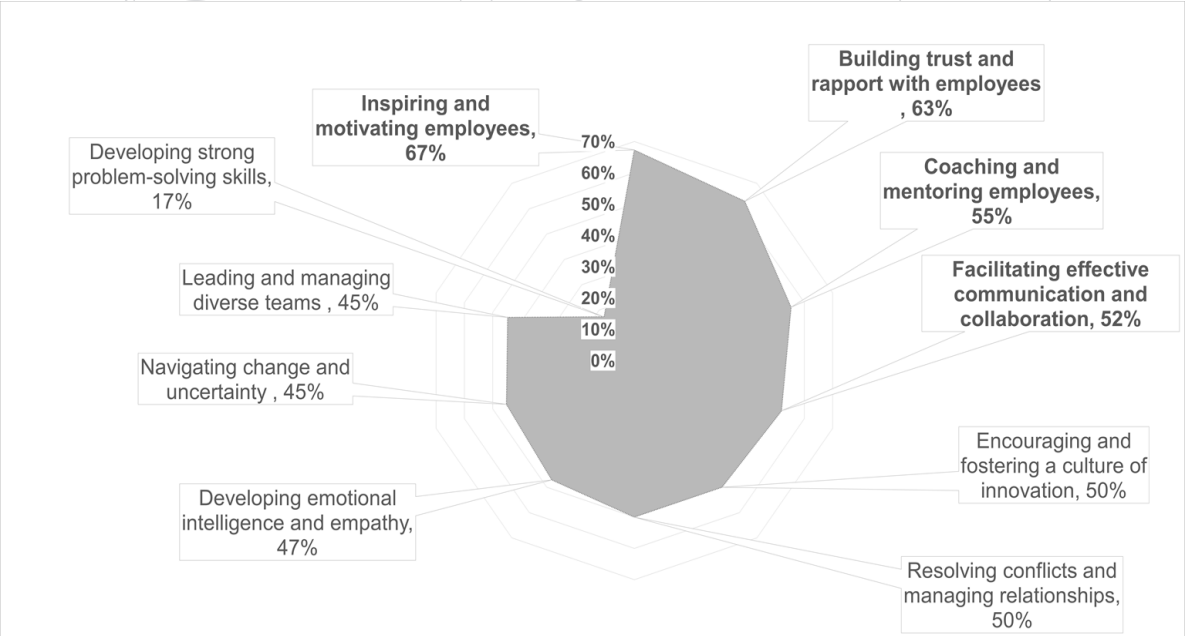


According to the respondents the most critical skills for success in leadership are: Emotional and social intelligence; Strategic and critical thinking and Organizational skills. Respondents believe that leaders must possess the ability to understand other people and social relations in different cultures, be able to critically question things and craft and execute strategy, and finally be able to organize people and processes. These abilities enable leaders to set strategic goals, to establish the adequate organizational structure necessary to achieve the goals, and to motivate people to pursue goals. After that we asked respondents to value relation between soft and hard skills. None of the participants believes that hard skills and soft skills are separate and do not complement each other. The most common responses are: Both hard and soft skills are equally important for effective leadership in the digital era. Hard skills provide the technical expertise needed to effectively

leverage digital tools and platforms, while soft skills help leaders to communicate, collaborate, and empathize with their team to create a positive and productive work culture.

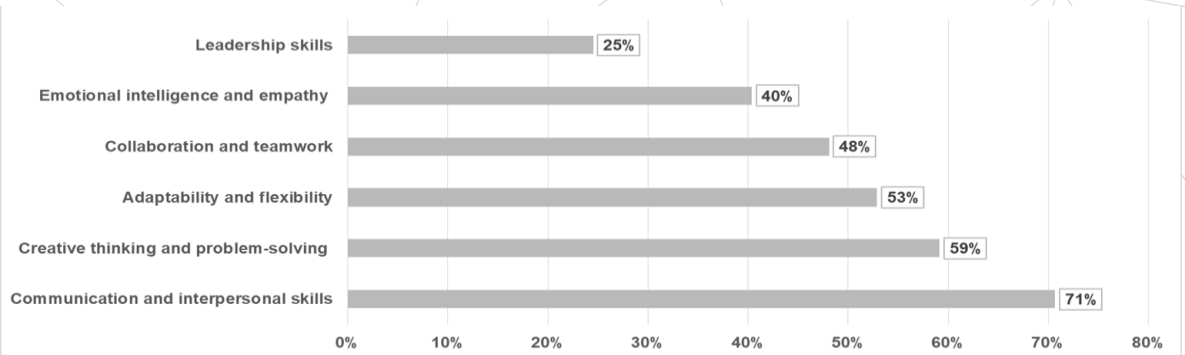
The next step in our analysis is to reveal how soft skill can help leaders to overcome the challenges of digital transformation. More than 63% of respondents believe that soft skills could help leaders to build trust and rapport with employees. This is very important because due to strong digitalization of business processes it is very hard to create social relationships. Many employees work remotely and have only digital communication with their peers and managers, which building trust make much harder. Additionally, due to digitalization it is hard to have insight in employees' performances, agility and needs, so more than 55% of respondents believe that soft skills could make couching and mentoring of employees' more effective.

Question 4. How do you think soft skills can help leaders to overcome the challenges of DT?



After the relationship between leadership and soft skills, we analyzed which soft skills respondents consider to be necessary to improve their productivity and performance. The majority of respondents, more than 71%, believe that good communication and interpersonal skills have been the most valuable for advancing their career. These results are not surprising given that in different industries, project teams are made up of individuals from different cultures, institutional environments, and individuals operating from remote locations. Also, loyalty to teams is much lower today, which is why relationships between the teams' members are one of the factors that contribute to the retention of talents. Additionally, 59% of respondents think that creative thinking and problem-solving have played a crucial role. Furthermore, 53% consider adaptability and flexibility to be very important for their promotion.

Question 5. What soft skills are the most valuable in advancing in your career?



Although the possession of soft skills depends to a certain, lesser extent, on the personal characteristics and national cultures, soft skills can be developed through different types of trainings and education. About 82% of the respondents stated that they received some kind of soft skills training at their job. This shows that companies have recognized soft skills as an important factor contributing to business performance. The results also showed that the respondents are aware of the importance of soft skills for the development of their careers. Therefore, it is not surprising that almost 59% of respondents believe that developing soft skills should start in high school or earlier, 29% think that it is never too late, and 10% responded that the best time was at the beginning of their career.

Question 6. What are your favorite channels for improving soft skills?

The respondents showed that they are aware that soft skills greatly affect their performance, which is why many of them are working on developing these skills. The last question in the survey was about the channels that respondents use to improve their soft skills. A remarkable 68% of the respondents replied that their favorite channel for improving soft skills are attending f2f live training programs, followed by collaborating with peers and colleagues and participating in role-playing or other interactive exercises. Online training sessions rank fourth on the list of favorite training channels. Due to, the acceleration of the digitalization we can expect that the number of managers who use online courses and training to improve their soft skills will grow in the future.

We had the opportunity to conduct a live online interview with Professor Dr. Philip Kotler. We asked him, "What are the key factors of leadership in the digital transformation and AI era?" He provided us with a broader response to our question. Primarily, he focused on the distinction between AI and digital transformation, stating that it is important to differentiate between the two. While most companies have embraced digital organization, not all have adopted AI. AI specifically concentrates on developing intelligent systems capable of performing tasks traditionally requiring human intelligence. A company can be digitally organized without being AI-oriented. Many companies aspire to be well-equipped to respond to the digital era; however, they require data to prepare in advance. Professor Kotler emphasized the importance of cultivating both data-driven and people-oriented approaches. Having data is advantageous, as the new business landscape relies on data rather than intuition. Data collection plays a crucial role. Furthermore, Professor Kotler highlighted the need for significant investments in data collection. It is desirable to invest in new mathematical tools such as cluster analysis, discrimination analysis, and multiple regression. Additionally, the human element remains paramount, emphasizing human-to-human interactions, relationships, and networks. In Professor Kotler's own words, we conclude with the following quote: "As in any good story, the hero needs the right attitude, which in our case is called the H2H (human to human) mindset."

3. Discusion and conclusions

In the future, companies that are both data-driven and people-oriented will have a competitive advantage. The abundance of data owned by the company will be one of the sources of competitive advantage in the future. Therefore, it is necessary for companies to invest in the collection of business data, but also in tools that enable efficient processing of this data and facilitate the making of business decisions based on information, not intuition.

However, when we talk about value creation, it is all about people, human-to-human interactions, relationships, and networks. In the end, it is people who need to understand collected data and initiate processes to take advantage of newly created business opportunities. Digital transformation is not equally important for all companies and all sectors. Managers should identify processes and sectors where digitalization will the most improve performance. The successful implementation of digital transformation across all relevant sectors may require significant investment and resource allocation, presenting potential challenges for companies and adapting business models and revenue streams to align with the evolving digital landscape while maintaining profitability and sustainability. We showed that digitalization affects the creation of new types of jobs, but also the way existing jobs are performed. Process automation and improved efficiency are identified as the primary effects of digital transformation by 74% of respondents. Based on the preceding analysis, it is evident that digital transformation has a profound impact on various aspects of businesses and the work environment. In summary, the findings strongly support the thesis statement that digitalization is indeed leading to the restructuring of business models and ways of performing tasks.

Radical changes in the business environment and business models force employees to change business routines and build new competencies. Companies must address the challenges associated with striking a balance, adapting to new models, and managing employee resistance to successfully navigate the digital transformation journey. More than half of the respondents stated that the resistance of employees to accept the new way of doing business is one of the factors that can negatively affect the performance of digital transformation. To overcome this resistance companies have to develop outstanding leadership. Leadership would result in improvement of business performance only if leaders possess whole set of soft skills. We found out that the most critical skills for success in leadership are: Emotional and social intelligence; Strategic and critical thinking; Organizational skills; Creativity and innovation and Growth Mindset. Over 60% of respondents believe that soft skills can help leaders overcome challenges during digital transformation, by inspiring and motivating employees and building trust and rapport with employees. Similarly, more than 70% respondents believe that good communication and interpersonal skills have been the most skill for advancing their career. Taking in to account after mention we conclude that the survey results support statement that leaders must have a clear business vision and highly developed soft skills to successfully conduct digital transformation of business models. Professor Kotler's responses have encouraged and validated our findings and conclusions.

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HINDERED CONTACT CENTER PERFORMANCE OF REGIONAL ENERGY COMPANY FOLLOWING OUTSOURCING HINTS

Andrija Ražnatović
Faculty of Organizational Sciences – University of Belgrade, ar20185039@student.fon.bg.ac.rs

Abstract: Contact center outsourcing represents a potential threat of job loss for employees, which can reduce employee motivation, as well as commitment to work and the organization. The purpose of this paper was to investigate performance consequences of one fully integrated organizational unit in regard to its potential outsourcing, as well as making the point of how early obstacles start to add up even before the perceived business event takes place. The problem this study deals with is the observed role of outsourcing in employee stress, absenteeism, their intention to leave the job and job dissatisfaction. All of these issues directly affect their performance and are difficult to manage in the environment of heavy duress.

Keywords: outsourcing, environment, performance, organization, contact center, management.

1 Introduction

Organizations are always looking for ways to stay competitive in the marketplace, and that often means being willing to provide quality products or services at lower prices. Outsourcing is one of the ways to achieve these goals. Using the services of an external supplier can be more economical than using one's own resources (Fung 2013). Outsourcing can also be a way to obtain specialized skills and knowledge, as well as facilities, that are not available internally.

However, despite the advantages that this business strategy brings, many corporations hesitate with the decision whether and which organizational units to outsource. Outsourced workers have a different organizational culture and values that may not align with those fostered internally. Managers who have made the decision to outsource an organizational unit often regret and are more annoyed than they show (Gorla 2014). Common complaints relate to poorer service, lower productivity and supplier commitment. For example, outsourced workers in the IT sector have a job satisfaction rate of 33% compared to in-house workers whose job satisfaction rate is 70-80% (Gorla 2014).

The aim of this paper is to investigate the increase in stress and dissatisfaction in employee behavior as a result of outsourcing. Additionally, the aim is to show how the bond between employer and employee breaks down due to outsourcing decisions where the employee's commitment and loyalty to the organization is directly threatened. The conducted research observes these changes through a social prism. Moreover, the aim of the research is to increase the awareness of managers about the loss of employees and economic hardships caused by outsourcing and the impact of these factors on individuals and organizations.

Outsourcing has become an ideal option for offshoring employees due to improved short-term financial performance such as cost reduction and increased profitability (Hendry 1995). As a result, employees are exposed to increased stress, reduced job security and loyalty to the organization. Organizations, on the other hand, are left without expertise, experience, loyalty and organizational culture, which in the long run cancels out the benefits for which they decided to outsource.

An empirical approach was applied, which relies on the business practice of a contact center in a multinational company for the processing and distribution of petroleum derivatives, supported by one of the three basic techniques for measuring motivation according to David Guest - evaluating the behavior of workers in modified work situations, as well as scientific articles, books and texts on the Internet. Assessing worker behavior is much more delicate than another basic technique for measuring motivation - surveying workers, that is, asking for their opinion on what motivates them to work. Namely, exactly the same work content in the same environment and on the same tasks, the same workers will fulfill differently in a different corporate context (Jovanović 1999).

This case study method is focused on an oil company that in the given period has about 4500 employees and a contact center with 16 agents and a manager. The goal was to gather comprehensive knowledge about the work of the contact center and the reasons and doubts when trying to implement outsourcing. In addition, the phenomenon of outsourcing is examined through observations on soft management skills and partly through data analysis.

2 Literature review

Although the problems and challenges of outsourcing have been documented, the link to employee stress and satisfaction has not been fully explored. According to Young (2012), few studies have focused on outsourcing activities. Researchers mainly considered topics such as the ability to satisfy organizational needs, the impact on organizational performance, communication problems, etc.

Baldomar's article discusses the reasons why contact center agents leave the service and what can be done to prevent it from happening again, which helps to solve the problems of saturation and stress in this work. (How to Reduce Call Center Attrition)

Bidwell's research focuses on how certain processes and organizational units are outsourced as a result of internal organizational politics, rather than objective business needs and savings. (Politics and Corporate Boundaries: How Organizational Structure, Group Interests, and Resources Affect Outsourcing)

Elmuti conducted an experimental study to compare changes in the perception of attitude related to the performance of work tasks in outsourced and non-outsourced employees. (Consequences of Outsourcing Strategies on Employee Quality of Work Life, Attitudes, and Performance)

Hendry's article presents outsourcing as a new fad in management and takes into account the negative consequences for employees. He also considers the beginnings of outsourcing and historically analyzes this management strategy along with the political ideology behind it. (Culture, Community and Networks: The Hidden Cost of Outsourcing)

Yang's research looks at the factors that cause stress at work and how it affects organizational behavior. (Job stress and well-being: An examination from the view of person-environment fit)

Yu's article clarifies the relationship between non-tenured workers and job commitment. (Worker and work environment suitability for non-standard work: Insights from workers with limited expectations for continued employment)

3 Contact center at a glance

The purpose of the contact center is to "improve customer and user support, and to improve efficiency in communication and information exchange within the organization." The basic activities of the contact center are communication with external and internal users - receiving, recording, contacting and forwarding calls/messages by phone, e-mail, fax, web chat..." (Marić 2013).

The contact center consists of 16 agents who work in three shifts (7/24/365), which means that the contact center can be called at any time. The contact center covers all inquiries from the three countries where the oil company has a chain of retail outlets: Bosnia and Herzegovina, Romania and Bulgaria. Two agents speak Romanian and handle inquiries from Romanian users, and two agents speak Bulgarian and handle inquiries from Bulgarian users.

Most of the agents are college graduates and got a job through the "first chance" program. This program is designed to help recent graduates, who have no work experience, get a job. The company usually looks for graduates with high averages and other achievements because the "first chance" program is designed not only to help young graduates, but also to help the organization by training new employees according to the needs of the business. It was decided that the contact center was the best starting point where they would get a broad and basic practical knowledge of the company before moving on to other jobs in other organizational units.

The importance of the contact center is best reflected in the internal connection with other organizational units because organizations do not consist of isolated individuals or groups that make decisions and implement them themselves (Pfeffer, 2010). The following is a list of organizational units according to Marić's instructions from 2010, on whose behalf the contact center performs certain tasks:

- Department for document management
- Department for retail sales
- Wholesale department

- Marketing department
- Internal communications department
- Health, Safety and Environment function
- Organizational units for health, safety and environment in divisions
- Business center department
- Information technologies department
- Department for business development
- Corporate security department
- Center for joint services of human resources
- Department for development, capital construction and material and technical services

There was a difference between superiors and subordinates in their perception of leadership styles. with task-focused management systems, this type of organization seemed to need additional management of employee stress. In line with this observation, the case study revealed that most agents saw the essence of their work in maintaining the relationship between the company and customers, while the manager saw the essence in the execution of work tasks. Agents also felt that middle and senior management were focused on productivity rather than maintaining customer relationships.

Despite the reality of a contact center where productivity is paramount, most employees were motivated by the desire to serve users, as well as by being part of a leading domestic company. Out of 16 agents, 14 stated that their priority is good service and customer satisfaction. Only two reported the number of calls handled and sales. Also, 14 out of 16 agents confirmed that their favorite part of the job is interacting with colleagues and customers.

4 Performance issues

Outsourcing is the delegation of work to a third party, a supplier that can be located in the same country or abroad. If this undertaking affects not only individual jobs but also the entire business process, it is called business process outsourcing. Outsourcing is not the same as selling part of the company. It implies a long-term business relationship between the supplier and the supplied, which is characterized by a high degree of joint risk. This is the fundamental difference between outsourcing and an ordinary procurement agreement (Jaško 2017).

Employee satisfaction is a person's reaction to his or her job in terms of outcomes that are expected, desired, and needed. It is a feeling that reflects the degree to which individual needs are met at work (Griffin 2010). Several factors influence an employee's sense of job satisfaction. Some internal factors include independence,

feedback, confidence, and control. External factors can be relationships with supervisors and colleagues, as well as the state of the work environment and compensation (Chen 2008).

Job stress is a negative emotional and cognitive state that manifests itself when an employee's expectations exceed his or her capabilities or resources. Stress related to work tasks is the most common type of stress. Employees are expected to fulfill various roles at work leading to conflict, ambiguity and excessive workload (Griffin 2010).

Absence from work is defined as a habitual absence of one or more days, usually justified by a doctor, but actually due to personal interests and a poor sense of duty; and one can also add indifference and lack of interest in political and social problems or issues of common interest (Cucchiella 2014).

The tendency towards employee turnover represents the intention of the worker to stop being part of the organization, and the willingness to act in accordance with this intention if other options for employment are presented in accordance with the associated financial, social and psychological costs, as well as personal characteristics (Calisir 2011) .

4.1 Hint of outsourcing

Outsourcing is seen as an effective solution for reducing operational costs. Many organizations use outsourcing as an alternative to hiring permanent employees (Cappelli 2013). Outsourcing partners are taking on more and more responsibilities that were traditionally performed internally (Elmuti 2013). Some organizations use outsourcing to remove older, higher paid and less productive workers. The top management of the oil company had the same views on outsourcing and initially focused on the contact center as a suitable organizational unit.

This approach can also be called a sacrificial strategy of human resources. Sacrificial because management sacrifices the enthusiasm and motivation of front-line employees, and strategy because it implies a connected set of management activities and attitudes that resolve the conflict of efficiency and service where stress turnover of employees is tolerated and even encouraged (Wallace 2000).

4.2 Employee satisfaction

When the rumors about outsourcing reached the employees of the contact center, one could suddenly feel the shaken confidence in the employer. Along with that, they experienced increased stress, a reduced sense of security at work, a decline in morale and commitment to the organization, as well as a greater tendency toward employee turnover. On the other hand, the management did not bother to communicate directly with the contact center agents and explain the situation to them. Contact center agents interpreted these rumors as an underestimation of their importance and a lack of trust. Any organizational changes decrease the satisfaction and commitment of employees (Blaskovich 2011), which ultimately results in seeking employment with another organization.

It turned out that the main concern of employees with the hint of outsourcing is how the existing jobs, and the jobs that go with them, will look like after being transferred to an external partner. Contact center agents were troubled by the thought of how they would fit into the new environment, compounded by the feeling that they were no longer valued by their current organization. The situation was negatively affected by the protests of about 200 employees in front of the building due to possible layoffs (NIS employees fear dismissal, 2013).

These issues of job insecurity and poor communication were linked to the perception that management did not provide sufficient support measures for employees during the transition. Thus, the agents themselves faced the process of anticipating and interpreting the situation that befell them (Mitchell 2017). The view of contact center agents was evident that management no longer thought the jobs they were doing were important, and outsourcing signaled to them that they were no longer needed. Some of them even spoke openly about feeling rejected and neglected.

In their desire to remain with their parent organization, almost all contact center agents applied to several posted internal job vacancies. Some were invited for an interview, but only one female colleague was accepted. Her satisfaction seemed to increase the dissatisfaction of other colleagues in the contact center.

4.3 Stress at work

Stress levels increased and agents began to make unprovoked negative comments about the workload and volume of calls. They also started to often comment on the negative impact of work on their social life because they have no desire to talk to other people after work. Research by the Customer Contact Association in 2012 found that contact center agents suffer more stress than coal miners. Almost 25% of the 433 agents surveyed said they suffered high and very high levels of stress, while 47% suffered moderate levels of stress. Over 60% of agents had no experience with such stress symptoms before working in a contact center, and 70% experienced at least one stress symptom since starting to work in a contact center.

A significant number of calls from the total number of calls in the contact center are consumer complaints and complaints, and 4 agents out of 16 categorically stated that this part of the call causes them the most stress. Also, it was noticed that two agents were visibly shaken by such calls, which is why they cried, which did not happen before. It took two hours for them to calm down and get back to work. The agents said that in such situations they do not have emotional support from their superiors and that they rely on colleagues for such help who often do not have time due to work to provide them with the same help.

4.4 Employee turnover

Losing a contact center agent is an expensive proposition. First of all, all the money associated with the training and preparation of the employee leaves the organization. Second, again you have to spend money on training the new employee if you are lucky enough to hire them quickly. In the meantime, you must reorganize your shift schedule and workload to make up for the missing agent. In the specific case of an oil company, it is an even bigger problem because the agent is expected to progress and move on to other jobs. In the business of contact centers, the employee turnover rate can be as high as 30% per year (Baldomaro 2016).

The reasons for employees leaving the contact center are reduced to lack of motivation and difficulties in communication with the immediate manager. The job of a contact center agent is stressful enough without the added pressure, and what agents appreciate most is the confirmation that what they are doing is not just talking on the phone. Most colleagues outside the contact center looked down on the job of a contact center agent and the last thing the agents themselves would want is to be treated the same way by management.

4.5 Absence from work

Absences from work also increased. Absence is most often caused by unexpected illness of the employee. Contact center agents are no different from other people and they get sick too. Agents usually have problems with their throat because it is the main tool for doing their job. Not surprisingly, the agents with throat problems were also the hardest working. However, absences began to appear on Mondays, Tuesdays and Fridays, when it was suspected that it was not an illness. Monday is normally the day when the contact center was most often absent. According to the analysis, about 40% of absent days are Mondays. Of course, the next most popular day to skip work is Tuesday. As with leaving work, the reasons for absenteeism can be found in lack of motivation.

Only once did the agent have to deal with a more formal approach to management regarding frequent absences. Because of the coherence of the organizational unit, the agent was aware of the serious consequences if he continued with the same behavior. Soon after that, the situation improved.

It is interesting that the perception among employees that they are now being monitored more than usual by security guards has also appeared. Attention was often paid to the presence of video surveillance, and the rare visits of colleagues from the security service who had no contact with the newly created situation were interpreted in this way.

The trainings that contact center agents used to attend, ranging from those related to workplace safety to those related to customer relationship management, were suddenly not so interesting to them. They usually looked for excuses not to go to training, and most often they mentioned that they did not see the purpose of such

training. In addition, agents mentioned that they are not offered training in managing stress and communicating with verbally aggressive consumers.

5 Resolution (environmental crisis management simulation)

Strategic decisions, changes and investments should be given time to see the effects. In the case of the contact center, it didn't last very long. Therefore, the decision of the management was not only to abandon the idea of outsourcing, but the possible further integration of the contact center into key organizational processes. In order to improve the customer experience, the contact center needed to become an integral part of all marketing and retail processes.

However, the team had to prove itself. The contact center is classified as a working group for crisis management. A foreign consulting firm was brought in to simulate a real environmental crisis and evaluate the task force's response. The scenario was that, due to inadequate quality of aviation fuel, several air planes had to dump the fuel and make an emergency landing. The contact center was on the front line because all the simulated calls went through it. The company's reputation was at risk and the response had to be quick and effective. The contact center manager was moving between the contact center and the crisis room, and as for the challenge that was put before the agents, suffice it to say that all this was happening while the regular operations of the contact center were in full swing.

It has been shown, however, that challenging work entrusted to workers who do not expect continued employment develops a sense of loyalty to the employer (Yu 2012). At the end of the exercise, representatives of all organizational units that are part of the crisis management working group had to meet with the general

director and the consultant in order to familiarize them with their evaluations. The contact center received the highest marks and praise as "the strongest link in the chain". That was the final end of the idea of outsourcing.

Thus, the hypothesis that employees see outsourcing as a way to remove them is proven, which is reflected in increased stress, less security in the workplace and reduced loyalty to the organization. Furthermore, such a work environment would directly threaten organizational performance (Lee 2019), with results such as reduced organizational network density and fragmentation of work processes (Bidwell 2010). It turns out that contact center employees are an invaluable resource who are expected to grow with the company and occupy advanced positions in the future, so they are closely linked to long-term plans.

On the other hand, knowing that he works for the leading domestic company in the country gave the employee a sense of special status - not only in the organization, but also in society, family, and among friends. Finally, the perception that the possibility of earning is much higher in the parent company than with the outsourcing partner was also important.

Last but not least, security issues are inevitable. The company is very careful when it comes to access to company infrastructure, documents and data about their employees, so certain restrictions have been imposed on this research.

As you can guess by now, the biggest hurdle during the research was confidentiality issues. It has proven difficult to obtain management permission to use some of the data collected for the purpose of analyzing contact center performance. Since I used a gas company as a real world example to support the theory, it would have been more effective and direct if I had been allowed to use all the material prepared for management.

Another limitation is the generalizability inherent in the case study method, but it can provide deeper insight into complex social systems and is advocated in the social sciences (Feagin 2016).

Potential research alternatives for further development of this work may include companies from other industries that have had the same or similar situation related to contact center outsourcing; to see what were the reasons and expectations, and what was the final outcome. Next, draw parallels with the case of this contact center.

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INTERNATIONALIZATION AS COMPARATIVE ADVANTAGE FOR HIGHER EDUCATION INSTITUTIONS – THE CASE OF MONTENEGRO

Filip Petrovic[1], Danijela Jacimovic[1], João Carlos Correia Leitão[2], Julija Cerovic Smolovic[1]
(1Faculty of Economics, University of Montenegro, Podgorica, Montenegro; 2Department of Management and Economics, University of Beira Interior, Covilhã, Portugal; fpetrovic@ucg.ac.me; danijelaj@ucg.ac.me; jleitao@ubi.pt; julija@ucg.ac.me)

Abstract: Although international aspects of higher education were recorded between the 18th and 19th centuries, the internationalization of universities is still a phenomenon that needs further research and investigation. It implies the development of high-talented, scientific, human potential, and has the particular importance to the creation and development of Intellectual Capital. In the era of knowledge economy, where innovation drives business cycles, the internationalization of universities can be a key to country's economic prosperity. Emerging countries like Montenegro, which are geographically small and where universities are the bearers of the innovation activity, should pay a special attention to internationalization and knowledge transfer. This research will focus on internationalization and its role in the global positioning of universities, and fostering innovation and national competitiveness in Montenegro. Compiled survey covered students both from public - University of Montenegro, and private university – University of Donja Gorica. The Structural Equation Model was developed to examine the impact of different dimensions of intellectual capital (IC) on Montenegrin HEIs' performance, like: a) *Innovation Potential (IP), b) Internal Potentials for Management of Knowledge (IMK), c) Cooperation with Society (CWS),* on the Montenegrin HEIs' performance - *Teaching, Research, Internationalization, Knowledge Transfer, Quality of Academic and Work Life.* The approach will look for intangible connections, with an aim to make a contribution to better understanding of whether the IC of HEIs makes an impact on its performance, including a more subjective dimension related to the perceptions of students.

Keywords: *internationalization, researcher mobility, innovation, competitiveness, economic growth and development*

Literature Review and Theoretical Frameworks

Knowledge transfer between countries is an important driver of innovation, especially in emerging economies, because they rely much more on foreign than on domestic research for innovation and growth (Barrett at al. 2021). Internationalization of higher education implies the development of high-talented, scientific, human potential, and has the particular importance to the creation and development of Intellectual Capital, especially in small economies.

Therefore, the international mobility of researchers has been a phenomenon of growing interest for scholars and policy makers since the 60s and can have a significant impact on National Innovation Systems (Freeman, 1987; Lundvall, 1992; Nelson, 1993). In this regard, Europe has put the knowledge economy in its growth strategy "Europe 2020" and recognized the mobility of researchers as a major factor in creating innovations that can lead to economic growth and development. European Research Area is a framework for the development of science and research in Europe (Morano Foadi S., 2005), and also a political effort to stimulate international academic mobility (Bauder H., 2012). The EU contentiously encourages the flow of a highly skilled workforce through the internationalization of higher education, joint recognition of qualifications and harmonization of teaching (Iredale, 2001). Adding to the previous statements, knowledge, creativity and innovation have become the main factors stimulating social and economic development - because modern growth is about innovation (Cimuasu, 2010), reinforcing the role of intellectual capital in generating sustainable growth and development (Cabrita M.R., Cabrita C., 2010). Especially at the time of the COVID-19 pandemic, which reversed decades of economic progress, so the only way out and imperative for recovery is to invest in long-term growth (Barrett, Hansen, Natal and Noureldin, 2021).

In a world where human capital is vital for development, universities are trying to attain more complex roles within society, moving closer to social and economic stakeholders, and becoming true development hubs, and main economic development engines (e.g., Göransson et al, 2009; Rapini et al, 2009). Everyone wants a "world-

class" university (Altbach, 2004), and for that reason, internationalization is a key component and strategic priority for the development of higher education institutions, which has an impact on the fundamental functions of the university – science and research. (Gao Y., Baik C., Arkoudis S., 2015).

Intellectual Capital plays an important role and makes a strong impact on the performance of the Higher Education Institutions (Jones et al. 2009; Mumtaz and Abbas 2014; Barbosa et al. 2016; Tjahjadi et al. 2019), and represents a combination of intangible resources - knowledge, information, process, intellectual property (Pedro at al., 2020). When HEIs understand and measure their IC, they will gain a better understanding of their core competencies, (Pedro at al., 2020). Bearing in mind the literature overview, the intellectual capital of the HEIs can be divided into three components, for this research: *IP* that represents all the most valuable human resources, personified in staff (Shehzad et al., 2014), *IMK* representing internal organizational processes and technological resources and *CS* that are institutional relationships with non-academic partners (Pedro et al., 2019).

Performance of the HEIs will be assessed through common categories recognized and evaluated by official rankings systems: teaching, research, internationalization and knowledge transfer, and it will be upgraded with a new category, that will represent novelty and scientific contribution of this research: Quality of Academic Life (QAL) for students, since they are being recognized as the HEIs' main stakeholders (Mainardes et al. 2013).

Data Research and Methods

An online survey was created (Pedro at al., 2020) with structured and closed questions and a 7-point Likert scale, and distributed via random sample thought networks of the University of Montenegro and University of Donja Gorica. The survey provided a broad pictures of students' level of agreement they attribute to each of the items indicated to measure the HEIs' intellectual capital of the institution where they study, in 32 questions, divided in three sections: a) IP-11, b) IMK-11, c) CS-10 questions. The questionnaires treated the "Performance" categories with questions, as following: i) Teaching, environment and learning-3, ii) Research-5, iii) Internationalization-3, iv) Knowledge and technology transfer-1 and v), Academic quality of life for students-39.

After the verification, 74 questionnaires were valid for the analysis. The sample was consisted of 61,6% female, and 38,4% male respondents. 76,4% were students from bachelor, 22,2% from master and 1.4% from doctoral level of studies. 80,8% belongs to age range between 17-25, 15,1% are between 26-35 years old, and 4,1% are older than 35.

Inputs from questionnaires were used to develop a model which will try to examine the contribution of different dimensions of the intellectual capital on the Montenegrin HEIs' performance and, in final, will try to answer the main research question: „Which component of the HEIs' IC makes the greatest impact on the HEIs' key performance indicators?" by testing the following hypothesis:

- *H1: Innovation Potential of Montenegrin HEIs is positively and statistically significantly related to their performance, according to perceptions of students;*
- *H2: Internal Potential for Management of Knowledge of Montenegrin HEIs is positively and statistically significantly related to their performance, according to perceptions of students;*
- *H3: Cooperation with Society of Montenegrin HEIs is positively and significantly related to their performance, according to perceptions of students.*

To test above mentioned hypothesis, the Structural Equation Model (SEM) was developed to examine the impact of the chosen variables on the performance of the Montenegrin HEIs. The SEM is a well-known multivariate statistical analysis model that provides robust use in social sciences (Cunningham, 2008; Pearl, 2000), specifically when dealing with multiple observed variables. It is useful in testing theories that contain multiple equations involving dependence relationships (Hair et al., 2016). The model can be used as a confirmatory technique, as well as exploratory analysis (Schreiber et al., 2006). Prior to the models, the reliability analysis was conducted showing whether the data is appropriate for the SEM. The Kayser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were applied, as well as the Cronbach alpha (the reliability coefficients). All calculations were done with the R package and SPSS.

Results

We've estimated the SEM model by the maximum likelihood estimation method with R package, and the results are expressed in Table 3, available in the annex. The goodness-of-fit statistic is measured by Chi square statistic and Comparative Fit Index (CFI). Chi square statistic is 44.647 with 25 degrees of freedom (p=0.009), and CFI is 0.959. Also, root mean square error of approximation statistic (RMSEA) is 0.05 which is below the upper acceptable boundary of 0.1 (Kline, 2005. Since all p-values for variables are below range of 0.0 (table 3), we can conclude that all (examined) variables are positively contribute to performance of HEIs, with statistical significance, according to standardized estimates calculated.

Out of the examined variables, the results show that IP has the highest influence on HEIs' performance (80,6%), and it is followed by CWS (76%), and IMK (70%). This stays in line with previous studies (Barbosa et al. 2016, Shehzad 2014, and Chatterji and Kiran 2017), but the strength of the influence can be discussed. Following the previous research done by Pedro, Alves, and Leitão (2020) the impact of these variable was actually different – the strongest one was coming from CWS and the weakest was from the IP, meaning that European HEIs are considering its openness as a strength, while Montenegrin universities are still being hold within traditional normative – teaching and research.

The academic and professional qualifications of professors and researchers at Montenegrin universities are good based on 45% of respondents, but the opinions differ when it comes to matter of organization of R&D activities – 29.8% consider it good, 48.7% considers it average, while 21.5% of them considers it below average. About 37% of respondents feels that their university has good cooperation with national and international organizations outside of academia, and 50.7% feels that the reputation of their university at regional, national and international level is good.

Conclusion

Based on students' perceptions of the influence of IC components on HEIs performance in Montenegro, we can conclude that there is a gap between Montenegrin and EU HEIs that is possible to overcome only with changing mind-set of the Montenegrin HEIs leaders. As "next-to-be" EU member state, Montenegro has strategic, legal and institutional framework for research and innovation, harmonized with the EU legislative, but in reality we still find our HEIs more focused on teaching and research, than on internationalization and openness.

Montenegro has a bright future as a NATO member and "next-to-be" EU member state, with a good regional relations and connections. The small geographical size of the country is favorable for undertaking reforms, but the size of population, insufficient number of scientists together with the "brain drain" are making the situation within the R&D sector difficult. Transition in economy is over and Montenegro has approach to all leading international R&D programs and funds, however, the private sector isn't involved enough and the international R&D funds aren't used as they should be. There are excellent scientists and scientific teams that do their research in the country, but on the other side, Montenegro is lacking market-oriented innovation culture, and long-term planning of R&D activities.

The innovation activity in country is dominantly performed by universities, which is a reason more to improve the internationalization of the HEIs, in order to build-up the long term development based on knowledge, which will also increase the national competitiveness.

As a geographically small country, with an emerging economy, depending on influence of "bigger" players, and entering the EU market in near future, Montenegro has to strengthen up its intellectual capital at HEIs which will provide the greater innovative performance of the country, since the HEIs in Montenegro are the major actors in R&D activity. To do so, it has to make their institutions more internationalized and to increase the cooperation with society and usage of available EU funds.

Annex

Table 1. Constructs and correspondent indicators in Model

Constructs/ dimensions	*Indicators*	*Acronym*
Innovation potential (1st order)	Percentage of expenditure on staff (lecturers, researchers and administrative staff) in the university's total expenditure.	IP
Internal Potential for Management of Knowledge (1st order)	Weight of expenditure on information and communication technology in relation to total expenditure.	IPMK
Cooperation with Society (1st order)	Total number of contracts/cooperation agreements/protocols (teaching/research) with national and foreign public and private organizations.	C
Performance (2nd order)	(Teaching+Research+Internationalization+Technology+KnowledgeTransfer+QAL)	P
Teaching and learning environment (1st order)	Quality of the HEI	T1
	Quality of teaching	T2
Research (1st order)	Research outputs/productivity	R
Internationalization (1st order)	International students	I
Knowledge and technology transfer (1st order)	Revenues from industry research	K
QL (1st order)	Cognitive component – Satisfaction with the quality of life at university, that is, with academic and social life on campus.	Q

Source: Own elaboration

Table 2. Reliability analysis of variables used

Variable/ Indicator	*Cronb. alpha*	*VIF*
IP		1.967
IPMK		1.691
C		1.932
Teaching and learning environment	0.93	-
T1		2.821
T2		2.424
R		2.800
I		2.372
K		2.933
Q		2.209

Table 3. The structural equation model results

Structural Relations	*Estimated Value*	*Standard error*	*Z value*	*p.value*	*Standardized estimated value*
Quality of the HEI -> Teaching and learning environment	1.000	-	-	-	0.913
Quality of teaching -> Teaching and learning environment	1.070	0.079	13.485	0.000	0.958***
Teaching and learning environment -> Performance	1.000	-	-	-	0.877
Research -> Performance	1.139	0.127	8.973	0.000	0.888***
Internationalization -> Performance	1.012	0.141	7.177	0.000	0.752***
Knowledge and Technology Transfer -> Performance	1.137	0.118	9.648	0.000	0.935***

Quality of Life -> Performance	0.928	0.137	6.757	0.000	0.718***
Innovation potential -> Performance	1.249	0.299	4.179	0.000	0.806***
Internal Potential for Management of Knowledge -> Performance	1.149	0.289	3.971	0.000	0.700***
Cooperation with Society -> Performance	1.188	0.289	4.113	0.000	0.760***
$\chi 2$	44.647				
Df	25				
RMSEA	0.050				
Comparative Fit Index (CFI)	9.959				
Tucker-Lewis Index (TLI)	0.941				

Source: Own elaboration

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LIST OF AUTHORS

ALBANIA

Irini **GOGA**	European University of Tirana
Ambra **KRAJA**	Agriculture University of Tirana
Ana **KAPAJ**	Agriculture University of Tirana

BELARUS

Uladzimir **BUTS**	Department of Economics, Belarusian State Agricultural Academy

BOSNIA & HERZEGOVINA

Sabina **ĐONLAGIĆ ALIBEGOVIĆ**	University of Tuzla
Miloš **GRUJIĆ**	University of Business Studies
Olja **KNEŽEVIĆ**	University of Business Studies
Predrag **MLINAREVIĆ**	University of East Sarajevo
Nemanja **ŠARENAC**	University of East Sarajevo

CROATIA

Ana Marija **ALFIREVIĆ**	Polytechnic "Marko Marulić", Knin
Darko **RENDULIĆ**	Karlovac University of Applied Sciences

MONTENEGRO

Maja **BAĆOVIĆ**	University of Montenegro
Milijana **NOVOVOIĆ-BURIĆ**	University of Montenegro
Julija **CEROVIĆ SMOLOVIĆ**	University of Montenegro
Stevan **ĐURIĆ**	University of Montenegro
Dženana **ĐURKOVIĆ**	University of Montenegro
Ana **ĐUROVIĆ**	Brain Code d.o.o., Podgorica
Gordana **ĐUROVIĆ**	University of Montenegro
Danijela **JAĆIMOVIĆ**	University of Montenegro
Mijat **JOCOVIĆ**	University of Montenegro
Ana **LALEVIĆ-FILIPOVIĆ**	University of Montenegro
Vujica **LAZOVIĆ**	University of Montenegro
Tanja **MIROTIĆ**	University of Montenegro
Milica **MUHADINOVIĆ**	University of Montenegro
Filip **PETROVIĆ**	University of Montenegro
Petar **RAIČEVIĆ**	Montenegrin Pan-European Union
Miloš **RAJKOVIĆ**	Universal Capital Bank AD Podgorica
Sunčica **VUKOVIĆ**	University of Montenegro
Sofija **SEKULIĆ**	University of Montenegro
Velibor **SPALEVIĆ**	University of Montenegro
Goran **ŠKATARIĆ**	National Parks of Montenegro

POLAND

Agnieszka **POKORSKA**	University of Szczecin

PORTUGAL

João **CORREIA LEITÃO**	University of Beira Interior, Covilhã

SERBIA

Predrag **BJELIĆ**	University of Belgrade
Đorđe **ĆELIĆ**	University of Novi Sad
Zoran **DRAŠKOVIĆ**	University Business Academy, Novi Sad
Olga **IVETIĆ**	University of Novi Sad
Radovan **KASTRATOVIĆ**	University of Belgrade
Dragana **KRAGULJ**	University of Belgrade
Ivana **LJUTIĆ**	Union University
Dejan **MALINIĆ**	University of Belgrade
Dušan **MARKOVIĆ**	University of Belgrade
Slavica **MITROVIĆ VELJKOVIĆ**	University of Novi Sad
Miloš **PAREŽANIN**	University of Belgrade
Aleksandra **PERIĆ**	University of Novi Sad
Viktorija **PETROV**	University of Novi Sad
Andrija **RAŽNATOVIĆ**	University of Belgrade
Darko **RENDULIĆ**	Karlovac University of Applied Sciences
Slađana **SREDOJEVIĆ**	Association of Serbian Banks b.a.
Mirjana **TODOROVIĆ**	University of Kragujevac
Aleksandar **VIĆENTIJEVIĆ**	University of Belgrade
Predrag **VIDICKI**	University of Novi Sad
Savka **VUČKOVIĆ MILUTINOVIĆ**	University of Belgrade
Jelena **VUJADINOVIĆ**	University of Kragujevac

SLOVAKIA

Branislav **DUDIĆ**	Comenius University
Alexandra **MITTELMAN**	Comenius University

SLOVENIA

Samo **BOBEK**	University of Maribor
Sandra **JORDAN**	University of Maribor
Aleksandar **KEŠELJEVIĆ**	University of Ljubljana
Simona **STERNAD -ZABUKOVŠEK**	University of Maribor