Enhancing EU Workforces: ADVANCING SKILLS IN THE ADMINISTRATIVE AREA FOR EUROPE'S FUTURE

Proceedings of the International Conference EU-PAIR 2024

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Jean Monnet Chair. EU Public Administration Integration and Resilience Studies

EU-PAIR

Project no. ERASMUS-JMO-2021-HAI-TCH-RSCH-101047526

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EDITORIAL MESSAGE

Dear Esteemed Readers,

We are pleased to present *Enhancing EU Workforces: Advancing Skills in the Administrative Area for Europe's Future* a collection of proceedings from the EU-PAIR 2024 International Conference that has been held at Alexandru Ioan Cuza University of Iași, Romania, Faculty of Economics and Business Administration, during 20th-21st of June 2024. This volume gathers insights, research, and perspectives from academics, PhD. students and practitioners who share a commitment to strengthening Europe's administrative workforce in response to evolving social and economic needs.

This volume tackles some of the most urgent issues surrounding workforce development in the EU, focusing on the administrative sector as a critical component of Europe's future resilience and progress. Among the central themes, we highlight digital transformation, where contributors examine the need for digital competencies to modernize public administration. The text also discusses the harmonization of educational frameworks across the EU, aimed at creating cohesive strategies for skills advancement that address regional disparities and encourage inclusive workforce development.

The volume also emphasizes the significance of lifelong learning and continuous professional development in today's administrative sectors. Through case studies and policy analysis, the authors showcase effective methods for upskilling that contribute to a robust and adaptable workforce. Innovative training models such as blended learning and competency-based education are presented, offering practical examples of how administrative professionals can quickly adapt to changes and challenges.

In addition, this work illustrates the socio-economic impacts of a skilled administrative workforce on the EU's broader goals. Through data-driven research and detailed case studies, contributors explore how an agile administrative workforce enhances economic stability, fosters social cohesion, and strengthens the effectiveness of EU institutions. The publication makes a compelling case for collaboration across governments, educational institutions, and the private sector to build talent pipelines, ensure cross-border mobility, and create an integrated approach to workforce development.

We hope this volume serves as both an inspiration and a resource, offering theoretical insights and practical strategies for advancing skills within Europe's administrative workforce. As Europe faces an increasingly complex future, we are

confident that the ideas and findings in this collection will contribute to a capable, innovative, and resilient workforce prepared to meet the challenges and opportunities of the coming years.

Sincerely,

Prof. Dr. Hab. Ana-Maria BERCU

Editor-in-Chief *Enhancing EU Workforces: Advancing Skills in the Administrative Area for Europe's Future. Proceedings of the International Conference EU-PAIR 2024*

GREENWASHING, CONSUMERS BEHAVIOR AND THE IMPACT ON COMPETITION POLICY

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Abstract
Climate change is increasingly affecting people's lives in all sectors. Experts are increasingly saying that we are heading for a global crisis. Greenwashing is the process of conveying a false impression or misleading information about how a company's products are environmentally sound. Greenwashing involves making an unsubstantiated claim to deceive consumers into believing that a company's products are environmentally friendly or have a greater positive environmental impact than they actually do. In order for consumers to be empowered to take better-informed decisions and thus stimulate the demand for, and the supply of, more sustainable goods, they should not be misled about a product's environmental or social characteristics or circularity aspects, such as durability, reparability or recyclability, through the overall presentation of a product. Comparing products based on their environmental or social characteristics or circularity aspects, such as durability, reparability or recyclability, is an increasingly common marketing technique that could mislead consumers, who are not always able to assess the reliability of that information.
Keywords: *consumer; competition law; greenwashing; environmental*
JEL Classification: K21, K23, L40, L41

1. INTRODUCTION

In principle, one can ask what the link is between sustainability, climate change, consumer behaviour and competition policy. Competition policy is a tool to ensure a free market based on supply and demand, to ensure that companies compete on equal terms in all Member States and to provide consumers with quality products at the best prices. But the rules of competition aren't always respected. In their fight to win customers and make big profits, companies use cheap production methods and raw materials that pollute the environment, and they promote their products through misleading marketing that distorts competition (Loozen, 2024). The European Union recognized a long time ago

(1990s) that we are exposed to climate change and that it is caused by the accelerated development of industries and consumerism.

Recent studies show that certain industries contribute significantly to environmental pollution, either through greenhouse gas emissions or through toxic waste and contamination. Here are some of the most polluting industries identified in recent studies:

1. Energy industry (energy production from fossil fuels): power plants using coal, oil and natural gas are among the largest sources of CO_2, methane and other greenhouse gas emissions. Fossil fuel combustion is responsible for about 73% of global greenhouse gas emissions, contributing significantly to climate change;

2. Transport industry: includes land vehicles, aircraft and ships that burn fossil fuels to operate. Transport is responsible for around 14% of global greenhouse gas emissions. Aircraft and shipping are among the largest contributors to carbon pollution;

3. Metal and steel production: the production of steel and other metals requires large amounts of energy and produces high levels of carbon dioxide emissions. This industry is responsible for about 7-9% of global greenhouse gas emissions. Most of the emissions come from the use of coal in steel furnaces;

4. Chemical industry: The production of chemicals, including fertilisers, pesticides and pharmaceuticals, involves processes that emit harmful gases and toxic wastes. It is a major contributor to air and water pollution and has significant impacts on human health and ecosystems;

5. Oil and gas industry: the extraction, refining and combustion of oil and natural gas generate large emissions of greenhouse gases and chemical pollution. It is a major source of methane, a more potent greenhouse gas than CO_2, and contributes to oil spills that affect marine life;

6. Textile and fashion industry: the production and dyeing of textiles uses large amounts of water and chemicals, generating toxic waste. This industry is responsible for about 10% of global CO_2 emissions and is a major water consumer, contributing to the pollution of freshwater resources;

7. Agriculture and livestock industry: intensive agriculture and livestock farming produce large emissions of methane and nitrous oxide, as well as deforestation to create agricultural land. Responsible for about 24% of global greenhouse gas emissions, mainly through fertilizer use and livestock emissions.

In response, the European Union adopted the European Green Deal in 2019, in which it set as its main objective that Europe should become climate neutral by 2025 and reduce emissions by 55% by 2030 (European Commission, 2019). Since then and up to now, the European Union has adopted a number of legislative acts to achieve the objectives set out in the Green Deal, including:

– Directive on repair on goods (Directive 2024/1799) which entered into force on July 30, 2024: the aims of this Directive is to encourage consumers to use their goods for longer thus preventing premature disposal of repairable goods. It

establishes a number of measures to promote repair like **obligation to repair, extension of the legal guarantee after repair, national measures promoting repair;**

– The Regulation on Nature Restoration – Nature Restoration Law (Regulation 2024/1991 in European Parliament and of the Council, 2024c) which entered into force on August 18, 2024 – the regulation sets binding targets to restore degraded ecosystems, particularly those with the most potential to capture and store carbon and to prevent and reduce the impact of natural disasters;

– Directive as regards empowering consumers for the green transition through better protection against unfair practices and through better information (Directive 2024/825 in European Parliament and of the Council, 2024b) – introducing consumer protection rules that to tackle unfair commercial practices that mislead consumers and prevent them from making sustainable consumption choices, such as practices associated with the early obsolescence of goods, misleading environmental claims ('greenwashing'), misleading information about the social characteristics of products or traders' businesses, or non-transparent and non-credible sustainability labels.

2.   GREENWASHING AND COMPETITION
2.1. What is greenwashing?

In recent times, consumers have become increasingly aware of sustainable products and are increasingly taking sustainability factors into account when purchasing goods. To this end, some producers are trying to green their products and services to attract sustainability-conscious consumers, while others are simply making misleading claims about the products they sell, for example by using false indications of origin (coffee from Venezuela, although the origin is unknown), natural product, etc. Thus, a new concept has emerged, namely "greenwashing".

Greenwashing is the process of conveying a false impression or misleading information about how a company's products are environmentally sound. Greenwashing involves making an unsubstantiated claim to deceive consumers into believing that a company's products are environmentally friendly or have a greater positive environmental impact than they actually do (Hayes, 2024).

Doctrine (Spillette, *et. al*, 2022) has adopted a classification of greenwashing by The Canadian Standards Association Group, which identified three types of greenwashing, namely:

– *type I claims*: these are environmental labels, logos, certificates, etc. which generally give consumers an indication of the environmental preferability of a product;

– *type II claims*: these are self-declared environmental claims and are likely the most common type of environmental claims (for example "organic", "sulfate free", "ethically sourced", "biodegradable", or "green");

– *type III claims*: these claims include the declaration of quantified environmental information on the life cycle of a product, similar to a nutrition label on food products.

In the *business-to-consumer* context, greenwashing is considered a form of misleading commercial advertising, while in the *business-to-business* context it represents a real distortion of competition.

Recently, greenwashing has started to spread to different sectors of the economy. Concerns about how to stop it are the reason why a number of experts are meeting in Geneva on 28 September 2022 at the Palais des Nations (UNCTAD Ad Hoc Expert Meeting). They prepared and published a report entitled *Competition and Consumer Protection Policies for Sustainability* (United Nations, 2023) which analyzes the interplay between competition law, consumer protection and sustainability at global, European and several countries such as China, Australia, Austria, Netherlands, New Zealand, United Kingdom. The report also explores how competition law relates to sustainability while taking stock of initiatives undertaken by competition authorities. They noted and underlined that, with the exception of a few countries in Europe, most competition authorities have not yet taken initiatives to encourage sustainable development.

As recommended in the United Nations guidelines for consumer protection, Member States "should develop and implement strategies that promote sustainable consumption through a mix of policies that could include regulations; economic and social instruments; sectoral policies in such areas as land use, transport, energy and housing; information programmes to raise awareness of the impact of consumption patterns; removal of subsidies that promote unsustainable patterns of consumption and production; and promotion of sector-specific best practices in environmental management" (paragraph 51).

2.2. New rules for traders to combat environmental misinformation

On 26.03.2024 Directive 2024/825 amending Directives 2005/29/EC and 2011/83/EU as regards enhancing the role of consumers in the green transition by improving the protection against unfair practices and enhancing information ("Directive on enhancing the role of consumers" or "Directive") entered into force, which will have to be transposed into Member States' legislation by 27.03.2026.

In the context of action to combat the climate crisis, a heightened awareness of consumers about the eco-sustainability characteristics of the products they buy who are, in principle, inclined to pay more than the average market price for eco-sustainable products. Therefore, more and more companies have started to emphasize communicate to stakeholders their (real or assumed) environmental awareness (Spedicato, 2024).

The European Commission has previously reiterated in its most recent Communication containing the *Guidelines on the interpretation and application of Directive 2005/29/EC* (European Commission, 2021a) that greenwashing

includes "environmental claims" and "green claims" that are not true or cannot be verified. The expressions "environmental claims" and "green claims" refer to the practice of suggesting or otherwise creating the impression (in a commercial communication, marketing or advertising) that a good or a service has a positive or no impact on the environment or is less damaging to the environment than competing goods or services. This may be due to its composition, how it has been manufactured, how it can be disposed of and the reduction in energy or pollution expected from its use. 'Greenwashing' in the context of business-to-consumer relations can relate to all forms of business-to-consumer commercial practices concerning the environmental attributes of products. According to the circumstances, this can include all types of statements, information, symbols, logos, graphics and brand names, and their interplay with colors, on packaging, labelling, advertising, in all media (including websites) and made by any organisation, if it qualifies as a 'trader' and engages in commercial practices towards consumers (paragraph 4.1.1 of the Communication).

Therefore, the main objective of the new Directive is to create a legal framework to enable consumers to make informed purchasing decisions, thus contributing to more sustainable consumption patterns, but also to make progress in the green transition. Consumers should be informed about the main characteristics of a product, including environmental and social characteristics such as, for example, the quality and fairness of the working conditions of the workforce involved, respect for human rights, gender equality, inclusiveness and diversity, etc. Environmental claims, in particular climate claims, should be confirmed by an expert and the regular findings of the third-party expert should be made available to consumers.

When traders compare products based on their environmental or social characteristics or circularity aspects, such as durability, reparability or recyclability the consumers are not always able to assess the reliability of that information. In this case, the traders must provide to consumers all the information about the method of comparison, the products which are the object of comparison and the suppliers of those products, and the measures to keep information up to date.

The displaying of sustainability labels which are not based on a certification scheme, or which have not been established by public authorities is considered misleading and is prohibited.

Annex I to Directive 2005/29/EC concerning practices considered unfair in all circumstances has been supplemented with sustainability unfair practices such as:

- displaying a sustainability label that is not based on a certification scheme or not established by public authorities;

- making a generic environmental claim for which the trader is not able to demonstrate recognized excellent environmental performance relevant to the claim;

- making an environmental claim about the entire product or the trader's entire business when it concerns only a certain aspect of the product or a specific activity of the trader's business;
- claiming, based on the offsetting of greenhouse gas emissions, that a product has a neutral, reduced or positive impact on the environment in terms of greenhouse gas emissions;
- any commercial communication in relation to a good containing a feature introduced to limit its durability despite information on the feature and its effects on the durability of the good being available to the trader;
- falsely claiming that under normal conditions of use a good has a certain durability in terms of usage time or intensity.

2.3. Some cases

Chicken of Tomorrow. The "Chicken of Tomorrow" is the name for sustainability arrangements made between producers and retailers about completely replacing from 2020 regularly produced broiler chicken meat that is currently part of the standard product range of supermarkets. The Netherlands Authority for Consumers and Markets in January 2015, the Netherlands Authority for Consumers and Markets (ACM) decided that a planned agreement between producers, traders, and retailers about minimum requirements regarding the welfare of chickens, did not qualify for the exemption from the cartel prohibition (Section 6, paragraph 3 of the Dutch Competition Act).

AdBlue. In July 2021, the European Commission has fined five German car manufacturers with 875 million euros for restricting competition in emission cleaning for new diesel passenger cars (European Commission, 2021b). The anti-competitive conduct took place from 25 June 2009 to 1 October 2014 and involved five German car manufacturers: Daimler, Volkswagen, Audi, Porsche and BMW (Holmes, 2023). Executive Vice-President of the Commission Margrethe **Vestager,** in charge of competition policy said: *"The five car manufacturers Daimler, BMW, Volkswagen, Audi and Porsche possessed the technology to reduce harmful emissions beyond what was legally required under EU emission standards. But they avoided to compete on using this technology's full potential to clean better than what is required by law. So today's decision is about how legitimate technical cooperation went wrong. And we do not tolerate it when companies collude. It is illegal under EU Antitrust rules. Competition and innovation on managing car pollution are essential for Europe to meet our ambitious Green Deal objectives. And this decision shows that we will not hesitate to take action against all forms of cartel conduct putting in jeopardy this goal."* The car manufactures held regular technical meetings to discuss the development of the selective catalytic reduction (SCR)-technology which eliminates harmful nitrogen oxide (NOx)-emissions from diesel passenger cars through the injection of urea (also called "AdBlue") into the exhaust gas stream. During these meetings, and for over five years, the car manufacturers

colluded to avoid competition on cleaning better than what is required by law despite the relevant technology being available (European Commission press release of 8 July 2021).

H&M's Conscious Collection. H&M, a major global fashion retailer, was accused of misleading consumers through its "Conscious" collection. The company claimed that the items in this line were more sustainable than they actually were. An investigation found that H&M used vague and misleading language, and the environmental impact of the materials used was often overstated. In some cases, garments labeled as sustainable had higher environmental impacts than standard items.

Shell. Shell, one of the world's largest oil companies, launched an ad campaign promoting its efforts to reduce carbon emissions and invest in renewable energy. The company was accused of greenwashing because, despite its marketing, Shell continued to invest heavily in fossil fuels and had not significantly reduced its overall carbon footprint.

Nestlé. Nestlé, a global food and beverage giant, launched a campaign claiming that its bottled water brand was committed to sustainability, using 100% recyclable packaging. Critics pointed out that while the bottles were technically recyclable, a large portion of plastic waste still ended up in landfills or oceans due to inadequate recycling infrastructure. Additionally, the company's water extraction practices raised concerns about sustainability.

IKEA. IKEA, known for its affordable furniture, promoted its products as being made from sustainable materials and being eco-friendly. Investigations revealed that some of the wood used in IKEA products was sourced from illegal logging operations in Ukraine, which contributed to deforestation.

Air travel sector. European Consumer authorities have identified different types of misleading practices, such as: creating the false impression that CO_2 emissions of a flight can be reduced or fully counterbalanced by paying an additional fee to finance climate projects with less certain environmental impact or the use of alternative aviation fuels; using the term "sustainable aviation fuels" without clearly justifying the environmental impact; using the terms "green", "sustainable" or "responsible" in an absolute way or use other implicit green claims, that can mislead consumers on the environmental impact of the highly polluting aviation industry; claiming that the airline is moving towards net-zero greenhouse gas emissions (GHG) or any future environmental performance, without clear and verifiable commitments, targets and an independent monitoring system; presenting consumers with a "calculator" for the CO_2 emissions of a specific flight, without providing sufficient scientific proof on whether such calculation is reliable and information regarding the elements used for the calculation; presenting consumers with a comparison of flights as regards their CO_2 emissions, without providing sufficient and accurate information on the elements of the comparison.

Allbirds. Allbirds is often touted as a "green" company because of its commitment to sustainability and its efforts to minimize environmental impact. Allbirds uses eco-friendly materials in the production of its shoes, such as certified merino wool, eucalyptus fiber and sugar-based foam rubber. These materials are less harmful to the environment compared to traditional materials such as leather or synthetics. Allbirds is widely regarded as a green company, with a serious commitment to sustainability and green practices. Although Allbirds has a clear commitment to sustainability, some critical voices have suggested that certain company practices or messages could be considered greenwashing. For example, while the use of sustainable materials is a step forward, there is debate about how "green" the entire production process really is, given the complexity of global supply chains. However, like any growing company, there are challenges in maintaining these standards as it expands. While not perfect, Allbirds remains a positive example in the fashion and footwear industry as one of the companies with a real focus on sustainability.

3. CONCLUSIONS

Greenwashing, the practice of making misleading or unsubstantiated claims about the environmental benefits of a product or service, poses significant challenges both for consumers and for competition within markets. When companies engage in greenwashing, it distorts the competitive landscape by giving an unfair advantage to those who deceive consumers about their environmental impact. This has led to increased scrutiny from regulators and has important implications under competition law. Companies that engage in greenwashing can gain an unfair competitive edge over rivals who invest in genuinely sustainable practices. This distorts competition, as the misleading companies reap financial rewards without bearing the costs associated with true environmental responsibility. Addressing greenwashing through competition law is crucial for ensuring that markets function properly and that consumers can make informed choices. Regulatory bodies must continue to develop and enforce standards that prevent misleading environmental claims, protecting both consumers and businesses that are genuinely committed to sustainability. As awareness of greenwashing grows, it will become increasingly important for companies to ensure their environmental claims are both accurate and substantiated, fostering a more transparent and competitive market for sustainable products. To combat greenwashing effectively, there is a need for stronger enforcement of existing competition and consumer protection laws. This includes imposing stricter penalties on companies that engage in deceptive marketing practices and ensuring that claims of sustainability are backed by verifiable and transparent data.

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PEDAGOGY PRIME WEB APPLICATION – AN ONLINE TOOL FOR THE ANALYSIS OF ACADEMIC CURRICULAR MATERIALS IN THE CONTEXT OF THE TPACK COMPETENCY MODEL

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Abstract
The 2020-2021 COVID-19 pandemic has spawned new ways for teachers and students to interact. These new ways of interaction between the participants in the didactic act accelerated the identification of ways to use technology in the didactic activities. New skills had to be assimilated by the teaching staff to be able to carry out teaching activities. These new skills were introduced by education science specialists in a new model of skills necessary for the teacher to deliver a quality didactic act: TPACK (technological, pedagogical, and content knowledge). The Pedagogy Prime web application is a powerful tool for educators, primarily focused on facilitating Percentage Coverage Analysis to ensure comprehensive course coverage aligns with discipline requirements. Beyond this core functionality, features such as Upload Discipline File Rules establish standardized guidelines for systematic file management. Display of Course Materials enhances transparency for both teachers and students, offering easy access to course materials. User Accounts for Professors and Students create a user-friendly environment, tailoring functionalities to the unique needs of each group. Additionally, Communication Channels for Students to Ask Questions About Courses foster real-time interaction, providing in-app messaging and course-specific channels. While our primary goal is to assist teachers in assessing course coverage, these complementary features collectively contribute to an organized, efficient, and collaborative educational experience. We remain dedicated to supporting educators in navigating course management complexities and ensuring a comprehensive and streamlined teaching process.
Keywords: *TPCK; TPACK; pedagogy; curricula*
JEL Classification: I23

1. INTRODUCTION

They are some challenges in digitalisation of traditional education:

- Inadequate or incomplete tools for aligning course materials;
- Inconsistent file management;
- Limited accessibility;
- Limited functionalities to manage the learning plan in existing software applications;
- Limited functionalities to manage the institution in existing software applications;
- Limited integration between different levels of management in education;
- Communication gaps.

Teachers carry out the didactic act using more and more technology. The TPACK competency model (Mishra and Koehler, 2006; Schmidt-Crawford *et al.*, 2009) is increasingly circulated in the scientific literature of the post-pandemic period. However, research shows that there are no software applications that cover all the requirements of educational management, which must cover several nested levels: management of the moment of presentation and transfer of knowledge, class management (here including all: personal management, student management but mainly groups of students management and room management) (Akey, 2006; Saifi *et al.*, 2018; Sumardi, 2023), learning unit management, course materials management, learning plan management, institution management.
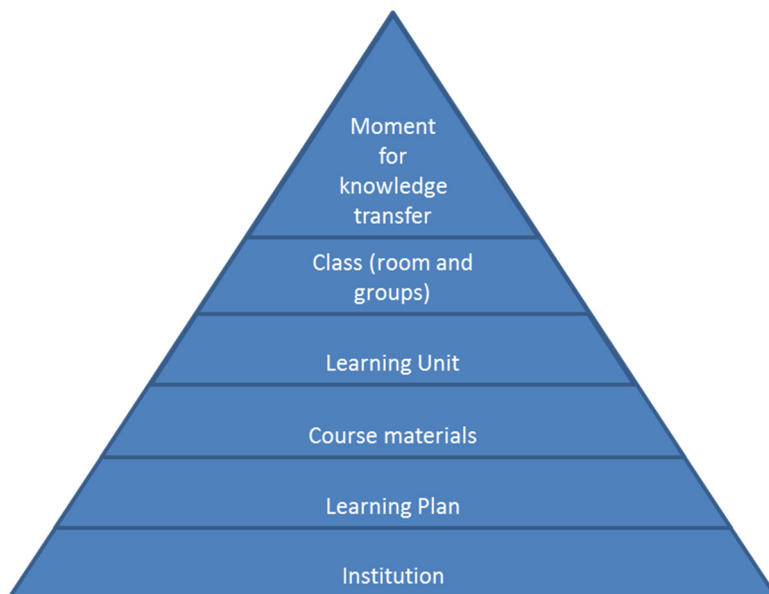
Source: authors' own processing

Figure 1. Levels of educational management

Regarding the use of technology in education we have more points of view. In 2000 it was mentioned that "technology is transforming nearly every aspect of society" (Groves and Zemel, 2000). The TPACK model shows that a teacher in a digitalized classroom must have more than content knowledge, and also more than padagogical knowledge (Mishra and Koehler, 2006; Schmidt-Crawford *et al.*, 2009; Sullivan *et al.*, 2024). TPACK reshapes education by emphasizing the integration of technology knowledge, pedagogical skills and content knowledge (Deivam and Philomina, 2022; Fanaru *et al.*, 2024). Also they are some research who reveal that are some medical risks in using educational technology. In 2012, several researchers identified Internet addiction as a disease (Cash *et al.*, 2012). In 2015, it was mentioned that "technostress has many negative effects on performance, commitment and motivation" at the workplace (Jena, 2015). Villalba *et al.* have studied the risks of integrating technology into education, their research showing that it has disruptive potential and can produce logistical problems (Villalba *et al.*, 2017). In 2019, a study revealed that the stress generated by technology is often associated with the appearance of behavioral and psychological disorders (La Torre *et al.*, 2019).

We believe that a good software application for managing a learning system for Humanities and Social Sciences must cover all levels of management, from institutional management to the management of the moment of knowledge transfer. We do not answer here to the next two questions: „could be done?" or „but is this enough?" but we present a tool that could help the teacher who is already required to use technology in everyday life to getting it right. The first step in this could be a tool that does text analysis and provides useful information to align the course materials to the main concepts used in the discipline, the *Pedagogy Prime* web application. The software was developed by the students Fanaru, V.D., Opariuc, R.I., Savin, R.E., Tablan, R.A. as a result of a developed project in one of their courses. We thank them in this material for the development effort and the tech research work.

2. OTHER USEFULL APPS ON EDUCATIONAL CONTENT ANALISYS

Kuali Curriculum (https://www.kuali.co/products/curriculum) is a curriculum management software designed for higher education institutions. The developers of Pedagogy Prime app used this example app to learn how to offer to the students the necessary materials that can help them with their career path in based on their sentence searching experience and their implications for that subject. Using the same methods can also help the teacher to determine which parts of the course are less interesting for the students and with this help him to improve it.

Creatix Campus (https://www.creatrixcampus.com/) provides a flexible design framework that enables clients to plan, develop, map, and review

curriculum. The developers of Pedagogy Prime app used this example to learn how to show the usefull data.

Coursedog (https://www.coursedog.com/) offers a comprehensive solution for institutions seeking streamlined curriculum processes. The developers of Pedagogy Prime app used this example app to learn how to handle academic and event scheduling to improve curriculum and school activity planning.

3. THE SOFTWARE ARCHITECTURE

For the application architecture the developers used Clean Code and N-layer architecture. Because it is an online app have three different key component: the frontend part (user interface - UI), the backend (server) part who generate the UI and manage the communication with the parser/coverage generator which the developers declared as the third key component of the app.
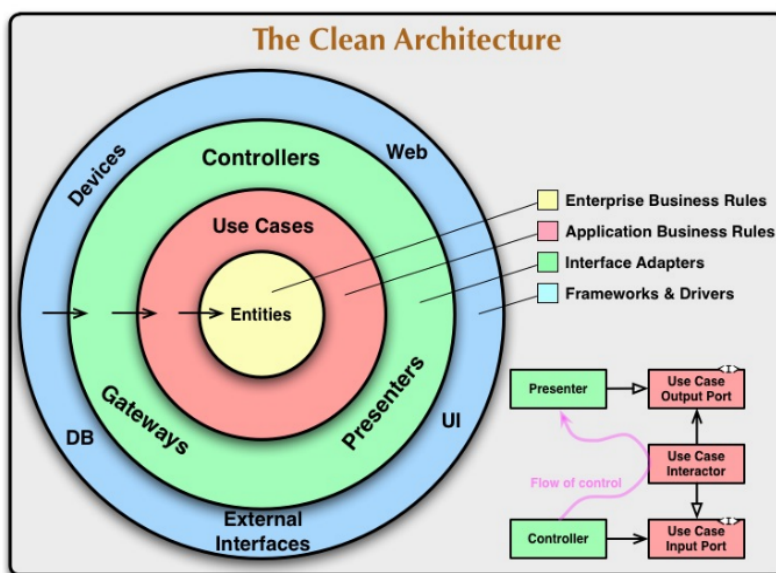
Source: Fanaru *et al.* (2024)

Figure 2. Clean code generic visualisation

The backend part of the app is written in .NET 7. Communication between the repositories (data store) and the UI components is achieved using a mediator pattern. This provide some key advantages: loose coupling, high cohesion, modularity, easy maintenance, ease of development, and scalability. For data persistence, the developers used Microsoft SQL Server 2022 because they needed its widespread recognition, reliability and security features.
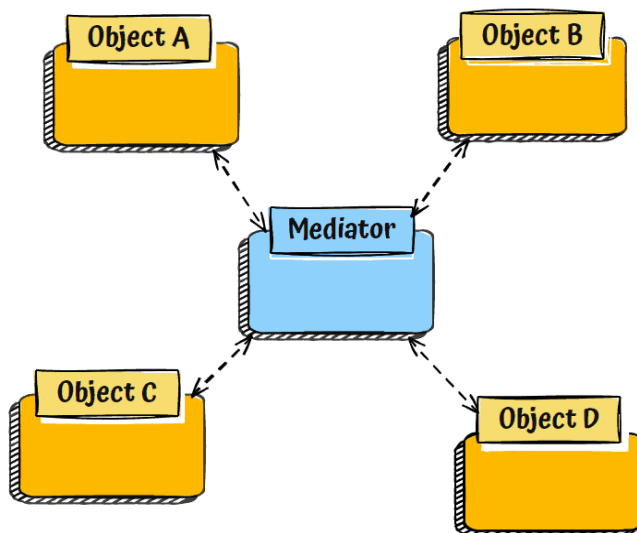
Source: Fanaru *et al.* (2024)

Figure 3. Mediator pattern schema
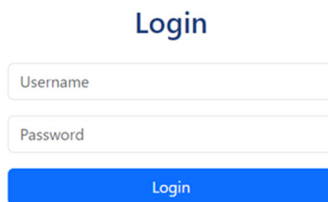
The UI is written using the React library with the support of TypeScript. The UI design was done using the Bootstrap library, providing ready-to-use components that developers used with minimal modifications.

The parser/coverage generator was made using a Flask application to analyse the materials that a teacher adds to the application. Starting from a description of the discipline the parser will start analysing the text and find the relevant topics of it. Having the relevant topics identified, the Flask Application will proceed to look through the other course materials for these topics or synonyms for them, to cover as much as possible. With the input provided by the teacher, the output of this parser will be a percentage of coverage for the course, with an array of the topics found in the course and another for the topics not found. These are displayed in green or red.

Communication between all three parts is achieved using the HTTPS protocol.

The developers used ai components. They worked with github copilot to recreate the login page of the application and also the login form within this page. Even though at the beginning, the tool did not provide them a full solution to the problem which the developers intended to solve, with guidance from developers it successfully was able to create and replace the functionality intended.

Login Page

Login

Username

Password

Login

Source: Fanaru *et al.* (2024)

Figure 4. Login page made with the help of GitHub Copilot

4.   THE ROLES

Within the application, users can connect in different roles: professor, student and admin.

Student role can view the subjects they are enrolled in. For each subject, they can see the lectures conducted so far, identify other participants in the subject and exchange messages with all participants.

Professor role has a broader set of functionalities. In addition to actions as a student, a professor can create new subjects, add lectures to subjects, make these lectures visible to other participants, update courses, and generate coverage reports for each lecture to assess compliance with declared standards. If a subject is removed from the curriculum, the professor who created it can delete it.

Admin role has the authority to use all application functionalities. In addition to the functionalities described for students and professors, the admin has veto power in user management. They can create, update, and delete users.

5.   THE RESULTS

Application has a secure login system who allow only the users who have a declared role in the app to access and update the user data. Also, a mechanism for the brute force attacks has been made using a timeout session. This bans a user from connecting after 5 failed log in attempts.

The app have a user friendly interface, intuitive and aesthetically pleasing. Clear navigation path and well-placed controls contribute to faster interaction user-app.

The teacher must face many challenges of technological evolution. One of them is the competition between teachers' learning of the use of educational technologies and respectively the development of new educational technologies by manufacturers. In this competition, the teacher needs help in maintaining the subjects and contents he uses within the standards imposed by the requirements of the discipline he teaches. Pedagogy Prime is a tool that can help him in this regard.

But we are also still looking for ways to increase the functionality of the app and are devoting our effort to supporting Humanities and Social Sciences teachers

in overcoming the complexities of course management and ensuring a comprehensive yet simplified teaching process.

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EMPLOYEE'S PERCEPTIONS ABOUT DIGITALIZATION IN WORK

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Abstract
Digitalization relates to much more terms in work: data, information, digitization, virtual environment, etc. Employees must keep up with the transformations that are made at the workplace. Some of them appreciate and agree with what means new in terms of technology, some of them adapt to digitalization slowly, and others are rejecting the idea of improvements with the new changes. This is the problem that conducted us to the idea of analysing the employee's perceptions regarding digitalization, and factors that support or not this process. Whatever we want or not, in the market changes are made, and people adapt their work to new processes. The current paper aim is to understand through previous studies what makes people to easily accept digitalization. Further, limits and new research ideas are described.
Keywords: *digital transformation; employees; factors; processes*
JEL Classification: O15, J81, M15

1. INTRODUCTION

Digitization includes the proposal, development and application of digital environments and tools that have a strategic impact on businesses, automating work processes. Technology brings implicitly changes in today's economy, and digitization contributes to the transfer of data and supports communication in business (Bogasiu (Anton) and Ardeleanu (Trifu), 2021).

There are areas where digitalization was very easily adopted, because it lent itself to the respective activities, and areas where technology is still restricted. For example, in financial and accounting activities, automation and digitalization have entered the most, 97% of the work tasks in this field being possible to be digitalized (Bogasiu (Anton) and Ardeleanu (Trifu), 2021).

Being a much-debated topic, both for the public and for the private, the Covid-19 crisis has accelerated the implementation of digital tools and indicated their usefulness. In just a few months after the onset of the pandemic, it was

demonstrated that the online environment can be used effectively by economic agents, state institutions, clients, suppliers, taxpayers, etc. In Romania, digitalization started quickly at that time, and currently the process is still ongoing, adapting and accepting.

The success of digital transformation (DT) depends on people's acceptance (Rusu *et al.,* 2023). The acceptance of digitalization refers to the design of products and services that are accompanied with digitalization in one way or another (Rusu et al., 2023). That is why it is important that those who design the products and services on the market to know the factors that determine the acceptance of digitalization (Rusu *et al.,* 2023).

While digital transformation plays a central role in defining new ways of doing business, there are authors that say there are not enough studies oriented on sustainable change management in this sense (Pacolli, 2022). Some authors are of the opinion that digital transformation occurs when people wholeheartedly adhere to the company's vision and not when technology is technically installed (Pacolli, 2022). Rarely the initiative of digitalization have success from the very beginning, and change management is an important way to sustain it (Pacolli, 2022).

2. ADVANTAGES AND DISADVANTAGES OF DIGITALIZATION

The introduction of digitalization can be perceived in a more or less positive way, depending on the field of activity, the type of management in the organization, the ability of employees to quickly adapt to new technologies, etc.

Some general advantages of digitization at work could be:
- Much higher productivity;
- Attention is focused on key tasks that bring high added value, to the detriment of repetitive tasks;
- 24/7 availability of applications;
- Lower costs.

Other studies reveal the fact that digitalization better connects the actors in the economic environment, the information transmitted to the public is more precise, and decision-making process is also influenced depending on the digitalization pillar (Leão *et al.,* 2023).

Some general disadvantages of digitization at work could be:
- The impossibility of adapting of some employees to the new digitalization requirements;
- High costs of adopting technologies;
- Replacing jobs with repetitive tasks by digitization, through artificial intelligence;
- Fear of the unknown.

It is natural for people to fear for their job security when they think about digitalization. At the same time, it is still so natural to orient employees towards

more important and less repetitive work tasks, in order to bring added value to the products and services offered in the market.

In Table 1 are presented advantages and challenges of digital technologies in emerging markets.

Table 1. Benefits and challenges of digital technologies in emerging markets

Advantages	Challenges
✓ Reducing costs	✓ Corruption
✓ International markets free access	✓ Instability in politics
✓ Quality improvements	✓ Limited data access
✓ Decision-making process improvements	✓ Weak legal system
✓ Provision of collaboration	✓ Resource missing (financial, technological and human)

Source: adapted after Leão *et al.* (2023)

Digitalization has different advantages and disadvantages, depending on the type of country or region that is being analyzed. The countries from the emerging economies have an alert rhythm of development, and their adaptation to technology is much easier compared to what happens in the less developed countries. There, the rhythm of adoption of digitization will be slower and more difficult.

3. FACTORS THAT INFLUENCE ACCEPTING DIGITALIZATION

Digital transformation is associated with some factors that propel it towards the market. According to Wittmer (2024), the adoption of technology keeps the business survival (Wittmer, 2024). A second important factor in this sense refers to the expectations of the clients, which surely also contain aspects related to digitalization (Wittmer, 2024). The rest of the factors are detailed in Figure 1:

Tech Trends Underscore. Digital transformation is about survival.	*Customer expectations are still raising*	*Employee behaviours & Preferences are an urgent priority*	*Remote-Hybrid collaboration need to adapt its game*	*Environmental policy and Sustainability*

Source: Wittmer (2024)

Figure 1. Factors driving Digital Transformation

Clients' preferences are very important, because businesses have to adapt to their options (Wittmer, 2024). The remote and hybrid work need also to be

adapted to stakeholders, and we do not have to forget the environmental and sustainability aspects of business (Wittmer, 2024). These are mainly the factors importance for implementing digitalization in organizations.

Digitization and sustainability put together lead to the creation of the natural capital of the planet (Pacolli, 2022). Other authors are of the opinion that organizational gaps such as the lack of qualified workforce, the lack of clear rules in terms of legislation, the lack of financial resources and the necessary data it slows digitization (Leão *et al.*, 2023). A study carried out on Russian companies says that the digital economy can be achieved through digital transformation projects and that, in this sense, the context and long-term objectives should be taken into account (Trofimov *et al.*, 2023).

The digitalization process should be provided with an assessment of digital preparation, which will look at: digital threats and opportunities, what resources exist and what still needs to be acquired, respectively what added value will bring the proposed digitalization level to the organization (Trofimov *et al.*, 2023).

According to another classification, there are eight successful digital transformation factors (Altimeter Company, 2024):

- Orientation;
- People;
- Processes;
- Structure;
- Insights and Intent;
- Technology;
- Execution.

Orientation takes into account the needs of customers, people take into account the digital transformation of a business at all levels, processes refer to the digital operational infrastructure, objectives should be aligned to the digital transformation in business strategies, structure refers to clear work tasks for all employees, insights and intent follow the results to evaluate the results obtained, technology is useful to increase confidence in the company's products and services, and execution is always analysed through implementation, learning and adaptation (Altimeter Company, 2024).

There is a gap between what employees think about digitalization versus what managers think about it. While managers could think that the organization is ready for digital transformation, in execution thinks are different, because employees know details from processes and differently understand what risks and challenges could involve new changes in terms of digitization and digitalization. In Table 2 are presented these two perspectives:

Table 2. Different perspectives on Digital Transformation (DT)

C-suite opinion	Hypothesis	Executives opinion
Definitely "Yes"	Future survival depends of DT	"Not so sure" of this
Very concerned	There are risks regarding job security	Not so concerned
Pessimistic	The company is ready for what is new in DT	Optimistic

Source: Rohei (2019)

Overall, the executive's opinion is more optimistic than the C-suite one regarding what it should be implemented in terms of what is new in digital transformation. However, managers will always be more worried about the risks regarding job security, while employees will not have problems in this sense.

4. CONCLUSIONS

Digitalization refers to the design of products and services that are accompanied by digitalization. The success of digital transformation (DT) depends on people's acceptance (Rusu *et al.,* 2023). Digitalization has different advantages and disadvantages, depending on the type of country or region that is being analyzed. The countries from the emerging economies have an alert rhythm of development, and their adaptation to technology is much easier compared to what happens in the less developed countries.

The digitalization process should be provided with an assessment of digital preparation. There are eight successful digital transformation group of factors: orientation, people; processes; structure; insights and intent; technology; execution (Altimeter Company, 2024). Rarely the initiative of digitalization has success from the very beginning, and change management is an important way to sustain it (Pacolli, 2022).

There are too many factors that influence DT. They are also specific to the analyzed fields of activity. This represents a research limit for all literature review articles. It would be interesting to see in future more studies from the perspective of digitalization of employees' learning activities.

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BRIDGING THE SKILLS GAP: INSIGHTS FROM THE PACT FOR SKILLS AND THE EUROPEAN ALLIANCE FOR APPRENTICESHIPS

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Abstract

In 2023, 42 occupations were classified as experiencing shortages. Moreover, 74% of European SMEs reported difficulties in finding workers with the right skills according to the Eurobarometer for the European Year of Skills. This highlights the critical need for initiatives like the Pact for Skills and the European Alliance for Apprenticeships (EAfA), which offer opportunities for individuals through apprenticeships, upskilling, and reskilling initiatives. The Pact for Skills is a flagship action under the Skills Agenda and supports public and private organisations in adapting to green and digital transitions. The 20 Large-scale Skills Partnerships (under the Pact) pledged to train over 25 million adults by 2030, enhancing sector-specific skills development. EAfA brings together governments and stakeholders to enhance the quality, supply, and image of apprenticeships in Europe, while promoting apprentice mobility. This article analyses the monitoring and annual surveys from 2023 (Pact for Skills) and 2022-2023 (EAfA) to assess the impact and outcomes of these initiatives. The analysis reveals significant impacts on skills development, with the Pact reaching nearly 1.5 million individuals in 2023 and EAfA facilitating the creation of more than 509,000 apprenticeship places between June 2022 and August 2023. High engagement and substantial investments were noted, with EUR 151 million invested by Pact members. However, financial and human resource limitations, along with administrative challenges, were common obstacles. Successful strategies included stakeholder cooperation, digital project implementation, and international collaboration, with high satisfaction reported for support services and resources.

Keywords: *apprenticeship; Pact for Skills; Skills Agenda; reskilling; upskilling*
JEL Classification: I2, P36, P46

1.   INTRODUCTION

In 2023, labour market shortages became increasingly pronounced, with 42 occupations identified as experiencing significant deficits across Europe

(European Commission, 2024b). These shortages reflect the growing gap between the skills employers require and the qualifications available in the workforce. The Eurobarometer for the European Year of Skills revealed that 74% of small and medium-sized enterprises (SMEs) in the EU reported challenges in finding workers with the appropriate skills to meet their business needs (European Commission, 2023c).

This mismatch highlights the urgency of addressing skill gaps, particularly in sectors undergoing rapid digital and green transformations, which are crucial for Europe's economic sustainability. These findings underscore the importance of initiatives like the Pact for Skills and the European Alliance for Apprenticeships (EAfA), which aim to bridge this gap by fostering skills development and training opportunities.

2.   THE EUROPEAN INITATIVES TO BRIDGE THE SKILLS GAP
European Skills Agenda
The European Skills Agenda is a strategic initiative created by the European Commission to ensure that Europe's workforce possesses the skills needed to meet the evolving demands of the economy, particularly in light of ongoing technological, digital, and green transformations. Launched in 2020, this Agenda seeks to equip 120 million Europeans with new skills by 2030, aiming to boost both employability and the competitive edge of European businesses. Key priorities include fostering lifelong learning, improving vocational education and training (VET), and addressing skills shortages, particularly in the green and digital sectors (European Commission, 2020a).

This initiative aligns closely with broader EU policies, including the European Green Deal and the Digital Decade, both of which underline the importance of equipping workers with the skills required for tomorrow's jobs. The European Skills Agenda is structured around 12 flagship actions, two of which are particularly critical: the Pact for Skills and the European Alliance for Apprenticeships (EAfA). These initiatives promote public-private partnerships, encourage skills development, and contribute to creating a more adaptable workforce (European Commission, 2020b).

European Alliance for Apprenticeships
The European Alliance for Apprenticeships (EAfA), launched in 2013, is a collaborative platform that aims to improve the supply, quality, and image of apprenticeships across Europe. It brings together governments, businesses, unions, vocational education providers, and other stakeholders to develop and support apprenticeships that meet industry needs (European Commission, 2023b).

One of EAfA's primary goals is to create more apprenticeship opportunities across Europe by strengthening partnerships between public and private stakeholders. Additionally, the alliance promotes the development of common

quality standards, ensuring that apprenticeships offer meaningful training and career development. Another critical objective is to raise the status of apprenticeships, positioning them as a valuable career path, especially for young people who may otherwise face barriers to employment.

EAfA has reached almost 450 pledges, and 40 national commitments, and over 2.5 million apprenticeship offers since its creation (European Commission, 2024c).

Pact for Skills

The Pact for Skills (Pact), established as part of the European Skills Agenda in 2020, is a key initiative focused on fostering large-scale cooperation between industry stakeholders to address Europe's skills shortages. The Pact encourages collaboration between public and private organisations, training providers, and unions to upskill and reskill workers, with a specific emphasis on sectors critical to Europe's green and digital transitions (European Commission, 2023a).

One of the Pact's main goals is the creation of Large-scale Skills Partnerships, targeting key industries such as digital technologies, healthcare, and renewable energy. These partnerships are designed to address sector-specific skill gaps by providing tailored training programs that equip workers with the necessary competencies for future jobs (European Commission, 2023a).

The reality?

Despite the significant progress made through the European Skills Agenda, EAfA, and the Pact, several challenges remain. Securing long-term investment for skills development, particularly from the private sector, is critical to meeting the ambitious targets of these initiatives.

At the same time, the increasing emphasis on developing green and digital skills offers a unique opportunity to align training programs with the needs of future industries. Furthermore, the multi-stakeholder approach underpinning both EAfA and the Pact provides a solid foundation for long-term success, as it draws on the collective expertise and resources of governments, businesses, and training providers. This collaborative model ensures that Europe is well-positioned to tackle its skills challenges and remain globally competitive.

The European Skills Agenda, EAfA, and the Pact are integral to Europe's strategy for tackling skills shortages, improving employability, and supporting the green and digital transitions. These initiatives emphasise lifelong learning, vocational education, and strong collaboration between the public and private sectors.

3.   METHODOLOGY

The Theory of Change (ToC) is a conceptual framework that outlines the steps needed to achieve long-term objectives, establishing a connection between

inputs, activities, outputs, and outcomes. It is widely used to provide a clear, visual representation of how specific actions lead to desired results in initiatives, programs, or policies. Carol Weiss introduced the concept in the 1990s to emphasise the importance of articulating the logic behind social interventions. Weiss's approach was designed to help practitioners better understand the assumptions underlying their programs and to assess the effectiveness of different interventions (Weiss, 1995).

Over time, the ToC has become an essential tool in sectors like international development and public policy, as it supports both strategic planning and the evaluation of impact. Its main strength lies in making the assumptions behind program interventions explicit, allowing for critical reflection on whether the desired changes are realistic and achievable (Taplin et al., 2013).

The article uses ToC to analyse EAfA and Pact for Skills, using the monitoring and annual surveys from 2023 (Pact for Skills) and 2022-2023 (EAfA) to assess the impact and outcomes of these initiatives.

This article uses the ToC framework to analyse the impact and outcomes of both the European Alliance for Apprenticeships (EAfA) and the Pact for Skills. The analysis draws on data from the most recent monitoring reports and annual surveys, including the 2023 report for the Pact for Skills and the 2022-2023 report for EAfA, to evaluate how effectively these initiatives are meeting their objectives and driving progress in skill development and apprenticeship growth.

4. ANALYSIS
ToC for Pact for Skills

The Pact for Skills is designed to address the growing need for skills development in the context of Europe's green and digital transitions. The long-term goal of the Pact is to equip European workers with the skills necessary to thrive in a rapidly changing labour market, reducing skills shortages while promoting social inclusion and economic resilience. By 2030, the Pact aims to train over 25 million adults, contributing to a workforce that is better prepared to meet the demands of emerging industries and technological advancements.

To achieve this overarching objective, the Pact focuses on several intermediate outcomes. One key outcome is the upskilling and reskilling of workers, particularly those in industries most affected by the green and digital transitions. This includes helping individuals develop sector-specific skills that are critical for the evolving labour market. Another important outcome is the improvement of employability among European workers, ensuring that individuals have the competencies required by industries experiencing skill shortages. In the long run, these efforts will support Europe's transition to a greener and more digital economy, as workers with the right skills are better equipped to contribute to and benefit from these shifts.

The Pact's achievements are reflected in several key outputs. In 2023 alone, the initiative successfully trained nearly 1.5 million individuals, demonstrating significant progress toward its long-term goal of training 25 million adults by 2030. Furthermore, 20 Large-scale Skills Partnerships were established under the Pact, each focused on addressing the specific skill needs of sectors critical to the green and digital transitions. These partnerships have made tangible commitments to upskilling and reskilling workers, and their collective impact is expected to play a vital role in meeting Europe's future workforce needs. In addition, Pact members have collectively invested EUR 151 million in these skills initiatives, signalling strong financial commitment to the Pact's objectives. The activities that have produced these outputs include the development of tailored skills training programs, particularly in sectors such as digital technologies, energy, and sustainable industries. The establishment of large-scale partnerships between public and private organisations is central to the Pact's success, as these collaborations ensure that training programs are aligned with industry needs and delivered on a wide scale. Additionally, the Pact supports initiatives aimed at fostering social inclusion by ensuring that upskilling opportunities are available to all, including vulnerable groups.

A member of the Pact for Skills based in Belgium provided cybersecurity training and certification to 1,000 women across Europe. The foundation coordinates a network of 27 national chapters, extending its reach to around 60,000 individuals at the national level. Another Pact member, a large manufacturer of heating and refrigeration systems, launched a role-specific upskilling initiative across its offices in several EU Member States. This approach involved training all employees in specific roles simultaneously, resulting in over 1,000 employees in Sales, Service, and Engineering benefiting from e-learning and on-site training courses by the end of 2023. This initiative not only improved skills but also fostered a positive company culture around continuous learning. In Spain, a sectoral organisation focusing on SMEs, co- coordinated a project, which enhanced the employability of around 2,000 individuals in vulnerable situations by working with 1,240 companies from various sectors. Lastly, a project in Sweden supported the integration of 2,400 third-country nationals into the labour market through a collaboration of 30 partners across 16 municipalities. These examples (European Commission, 2023a) highlight how diverse activities under the Pact for Skills are addressing specific skills gaps and social challenges across Europe.

The Pact for Skills is supported by a variety of inputs, including financial investments from both private companies and public bodies, policy frameworks that encourage collaboration between different sectors, and the active engagement of businesses, training providers, and governmental institutions.

These inputs provide the resources and structures necessary to carry out the Pact's activities and achieve its long-term goals.

One key assumption is that industry demand for skills will continue to evolve, particularly as green and digital technologies advance, requiring ongoing upskilling and reskilling initiatives. Another assumption is that businesses and governments will remain committed to investing in skills development, both financially and in terms of policy support. Another assumption is that the stakeholders involved in the Pact will continue to collaborate effectively, ensuring that training programs are implemented and scaled as needed to meet the Pact's objectives.

ToC for European Alliance for Apprenticeships

The European Alliance for Apprenticeships (EAfA) aims to address the pressing challenge of youth unemployment and skills shortages across Europe by enhancing the quality, supply, and perception of apprenticeships. The ultimate goal of EAfA is to establish apprenticeships as a vital pathway to employment, contributing to a more skilled and adaptable workforce. By focusing on these objectives, EAfA aims to reduce the skills gap and youth unemployment while fostering economic resilience and growth across European countries.

To achieve this long-term goal, EAfA's efforts are centered on several intermediate outcomes. First, the initiative seeks to increase the supply of apprenticeship opportunities by encouraging more businesses to offer these programs. This involves collaboration between governments, employers, and vocational education and training (VET) providers to design apprenticeships that meet industry needs. Secondly, EAfA focuses on improving the quality of apprenticeships by developing and implementing standardized quality frameworks that ensure consistency and high standards across different countries and sectors. Third, a key outcome of EAfA's work is to enhance the perception of apprenticeships across society, positioning them as a respected and valuable career pathway, particularly among young people and their families. Lastly, EAfA promotes apprentice mobility, making it easier for apprentices to gain experience in other European countries, thus broadening their skills and employability.

The outputs of EAfA's activities reflect the tangible achievements of these efforts. Between June 2022 and August 2023, more than 509,000 apprenticeship places were created, demonstrating significant progress in increasing the supply of opportunities. This was made possible through the creation of strong partnerships between governments, employers, and educational institutions, fostering a collaborative approach to apprenticeship development. Additionally, EAfA has successfully engaged a wide array of stakeholders, including business organisations, trade unions, and VET providers, to support these efforts.

The key activities driving these outputs include establishing partnerships to create and promote apprenticeship programs, facilitating cross-border mobility through specific mobility initiatives, and promoting the implementation of quality standards for apprenticeships. These activities are supported by a robust framework

of inputs, including financial resources, policy support from European bodies, and the active involvement of member states and private-sector partners. Through these activities and inputs, EAfA strives to build an ecosystem where apprenticeships are accessible, high-quality, and widely valued across Europe.

The Greek Ministry of Education and Religious Affairs introduced structural reforms to make the VET teaching profession more attractive, such as increasing financial compensation for post-secondary apprenticeship educators.A German member raised the required classroom learning hours for apprentices from 16 to 21 per week, ensuring more comprehensive theoretical support. A Finnish member initiated nationwide information-sharing programs and collected data on apprenticeship systems across EU Member States. A Belgian member enhanced its apprenticeships by offering international exchange opportunities with the United States and Spain, significantly enriching the learning experience. Meanwhile, the Development and Training Department of Lisbon's City Council implemented a marketing campaign promoting VET courses through public materials, such as leaflets and bus advertisements, aimed at informing citizens about adult VET qualifications. Another member based in Belgium, created an international apprenticeship position that extended opportunities beyond the EU27, further broadening the reach of its training programs. These initiatives (European Commission, 2024a) demonstrate the diverse ways in which European organisations are enhancing VET and apprenticeship programs across different regions.

One key assumption is that employers are willing and able to offer apprenticeship positions, especially with the support provided through EAfA. Secondly, the success of the initiative depends on continued government backing, both in terms of funding and policy support, ensuring that apprenticeships remain a priority in national education and employment strategies. Another assumption is that there is ongoing cooperation between the public and private sectors, which is crucial for maintaining the quality and relevance of apprenticeship programs.

5. CONCLUSIONS

The Theory of Change (ToC) analysis of both the Pact for Skills and the European Alliance for Apprenticeships (EAfA) reveals their significant contributions to addressing Europe's skills gap and supporting economic transitions. For the Pact for Skills, the ToC highlights the initiative's success in mobilising partnerships and financial resources to train nearly 1.5 million individuals in 2023, advancing toward its goal of training 25 million by 2030. The Pact's sector-specific collaborations have played a crucial role in targeting the green and digital transitions, which are essential for Europe's sustainable economic future. However, challenges such as the need for continuous investment and ensuring scalable collaboration remain.

Similarly, the ToC for European Alliance for Apprenticeships demonstrates its substantial impact on youth employability by creating over 509,000

apprenticeship places between June 2022 and August 2023. The initiative's efforts to improve the supply, quality, and image of apprenticeships—through partnerships and standardisation of apprenticeship frameworks—have proven effective in tackling youth unemployment and equipping workers with industry-relevant skills. Both initiatives, though distinct, contribute to a shared objective: bridging Europe's critical skills gap, fostering workforce adaptability, and supporting long-term economic resilience through collaboration between public and private sectors.

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IMPACTS OF MACROECONOMIC AND SOCIAL DETERMINANTS ON INCOME INEQUALITY IN EU

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Abstract
On the background of strengthening the relationships between the EU countries and of the increasing concerns regarding the equilibrate development of the society both in each EU country and overall, in the entire EU, a very significant subject of debate remains diminishing the income inequality. However, in order to find solutions for this issue, it is mandatory to understand first what drives such inequality. This is why the paper aims to analyze the impact of some important macroeconomic and social determinants, such as GDP, gross capital formation, labor force participation, control of corruption etc. on income inequality in EU countries, during the period between 2004 and 2020. Our analysis leads to conclusions regarding the main drivers of inequality and creates premises also for implementing solutions in order to correct this phenomenon.
Keywords: *Gini index; macroeconomic determinants; social determinants*
JEL Classification: C23, E25, I32, O15

1. INTRODUCTION

Inequalities within the society proved to be, historically, major causes of conflicts between social classes, leading most of the time to strikes, riots or even anarchy or civil wars, all of them impeding the society development. On the contrary, when inequalities are low the society has the strength to rapidly evolve and to avoid the negative social movements and their effects. Therefore, diminishing the inequalities or at least controlling them is an issue for each society, either smaller or bigger one. Thus, when approaching the European Union, this matter becomes important both for each country, but also for the whole union. Moreover, on the contemporary background, the most important inequalities are economic ones, especially the income inequality.

For the European Union, the first decades of the current century were marked by a significant process of enlarging the European Union, which has progressively

added more and more members to the existing ones and continues to look forward to also other future new members. However, this process implies also surpassing a lot of issues regarding both cooperation between members old and new, but also finding ways in order to harmonize the actions and policies of each member to fulfil in the end the development of the entire European Union. The road to a united and performant European Union brings challenges both for the governments and for the citizens of each member state and the success of the integration process depends strongly on the capacity to ensure the welfare of all people. This means mainly also to reduce the income inequality amongst the citizens in each member state and also all over the European Union and for this it is imperative to assess what drives it.

As, according to World Bank, Gini index measures how far the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution, we use this indicator as a proxy for income inequality and dependent variable, considering that a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.

We analyse in this paper to which extent some significant macroeconomic or social determinants tend to influence the level of the income inequality within the member states of the European Union and finally to conclude on some possible specific ways to reduce such inequality.

2. LITERATURE REVIEW

Due to the importance of inequality, and especially of income inequality, during the recent past decades, several studies approached this subject, both in terms of the effects generated by inequality, but also in searching answers regarding which are its determinants and how can be limited this phenomenon.

Previous literature has not reached a common opinion on the relationship between income inequality and economic growth. In this regard, Dollar *et al.* (2013) concluded that there is reason to believe that the effect of growth on income inequality may differ across countries due to variations in development level, policies, and institutions. This ambiguous effect of growth on income inequality is confirmed by the contradictory results of several previous studies. Thus, while some studies (Nissim, 2007; Yang and Greaney, 2017) revealed a negative impact of growth on income inequality, others showed a positive effect (Forbes, 2000; Roine *et al.*, 2009; Rubin and Segal, 2015), or even mixed on short and long term (Chambers, 2010).

Capital, proxied either by gross capital formation or gross fixed capital formation was also considered as a potential determinant of inequality in several papers (Bucevska, 2019; Akobeng, 2017). However, other studies (Purba *et al.*, 2019) showed a positive impact of capital on the income inequality.

Trade or trade openness have also been taken into consideration, each, as potential determinant of income inequality, in literature. Some studies (Yang and

Greaney, 2017; Ponce *et al.*, 2023) found different impacts of trade, either positive or negative, in different countries, respectively regions, most of them insignificant. Other studies (Roine *et al.*, 2009; Hovhannisyan *et al.*, 2019) found negative effects of trade on the income inequality. However, other researchers (Artuc *et al.*, 2019; Johansson and Wang, 2014; Baiardi and Morana, 2018) found positive effects of trade on Gini index.

In many studies (e.g. Hovhannisyan *et al.*, 2019; Bucevska, 2019; Ponce *et al.*, 2023) researchers found positive and usually significant impact of unemployment on income inequality. On the other hand, Castaneda *et al.* (1998) found no significant impact of unemployment on income inequality. However, while unemployment rate refers only a part of the population capable to work but unemployed, we consider a more relevant determinant labor force participation that reflects exactly the employed part of the labor force, and we expect a negative impact of this variable on income inequality.

Another determinant of inequality considered in literature is education, which appear to have possible different effects. Thus, many papers (Berry and Glaeser, 2005; Battistón *et al.*, 2014; Hovhannisyan *et al.*, 2019) point out that education limits income polarization and therefore also the income inequality. On the other hand, several studies (Crawford *et al.*, 2016; Lustig *et al.*, 2016) revealed that education can enhance sometimes income inequality under specific circumstances, while other papers (Galor and Tsiddon,1997; Wolf, 2004) found no significant impact of education on income inequality. Starting from the idea of a possible impact of education on income inequality we propose ourselves to include the analysis of the impacts of government expenditures on education, but also, due to the information era in which we live, also the impact of Internet use.

Government expenditures, considered either as total or on specific destinations such as education or, especially, social protection, were proven to impact significantly on decreasing the income inequality in several studies (Roine *et al.*, 2009; Afonso *et al.*, 2010; Muinelo-Gallo and Roca-Sagalés, 2013; Baiardi and Morana, 2018; Bucevska, 2019).

Beside the macroeconomic determinants, income inequality depends also on the social context. Therefore, literature on income inequality's determinants include several studies that approach also the impact of such variables. For instance, Muinelo-Gallo and Roca-Sagalés (2013) found that the more civil liberties are limited the higher rises income inequality/ Also, Ponce *et al.* (2023) showed that democracy index has a strong negative impact on income inequality, proxied by Gini index. Therefore, differently from the mentioned studies, but following the idea, we will investigate in this paper the impact of the control of corruption on the Gini index.

3. DATA AND METHODOLOGY

Our analysis is based on annual data for all the current 27 countries, members of European Union: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain and Sweden. Due to the limited availability of the data, we have chosen for our analysis the period starting from 2004 and ending with 2020.

We use the GINI index (GINI) as dependent variable, for which we have gathered the specific data from the World Bank database. Also, based on the previous observations, we consider the independent variables specified in Table 1, as determinants of the evolution of the GINI index. We use macroeconomic determinants such as prosperity, capital, trade, labour force participation, as well as social determinants such as control of corruption, use of internet or socio-economic determinants as education and social protection expenditures.

As we show also in Table 1, due to their availability we gathered their values mainly from World Bank database, but in some cases also from Eurostat database. At the same time, based on our above considerations and on the findings in previous literature the expected impact of each macroeconomic and social determinant is also mentioned in Table 1.

Table 1. The independent variables/ influence factors

Independent variable/ factor	Indicator name	Indicator symbol	Expected impact (+/-)	Source
Prosperity	Natural logarithm of GDP per capita	lnGDPc	+/-	World Bank Databank
Capital	Gross capital formation (% of GDP)	GCF	+/-	World Bank Databank
Trade	Trade (% of GDP)	TRADE	-	World Bank Databank
Labor force participation	Labor force participation rate, total (% of total population ages 15+)	LFP	-	World Bank Databank
Control of Corruption	Control of Corruption: Percentile Rank	CPT	-	World Bank Databank
Internet use	Individuals using the Internet (% of population)	NET	-	World Bank Databank
Education expenditures	General government expenditure on Education (% of GDP)	EDGE	+/-	Eurostat

Independent variable/ factor	Indicator name	Indicator symbol	Expected impact (+/-)	Source
Social protection expenditures	General government expenditure on Social Protection (% of GDP)	SPGE	-	Eurostat

Source: developed by the author

In accordance with these premises, we develop our research by processing the panel of data, for the EU 27 countries, by using Pearson correlations, respectively by building econometric models using the Panel Least Squares method and testing these models for all the years we mentioned above. Our expectations are to find out which factors have significant impact on GINI index and, therefore, how do they impact on the income inequalities, in order to seek for solutions to diminish the income inequality.

4. RESULTS AND COMMENTS

Our analysis begins with searching of the existence of some relevant connections between the GINI index and the considered determinants, mentioned above. In this respect, we use Pearson correlations in order to identify such possible statistically significant linkages, based on the data sample for the 27 countries of the European Union for the period 2004-2020, which lead us to the results described in Table 2.

Table 2. The correlation matrix of the variables

Variable	GINI	lnGDPc	GCF	TRADE	LFP	CPT	NET	EDGE
lnGDPc	-0.1949	1.0000						
sig	0.0000							
GCF	-0.1543	-0.1616	1.0000					
sig	0.0009	0.0005						
TRADE	-0.1281	0.2456	0.0098	1.0000				
sig	0.0060	0.0000	0.8345					
LFP	-0.2352	0.4365	0.1175	0.0634	1.0000			
sig	0.0000	0.0000	0.0188	0.1748				
CPT	-0.3238	0.8252	-0.0082	0.1466	0.5890	1.0000		
sig	0.0000	0.0000	0.8606	0.0016	0.0000			
NET	-0.3256	0.6185	-0.2169	0.2856	0.5083	0.5474	1.0000	
sig	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
EDGE	-0.4157	0.2115	-0.0336	-0.0250	0.3732	0.4958	0.2458	1.0000
sig	0.0000	0.0000	0.4732	0.5929	0.0000	0.0000	0.0000	
SPGE	-0.1542	0.5602	-0.4192	-0.3161	0.0430	0.5179	0.4159	0.3209
sig	0.0009	0.0000	0.0000	0.0000	0.3578	0.0000	0.0000	0.0000

Source: developed by the author

We observe first a very significant correlation between GDP per capita and GINI index, the negative coefficient confirming a strong reverse correlation between inequality and GDP per capita, which implies that the income inequality decreases when GDP per capita grows.

At the same time, is valid also that increasing income inequality, that may lead to strikes and riots will affect the prosperity. Similar significant strong reverse relationships are revealed between income inequality and gross capital formation, trade or labour force participation, all these factors reasonably impacting on the decrease of income inequality and vice versa.

The socio-economic determinants, namely the expenditures for education and social protection are either creating the capacity of the people to gain more income or are supplementing the income of poor people and therefore determine a decrease of income inequality as shown by the strong reverse relationships from Table 2.

The use of Internet creates possibilities for both accessing information for increasing the level of education or for easing the work or interactions with employers or vendors, increasing transparency and creating premises for a bigger income, especially for the poor people. It also leads to a better control of corruption that also determines a decrease of the income inequalities by limiting the polarization of the society.

We continue our analysis, in order to determine the effective influence of the considered factors on the dependent variable (GINI index), by building and testing several pooled OLS models. The models, depending on their type, either implying fixed effects (1) or of random effects (2), are based on the following structured equations:

$$GINI_{it} = \alpha_{it} + \sum_{i=0}^{27} (\beta_{it} \times X_{it}) + \mu_{it} \quad (1)$$

$$GINI_{it} = \alpha_{it} + \sum_{i=0}^{27} (\beta_{it} \times X_{it}) + \mu_{it} + \varepsilon_{it} \quad (2)$$

where, $GINI_{it}$ represents the dependent variable (GINI index)

X_{it} represent independent variables considered for each model for the specific country i, in year t

β_{it} are the statistic coefficients for the independent variables

μ_{it} is the between-error term

ε_{it} is the within-error term

We have tested these models on our data sample, using first simple fixed effects, respectively random effects. We also have tested the robustness of our

models in the case of fixed, respectively random effects and we reached the results shown in Table 3.

The results from Table 3, show that the reliability of the models both when applying simple fixed effects or random effects remain the same also in the case of the robust models.

Table 3. Results of the proposed models

Independent Variable	Fixed Effects		Random Effects		Fixed Effects Robust		Random Effects Robust	
	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
lnGDPc	-0.3315	0.5020	-0.0360	0.9390	-0.3315	0.7230	-0.0360	0.9640
GCF	-0.0883***	0.0000	-0.0927***	0.0000	-0.0883**	0.0420	-0.0927**	0.0200
TRADE	0.0043	0.4280	0.0024	0.6210	0.0043	0.5300	0.0024	0.7450
LFP	0.1784***	0.0000	0.1677***	0.0000	0.1784**	0.0340	0.1677**	0.0290
CPT	-0.0711***	0.0000	-0.0790***	0.0000	-0.0711**	0.0130	-0.0790***	0.0020
NET	-0.0222**	0.0180	-0.0270***	0.0030	-0.0222	0.1930	-0.0270*	0.0950
EDGE	0.9183***	0.0000	0.7361***	0.0000	0.9183**	0.0240	0.7361*	0.0560
SPGE	-0.1344**	0.0290	-0.1104*	0.0640	-0.1344	0.1800	-0.1104	0.2770
_cons	30.4623***	0.0000	29.9111***	0.0000	30.4623***	0.0010	29.9111***	0.0000
R-squared	0.1971		0.1946		0.1971		0.1946	
Obs.	459		459		459		459	

Source: developed by the author

When applying the simple fixed or random effects the impacts of almost all the determinants on income inequality appear to be significant, while in the case of using the robust models only some determinants show a significant impact.

In the case of both simple models, gross capital formation, control of corruption, Internet use and social protection expenditures have significant impact on decreasing the income inequality. GDP per capita has in all models, either simple or robust, a decreasing but insignificant impact on income inequality, while Trade has an insignificant increasing effect. However, contrary to the expectations and to the correlation results, it appears that in both simple effects models labor force participation determines a significant impact on increasing the income inequality. Such impact of labor force participation may be explained by the big difference between the very large number employees which obtain low or the lowest incomes and the significantly fewer employees with big incomes. Also, Education expenditures have a similar increasing impact on income inequality, observed also in other studies. This impact can be explained by the fact that the education expenditures may be in many cases either too low or not well performed

in order to sustain the improvement of the labor capacity and, further, the people capability of gaining bigger incomes.

Testing the robust models on our panel revealed same kind of impacts of all the considered determinants on the income inequality, but only some determinants continued to have significant impact. Thus, gross capital formation and control of corruption continue to impact significantly on decreasing income inequality. Moreover, Internet use determines also a decrease of income inequality, but only in the case of the robust random effect model has a significant impact. As in the simple models, labour force participation and education expenses have significant positive effects on Gini index. Finally, GDP per capita and social protection expenditures have impacts on decreasing the income inequality, but insignificantly ones.

5.   CONCLUSIONS

Income inequality represents an important concern of any government, because of its impacts on the development and welfare of the nation. This issue becomes more complex when it is approached in the context of a union of countries such as European Union, case in which appears the necessity of harmonization of the policies of each country in order find solutions in this matter for all citizens of the union.

This paper developed an analysis on all 27 countries of the current European Union, for the period 2004-2020 that aimed to reveal the most important determinants of income inequality and offer possible solutions for containing this phenomenon.

Our findings show that government expenditures for social protection, the control of corruption and gross capital formation were during the analysed period the most important determinants for decreasing the income inequality, along with the GDP per capita level and the use of Internet. Therefore, the measures regarding these areas of interest should be continued and developed.

On the other hand, it resulted also that labour force participation and government expenditures for education had a reverse impact of enhancing the inequality, which shows that the policies in the education area and in regulating and stimulating the employment need to be reviewed. In this regard it is salutary the recent initiative for regulating the minimum wage on the European level, that will correct some of the most acute dissatisfactions of the citizens of EU.

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SUPPORTING REFUGEE ENTREPRENEURSHIP IN EUROPE: A NEW CHALLENGE TO
THE SUSTAINABLE DEVELOPMENT GOALS

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Abstract

Refugee entrepreneurship is emerging in countries where migrants seek to rebuild their lives after fleeing due to economic issues, war, or social problems. Refugees often struggle to enter the labour market quickly, making self-employment a viable option. Supporting refugee employment and entrepreneurship aligns with the Sustainable Development Goals. Business minorities typically rely on savings, financial support, or loans from family and friends. They need not only actively support but also financing sources. Another way to secure financial support for starting a business is through commercial support or contributions from the Office of Labour. Refugees face discrimination in lending policies due to a lack of credit history, similar to other start-up entrepreneurs. Financing is also linked to networking and obtaining credit from business partners outside their community. Creating microfinance groups, getting support from microfinance institutions (MFIs), or crowdfunding are suggested solutions. Active interventions must be tailored to national principles focusing on the specific characteristics and situations of refugee groups. Motivating donors and others to support sustainable systems and programs to create a sufficient ecosystem is challenging. The success of these programs is still debated, and measuring real impact is difficult. This article aims to review existing possibilities within EU countries and suggest policy development in countries with higher refugee rates. The research problem is closely related to active labour market policy within countries; a significant group at risk in the labour market includes people of other ethnicities. A qualitative examination of successful programs demonstrates ways to support them. The findings could suggest cooperation

between nongovernmental organizations (NGOs) and refugee-led groups to support access to public or private support and provide financial knowledge for start-up training under the wings of public or private organizations.
Keywords: *refugees; microfinancing; market policy*
JEL Classification: L26, G23, L31

1. INTRODUCTION

Microfinance represents an effective instrument for the delivery of financial assistance to low-income entrepreneurs, particularly within the context of developing countries. In addition to providing access to financial resources for low-income entrepreneurs, microfinance offers a viable strategy for the prevention and alleviation of poverty. Those with low incomes often encounter difficulties when attempting to gain access to traditional banking services due to their lack of financial history. In such cases, microfinance can serve as an effective means of providing financial support to individuals seeking to start their own businesses. The Grameen Bank provides an excellent case study of a microfinance institution established in Bangladesh with the objective of providing support to millions of small entrepreneurs in rural areas. As of November 2019, the Grameen Bank had 9.25 million members, the majority of whom were women, representing 97% of the total membership (Lamichhane, 2020).

The refugee crisis represents one of the most significant challenges currently facing Europe. In recent years, a considerable number of refugees have arrived in Europe from a range of countries, including Syria, Lebanon, Afghanistan and Ukraine. As reported by Caliendo *et al.* (2023), the Russia-Ukraine war in 2022 resulted in over 7 million refugees from Ukraine seeking asylum in Europe. Of these, over 4 million were of working age and possessed varying skill sets. The refugees were dispersed across the continent, with neighbouring European countries experiencing the greatest concentration of refugees within their territories.

Balkenhol *et al.* (2013) identify microfinance as a rapidly growing sector within the European Union (EU). In 2011, microfinance institutions based within the European Union (EU) provided 122,370 microloans with a total outstanding value of €872 million. This represents a 45% increase in the number of loans issued and a 5% increase in the total loan volume in comparison to the figures recorded in 2009. It is notable that 60% of the extant MFIs were established during the previous decade. This trend indicates that microcredit is a significant and growing source of financing for individuals and businesses in the EU. France is the third-largest microcredit lender in Europe, just after Spain and the Bosnia and Herzegovina. According to Nogueira *et al.* (2020), microfinance has the potential to increase self-employment and establish micro enterprises in developed countries.

2. MARKETING SUPPORTIVE STRATEGY AND MICROFINANCE INSTITUTIONS

The marketing strategy of microfinance institutes is shaped by two key factors: the nature of the market and the intrinsic characteristics of the institutes themselves (Tran, 2000). Customer relationship management (CRM) is a methodology that facilitates interaction with customers and potential customers. The concept of customer relationship management (CRM) is subject to interpretation and may be perceived differently by individuals in varying contexts. The creation of superior customer value and satisfaction through the utilisation of customer relationship management (CRM) has been observed in numerous domains, including academic, political, business, and economic contexts (Kotler and Armstrong, 2010). Customer relationship management (CRM) entails the collation of customer data from diverse sources, the identification of their needs and expectations, and the provision of services aligned with those expectations, with the objective of enhancing customer satisfaction. Customer relationship management is employed in a variety of contexts, including marketing. Customer relationship management enables the marketing department to gain insight into the characteristics and requirements of prospective customers. Consequently, the marketing unit is better positioned to undertake more effective marketing activities and generate increased sales.

It is of great importance for microfinance institutions to implement customer relationship management strategies in order to provide enhanced services to refugee entrepreneurs in Europe. CRM is a widely utilised tool in the financial sector, facilitating a deeper comprehension of customers' actual needs and expectations. Customer relationship management (CRM) is a significant concept in contemporary marketing. A high level of customer satisfaction leads to repeat purchases and, moreover, to customers acting as marketing partners by sharing their positive experiences with others (Kotler and Armstrong, 2010).

The Customer Relationship Management (CRM) gave rise to novel concepts in the field of relationship marketing (RM) mentioned by Rahimi and Kozak (2017). Effective RM necessitates transparent and continuous communication between customers and service providers. This fosters customer loyalty and satisfaction, thereby achieving the organisation's objectives. Pytkowska *et al.* (2017) demonstrate in their paper how technology can reduce the need for direct interaction between clients and front office personnel. In the course of this search, the author mentions three MFIs in Western Europe that employ technology for loan and repayment applications. There is no requirement for staff-client interaction in the context of loan-related activities. Conversely, in Kenya, customers express a preference for personal interaction, particularly in three areas: 1) the legitimacy of products, 2) a comprehensive understanding of products, and 3) the resolution of issues.

2.1. Supportive strategy and SDG goals

Furthermore, the business environment is now actively promoting sustainability as a means of fostering a healthier way of living. In this regard, sustainable innovation is being positioned as a sustainable framework that businesses can adopt in order to significantly enhance their environmental, social, and economic impact (European Central Bank, 2023; Zhang, 2023).

Refugee entrepreneurs have the potential to foster a more conducive business environment and serve as role models for others who may be considering starting their own businesses. It is inevitable that some will enter the market and that some will fail and exit the market. The competitive market, process of entry, exit and changing market shares improves productivity and economic growth. Entrepreneurs are inherently risk-takers, introducing innovative ideas that disrupt the status quo and drive competitive market forces. They facilitate the transformation of non-competitive markets into competitive ones.

Microfinance institutions can serve as a crucial financial resource for refugee entrepreneurs, enabling them to launch new businesses and generate income. This can reduce dependency on government funding, improve quality of life, empower refugee women, and integrate them into the local community Zakaria, 2023).

The following summary on the general support of refugee entrepreneurs is in alignment with several Sustainable Development Goals (SDGs):

• In accordance with Sustainable Development Goal (SDG) 1, the **elimination of poverty**, microfinance institutions are facilitating the reduction of poverty and dependency on government aid by enabling refugees to establish business ventures (Denaro and Giuffré, 2022)

• SDG 5: **Gender Equality** – The empowerment of refugees, in particular female refugees, through the means of entrepreneurship serves to foster gender equality and economic independence at the societal level. (UNHCR, 2021)

• SDG 8: **Decent Work and Economic Growth** – The integration of refugee entrepreneurs into the broader economic and social fabric facilitates the growth and productivity of the wider community, whilst also creating employment opportunities. Global Compact on Refugees (2020).

• SDG 9: **Industry, Innovation, and Infrastructure** – The introduction of innovative ideas, often based on the unique perspectives of refugee entrepreneurs, can facilitate industrial expansion and infrastructure advancement.

• SDG 10: **Reduced Inequalities** – Promoting refugee entrepreneurial activities can assist in reducing socioeconomic disparities through the integration of refugees into the local economy and community.

Supporting these objectives can help both the integration of refugees and the targeting of individual support (International Rescue Committee, 2020).

3.   MICROFINANCE SYSTEM IN EUROPE

At the European level, microfinance is subject to regulation by the European Commission. The EU provides financial support for micro-enterprises and social enterprises through the InvestEU programme and the EU Programme for Employment and Social Innovation (EaSI). This support is also targeted at refugees and other minority groups in society in the form of senior and subordinated loans to eligible financial intermediaries to increase their capacity to provide finance to micro-enterprises and social enterprises, and to mobilise their own resources to expand their microfinance or social enterprise portfolios (European Investment Fund, 2016).

To illustrate the current development of microfinance institutions, an analysis has been conducted of the list of beneficiaries for 2022. Information on the amount allocated, the number of intermediaries in each country, and the projects implemented can be obtained from this analysis. The report lists final recipients that have received financial support exceeding the aforementioned threshold of EUR 150,000, whereas the usual support is EUR 25,000.

Table 1. Comparison of selected countries in Microfinancing

Country	Number of beneficiaries	Number of providers	Budget (thous. EUR)	Possible number of beneficiaries*
Albania	0	3	1 630	65
Austria	27	1	475	19
Belgium	43	3	5 544	222
Bulgaria	0	1	697	27
Croatia	1	3	2 256	90
Czechia	11	3	7 504	300
Estonia	0	3	19 532	781
Finland	14	1	1 632	65
France	478	4	14 218	568
Greece	0	9	19 688	787
Ireland	12	2	6 375	255
Italy	398	8	20 373	815
Latvia	0	4	3 836	153
Lithuania	0	3	2 644	105
Luxemburg	0	1	372	14
Montenegro	0	2	416	16
Netherlands	111	2	17 175	687
North Macedonia	0	1	168	6
Poland	4	4	5 063	202
Portugal	180	1	857	34

Country	Number of beneficiaries	Number of providers	Budget (thous. EUR)	Possible number of beneficiaries*
Romania	0	6	17 384	695
Serbia	0	2	1 813	72
Slovakia	16	3	5 040	202
Spain	331	4	5 823	232
Sweden	1	4	14 226	569
Turkey	0	1	3 200	128
United Kingdom	1	1	1 175	47

* means average support of EUR 25 000

Source: EaSi (2023) and own calculation

Table 1 illustrates significant discrepancies. Some countries (Spain and Portugal) have demonstrated remarkable commitment to supporting projects with limited financial resources (number of projects is above expected number of project based on average amount of support), whereas others have failed to fully leverage their capabilities. This underscores the need to identify strategies that can bridge the gap between the current net and the one that would be optimal within the European context. The social and economic impact of providing support for relocation will be evaluated through a series of analytical processes, primarily based on secondary data sources such as annual reports or statistical data sets. The evaluation will comprise several fundamental stages. Initially, a SOAR analysis of the support will be constructed based on the data search. The SOAR analysis is a positive approach to strategic thinking and planning that enables a microfinance system to construct its future through collaboration, shared understanding, and commitment to action (Stavros and Cole, 2013).
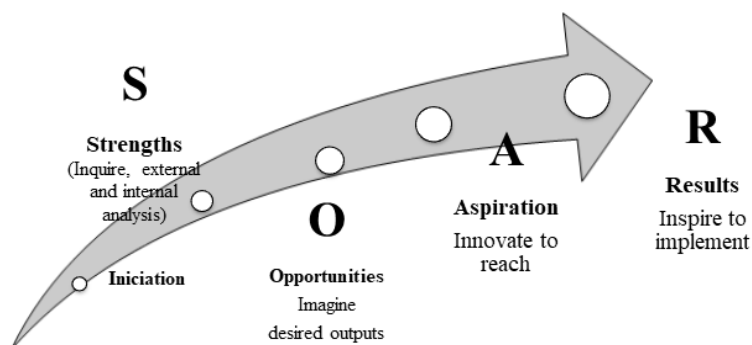
Source: Stavros and Cole (2013)

Figure 1. SOAR Analysis framework

Based on this analysis, a strategic map will be compiled in the second step, and compare the simulation of the impact of this microfinancing proposal within SGD goals (Ștefan and Brezoi, 2021).

3.1. SOAR analysis evaluation

The SOAR analysis was the initial method employed to determine the project objective and establish the criteria for evaluating the dashboard. A rating scale of 1 to 10 was utilized to assess the individual factors, with a rating of 10 indicating a factor that is indispensable for achieving goal. The final rating was derived through a subjective evaluation based on the findings of the secondary data analysis.

Table 2. SOAR analysis

Strengths (S)	Points	Opportunities (O)	Points	Aspirations (A)	Points	Results (R)	Points
Network of banks	4	Saving costs in social area by self-employment	7	Innovation in network	6	% of successful projects	10
EU based Experience	8	Inclusion of minorities into society	8	Online services/counselling	6	Growth of minority inclusion through microfinance	10
Governmental Support	5			Active support from local government	9	Innovations	10
		NGO involvement for consultation	9			Best practices sharing	
Total	17	Total	24	Total	21		40

Source: own calculation

As illustrated in Table 2, the multiplier effect of strength and opportunity on aspiration and results is an appropriate representation. This increase demonstrates a comparison of inputs, specifically in terms of potential factors such as strengths and possibilities, and in terms of outputs, namely in relation to aspirations and outcomes. The sum of S + O is 41 points, and the expected benefits of A + R are 61 points, representing a planned increase in efficiency of 48.7%. The cal-culation is the difference between the result and the input, which can be

expressed as (61 - 41) / 41 x 100 = 48.7%. In accordance with the findings of the preceding analysis, the principal objective of the project was identified as being the impact on the community, with a particular focus on the development of minority groups. The proposal of main goal of the microfinancing strategy is divided into four sub-goals, which follow on from the SOAR analysis and contribute to the development of Aspirations and Results (Fig. 2).
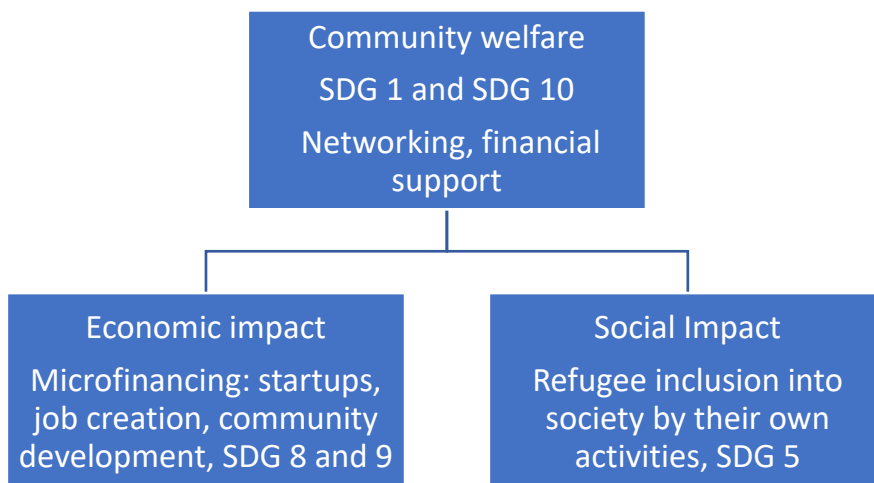
Source: own processing

Figure 2. Strategic goal suggestion for microfinancing

4. CONCLUSIONS

The primary objective of collaboration facilitated by shared financial resources can be attained through the utilisation of an economic objective (impact) in the form of endorsement of innovative solutions and exemplary practices. Furthermore, financial innovations should be assessed in terms of their impact on these indicators, as well as on the formation of relationships and the promotion of collaboration within minority businesses. In the social domain, there is evidence of a favourable impact on affected groups (refugees) and on the stakeholders involved in fostering cooperation and pursuing entrepreneurial initiatives, followed by SDG goals achievement.

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ETHICAL CHALLENGES IN IMPROVING THE QUALITY OF MEDICAL SERVICES

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Abstract
Ethics management involves describing and analysing the current ethical situation, defining the desired situation and the measures to be taken to achieve it, in full accordance with other forms of management. The approach to ethics management in increasing the quality of medical services can involve both evaluating the consequences and usefulness of actions, as well as observing basic ethical principles and norms.
This work includes the study of ethical dilemmas in medical decision-making, the identification and analysis of ethical risks associated with medical practices, the assessment of the impact of policies and regulations in medical ethics, and the development and promotion of high ethical standards in the medical field.
The method used to study the management of ethics in hospitals is qualitative research, using content analysis, secondary data (scientific articles). The results will be formulated in the form of conclusions regarding the phenomena and behaviour observed.
Keywords: *ethical dilemmas; management of ethics; medical ethics; ethical principles*
JEL code: I15, I18

1. INTRODUCTION

Research in the field of ethics management is intended to serve to increase the quality of public health services, being evidenced by the information and recent data obtained in the medical sector.

The contemporary evolution of public policies profoundly changes the need and status of ethics. Long developed in the form of a moral discourse about

professional practices, ethics is now increasingly seen as a skill that professionals must develop and integrate into their practices in order to act appropriately in a situation

Medical ethics is related to the confrontation of a patient and the actors in the medical sector with the problem of existing limitations: the limit of knowledge, the limit of life, the limit of public policies, the limit of what is acceptably acceptable.

The interest and motivation for the study of the theme was determined by reading some articles, books about the introduction of ethics codes in public institutions, about the regulation and institutionalization of ethics management.

The ever-increasing complexity of situations requires learning to redefine along the way the goals and methods of professional action under the influence of ethics and deontology, the elimination of possible causes of errors.

The management of public health services is governed by ethical bases necessary for making strategic decisions that lead to an increase in their quality. In this sense, a good knowledge of the principles and laws governing health is required.

Ethical management involves the description and analysis of the current ethical situation, the definition of the desired situation and the taking of the measures that must be taken to achieve it, in full accordance with other forms of management. As the health system gains in economic, financial and managerial performance, it loses in humane performance and generates inequities in access to care and health and possible contradictions with professional values.

The importance and topicality of the issues is both at the local, national and international level, demonstrating the concern for correct and safe medical practice and the possible exchange of best practices between countries.

Management ethics and ethics management must always act positively to support the institution's actions, regardless of classification level, to serve the public interest.

2. LITERATURE REVIEW

The beginnings of medical ethics do not date back very long.

Some believe that the foundation was laid at Nuremberg at the end of World War II, when Nazi doctors were put on trial, with the Nuremberg Code being the first document to prescribe ethics in research (Nuremberg Code (1947) and Declaration of Helsinki (1964)).

Others claim that the publication date of the article "They Decide Who Lives and Who Dies" is November 9, 1962. The article in question tells the story of the Seattle ethics committee responsible for selecting potential recipients of the dialysis program, known as the Committee of God, because he somehow decides who lives (Rojas, 2020).

The bottom line is that the modern world relies more and more on the foundations of ethics and especially medical ethics.

Adherence to ethical principles in medical services contributes to improving patient outcomes, increasing trust in the health care system, and the overall well-being of society. These benefits are possible when healthcare professionals have the knowledge, skills and expertise to make ethical decisions in their everyday work. (Beauchamp and Childress, 2013).

Ethical principles were defined by the World Health Organization (WHO) in 2002, in a document entitled "Ethical principles for protecting the health and welfare of populations". This document has been developed to provide guidance on the ethical approach to global public health issues.
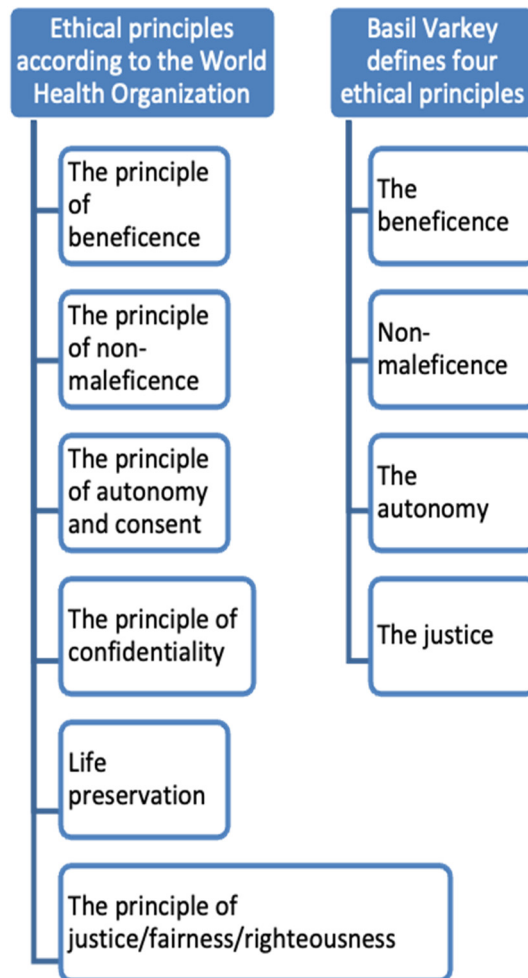
Source: WHO ethical principles (2002) / Varkey (2021)

Figure 1. Ethical principles

3. ETHICS IN MEDICAL SERVICES. ASSESSING IMPORTANCE AND IMPACT ON QUALITY

An analysis of the importance of ethics in medical services is intended to highlight the need for professional ethics in medicine. Performance indices are evaluated, and quality dimensions in public health services are determined, proving that research on ethics management, both quantitative and qualitative, is in full development. This justifies the creation of articles and doctoral theses on this topic.

3.1. The research question

1. What are the main ethical challenges that can influence the quality of medical services?

3.2. Objectives

1. Highlighting ethical principles in providing and ensuring high quality medical services
2. Identification of ethical issues that influence the efficiency of the quality of medical services

3.3. Method

Documentation is a necessary stage and involves an investigation of bibliographic materials, direct documents from public organizations, discussions with experts in the field, questionnaires addressed to professionals, but also to patients.

In research on ethics management in health care quality improvement, both secondary and primary designs are used.

Secondary design involves reviewing and synthesizing information available in previous work and other literature sources. Through the methodical analysis of the accessed studies, relevant models, trends and conclusions related to ethics management and performance growth in hospitals will be identified.

The primary design involves the study itself, conducted through document analysis. Relevant documents, for example ethical policies and procedures, performance reports or case studies, will highlight concrete data to assess the impact of ethical management on the quality of medical services.

In this paper, we performed a manual search, for the period January 1, 2019-January 10, 2024, by keywords and citation tracking, accessing scientific papers published in international journals on the management of ethics in the medical sector, from databases such as Google Scholar, PubMed. International Journal of Healthcare Management, BioMed Central, Medline.

Tabel 1. Inclusion/exclusion criteria in the study

Inclusion criteria	Exclusion criteria
Full text available	If the full text is not available
Original article resulting from empirical research on ethical challenges in the medical sector	Studies including expert opinions, bioethical arguments, Covid case studies, involvement of artificial intelligence, analysis
English language, any author	Expert reviews of topics without formal structure or published protocol details
Studies that analyze "ethical principles", "ethical challenges" "ethics management" in any context of medical services	Studies that do not report research in the context of medical services
Qualitative studies, mixed methods and quantitative studies, systematic reviews, structured but non-systematic reviews (narrative syntheses, rapid reviews, scoping reviews and other records with a described protocol that could be followed independently) or their published protocols.	Abstracts of some conferences
Publications indexed between 1.01.2019 – 10.01.2024	References outside the range 1.01.2019 – 10.01.2024
Reports containing the phrases "ethical challenges", "ethics management", "ethics principles" in the title	Editorials, letters or comment/opinion articles
Reports containing the expressions "ethical challenges", "ethics management", "ethical principles" in the abstract	Book Sections

Source: own computation

The selection of studies, their quality assessment and the synthesis of relevant data followed the PRISMA method, ensuring that systematic reviews of qualitative studies are carried out rigorously and transparently so that the results are as reliable and relevant as possible. This method aims to improve the quality and consistency of qualitative health research and to facilitate its interpretation and use in medical decision making and improving clinical practice.

The search returned 706 items. After reading the titles and abstracts, 40 articles were chosen, based on which we made a synthesis of the knowledge resulting from the studies analyzed in debate with the scientific literature.
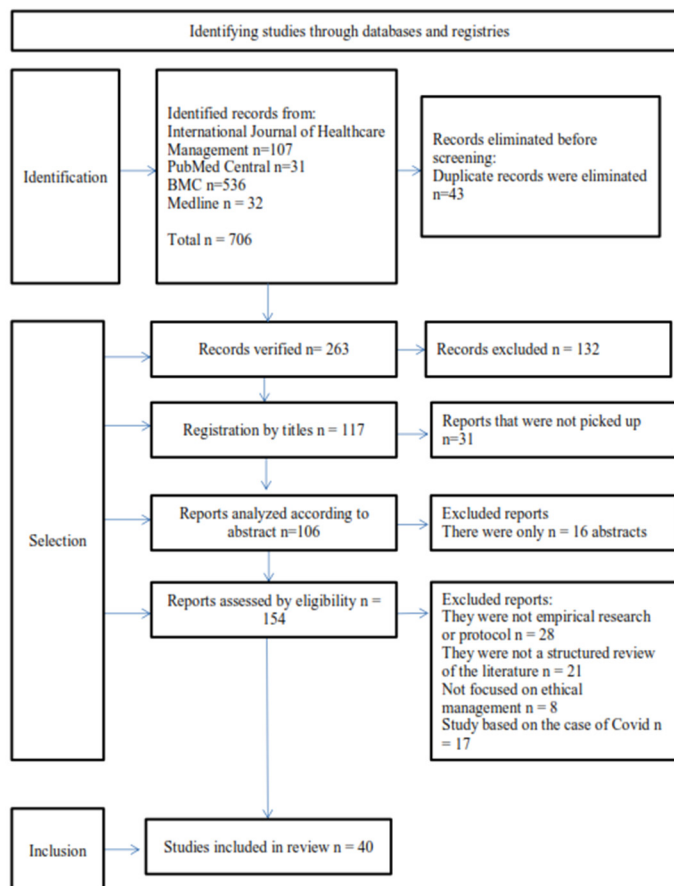
Source: own computation

Figure 2. PRISMA record identification diagram

In the case of hospital ethics management, qualitative analysis involves gathering and analyzing information about current ethical practices, policies, and procedures, as well as the perceptions of staff, patients, and other stakeholders. The qualitative analysis method may involve interviews, focus groups, direct observation, or analysis of relevant documents.

During qualitative analysis, researchers examine and interpret data to identify themes and patterns that reflect fundamental principles of hospital management ethics. This may include, for example, the identification of practices and policies that promote respect for patient autonomy, distributive justice in access to health services, or professional integrity of staff.

Qualitative analysis can help to understand how ethical values are implemented and respected within the organization and can provide valuable

information for improving ethical practices and developing an ethical environment in hospitals.

The analysis of relevant documents in the qualitative analysis of ethics management in medical services involves the following steps:

1. Identification of relevant documents

Identification of documents such as policies, procedures, codes of conduct, legal regulations, audit reports or any other written material that directly or indirectly relates to the management of ethics in hospitals.

2. Reading and understanding documents

Before starting the analysis, the identified documents are carefully read to understand their content and context, to be familiar with the organization's policies and norms.

3. Creating an analysis tool

Development of an analysis tool to help extract relevant information from documents. This tool may contain categories or subcategories of interest, such as ethical principles, responsibilities, patient confidentiality practices, ethics and compliance processes, or other relevant areas.

4. Data coding and extraction

Starting the analysis process by coding and extracting meaningful data from the identified documents involves identifying and highlighting key information that relates to ethics management, ethical challenges in hospitals, and interpreting and noting relevant observations.

5. Categorizing and evaluating data

Organizing the extracted data into relevant categories or subcategories helps to identify patterns, themes, contradictions or significant aspects that may provide a deeper understanding of ethics management in hospitals.

6. Data analysis and interpretation:

Analyzing and interpreting the data extracted in the context of ethics management in hospitals leads to the identification of strengths, weaknesses, trends or issues reported in the documents and the impact of ethical practices in medical services can be analyzed.

7. Reviewing the data and validating the results

Reviewing relevant documents can provide important insight into how ethics management is implemented and respected within hospitals and can help identify deficiencies and improve ethical practices.

4. ARTICLES ANALYSIS

The analyzed sample consists of 40 articles (Appendix 1), 7 being evaluated according to the two directions, respectively ethics and ethical principles and the management of ethics in hospitals, extracting from each article, those parts that add to the research and that provide answers to one from the two research questions.

We used the Atlas.ti software, a program that allows the analysis of documents through the coding system, and Excel for data processing.

Conducting document analysis is a structured process that provides meaningful and qualitative insights by organizing documents into structured data. The stages of this process are:

– setting a clear research question and two objectives, which serves as the basis for the entire analysis and guides the selection and review of documents;

– the identification and selection of documents that align with the research question. It is important that these documents are reliable and relevant to the research. The chosen materials can vary: official reports, journals, digital resources;

– organizing documents in a way that facilitates smooth analysis by classifying documents by topic, chronology or method;

– the initial review of the documents, emphasizing the identification of themes, relevant information for the research question, applied methods;

– coding involves assigning tags or labels to sections of text to categorize information, codes can be changed as documents are analyzed;

– document and text analysis (word frequency), means reviewing and interpreting data from various sources, but also complex details from these documents, allowing a deeper understanding;

– drawing up conclusions that involve synthesizing the perspectives obtained from the analysis and providing answers in relation to the research question.

Codes used: autonomy, confidentiality, consent, social benefits, public policies, quality of medical services, efficiency of medical services, performance indicators, quality standards, ethical dilemmas, doctor-patient relationship, doctor-doctor relationship.

Search groups: ethical principles, societal benefits, efficiency in the medical sector, ethical dilemmas, communication.

5. DISCUSSIONS

5.1. Medical ethics and principles of ethics

The fundamental principles of ethics are beneficence, non-maleficence, autonomy and justice, the first two of which date back to the time of Hippocrates and were "to help and do no harm", while the latter two were developed later.

Thus, Percival's early eighteenth-century book of ethics emphasizes the importance of maintaining the patient's interests as an end but does not discuss autonomy or justice.

Over time, however, autonomy and justice have both been established as important ethical principles. In modern times, the book Principles of Biomedical Ethics by Beauchamp and Childress explains the four principles, but also their application, even with alternative approaches.

The principle of beneficence is the physician's obligation to act for the benefit of the patient and to observe a series of moral rules to protect and defend the rights of others, to prevent harm, to remove conditions that will cause harm, to help the disabled and to save the people in danger. The principle of non-maleficence is the obligation of a doctor not to harm the patient. The principle of autonomy points out that all persons who have intrinsic and unconditional worth have the power to make rational decisions and moral choices and each is allowed to exercise their capacity for self-determination, compliance with the principle thus compels the physician to disclose medical information and treatment options that are necessary for the patient to exercise self-determination and supports informed consent, truth-telling and confidentiality. The principle of justice ensures fair, equitable and appropriate treatment for all patients.

In the study The Principles of Clinical Ethics and Their Application in Practice, Basil Varkey presents 6 case studies, ethical dilemmas, and debates the issue of conflicts between principles. Each of the four principles of ethics must be regarded as an obligation to be fulfilled in each case, unless it conflicts with another principle.

When such conflicts exist, physicians must determine their actual obligations to patients by considering the relative weight of competing obligations in both the content and the context of the situation. Nowhere in the field of ethical decision-making is the conflict more apparent than where the principles of beneficence and autonomy collide, sometimes care measures that guarantee beneficence may violate other ethical principles such as patient autonomy.

Varkey B. proposes an Integrated Patient Care Model, where medical knowledge, skills to apply this knowledge, technical skills, practice-based learning and communication skills are associated with ethical principles and professional virtues. (Varkey, 2021)

Rozita Cheraghi and her colleagues have done an integrative review in terms of clarifying the principle of beneficence in health services and its challenges, considering it the core of health care. (Cheraghi, 2023) Based on the results of their study entitled Clarifying the Ethical Principle of Beneficence in Health Care: An Integrative Review, they argue that paying attention to clarifying the principle of beneficence in health care care can provide positive outcomes, leading to increased well-being and patients' health, reducing the mortality rate, increasing satisfaction and maintaining the patients' human respect and dignity.

There is a major challenge to balance the patient's right to choose and the intention of the professionals. Thus, sometimes the care measures that guarantee beneficence may violate other ethical principles such as patient autonomy. The lack of knowledge of the principle of beneficence in medical services is an important challenge that makes it necessary to conduct more studies, health promotion programs, policies, research and access to medical services having the principle of beneficence at their center.

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Defining the ethical challenges is a key aspect of the research, both theoretically and empirically. Guy Schofield and colleagues conducted a rapid review of the phrase "ethical challenge", finding that authors frequently use closely related terms such as "moral dilemmas" or "ethical problems", published in BMC Med Ethics in 2021.

5.2. Management of ethics and its influence on the quality of medical services

Hospital managers must adopt and implement ethical policies and procedures, implicitly directives and professional guidelines, institutional policies, which must be based on ethical principles.

One of the important factors is the professional competence of medical staff, which includes both theoretical knowledge, practical skills, ethical behavior, and experience gained in providing health services.

Various research works have practically examined and assessed the competence of the professionals. Thus, Georg Marckmann and his colleague Jan Schildmann, in the article Quality and ethics in healthcare, first explain what ethical requirements should be considered quality criteria in medical services and argue that the teaching of ethical competences in medical education is discussed as a possible contribution to the quality and quality assurance of medical services.

Among the important criteria in ensuring the quality of services, mentioned by the two, are found:
– Fulfillment of ethical requirements, fulfillment of the requirements specified by the principles
– Quality of information to patients about medical treatment
– Addressing moral uncertainties or conflicts
– Explicit prioritization of resource use
– Direction and control of ethical requirement of justice
– The interaction between doctors and patients
– More patient involvement in decision-making
– Equal chances of fair patient care

Another challenge of ethics management and the link with the quality of medical services is the management of information, which is essential for a higher level of care for patients. Cornelius Ewuoso and colleagues, Susan Hall, Kris Dierickx, using a Q-sort technique to analyze articles, published a study in 2021 that found that health professionals around the world generally use four broad strategies to manage different types of of information challenges, which can be classified as privacy, communication, professional duties and decision-making challenges.

Privacy challenges fall under 3 main sub-categories:
a) Informing patients about confidentiality limits

b) Disclosing information about the patient's health to an insurance company, a public authority or an employer

c) The decision between breaching confidential information or maintaining patient confidentiality.

Challenges related to job duties include:

− conflicts between the duty to report the error of a colleague and the desire to maintain trust/friendship

− conflicts of values, such as disagreements between the health professional and the patient or family members

In decision-making challenges, problems include disagreements within the medical team regarding treatment decisions.

Communication difficulties among healthcare professionals can also lead to poor communication with patients and family members. Even when information about treatment plans is communicated to patients and family members, disagreements may arise between professionals (who may, for example, believe that a treatment plan is in the patients' best interests) and patients or family members (who may hold the view that the proposed treatment plan conflicts with their religious or cultural beliefs).

Health professionals describe their experience of these challenges in different ways, depending on the specialty they work in.

Through this study, insight was gained into how health professionals respond to ethical dilemmas about information. This review of empirical studies identified challenges related to communication, decision-making, confidentiality and professional duty as ethical issues that may affect health professional-patient communication in 17 different clinical specialties. The study also identified four strategies—resolution, blocking, disclosure/concealment, and consultation—for managing these challenges. Very few studies have considered whether these strategies lead to more efficient services, better outcomes for all stakeholders.

Ethical education and discussions for the further development of a common ethical language and a good ethical work climate can improve ethical competence and help professionals to better cooperate with patients in their efforts to act in the best interests of patients.

In the year 2021, Cristian G. Curcă, in the article Moral values in medical practice: medical ethics in practice and in higher medical education, emphasizes that ethics and quality are not mandatory for higher education and the academic field, but for the entire educational system. He believes that theoretically, for a formative education of morality, there must be a culture of ethics, in the pre-university education system being very important a formative preparation of a culture of quality and ethics to impress good and correct thinking and behaviors.

Ethics education aims to encourage and provide a space for students to develop an awareness of different perspectives, to reflect on their own views and biases, and to think critically, question and take action on ethical issues. As far as

the higher education system is concerned, teaching ethics and academic integrity is very helpful. Theoretically, for a formative morality education, there must be a multidisciplinary culture of ethics, containing the following directions: altruistic, deontological, professional, ethical and legal.

In the article Key issues of medical research ethics from 2019, Sorina-Alexandra Covalciuc emphasizes the importance of protecting the rights and well-being of research subjects and emphasizes the need for a balance between the interests of researchers and participants. These principles have been extremely influential in the field of medical ethics and are fundamental to understanding the current approach to ethical assessment in health. The most important problem from this point of view is the risks that some research methodologies present to the people under investigation, informed consent being very important.

6. RESULTS

A high tendency to publish studies that include ethical challenges is observed (n=34), thus reflecting an increased concern for ethical dilemmas in the medical sector. These ethical challenges are related to ethical principles (n=15), the latter having an older history, their study becoming a necessity in order to understand the context and ethical implications of the actions of all the actors involved.
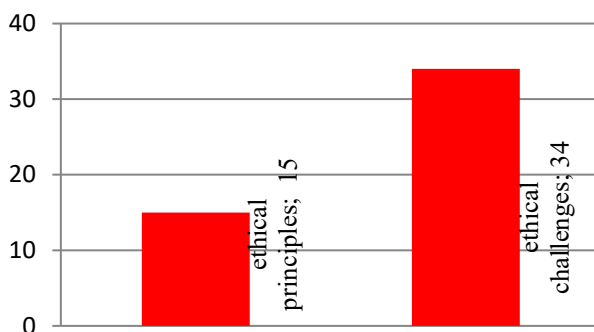
Source: own computation

Figure 3. Contents of selected documents

In academic research, various methods are used to carry out a detailed study of a topic. In the case of this study, one of the most frequently used research methods is the qualitative analysis (n=15), which involves the evaluation of ethics management based on ethical values and the quality of medical services. This method focuses on description, interpretation and explanation, facilitating a better understanding of the principles and ethical challenges. Another relevant method in the present study is the systemic review (n=14), which involves the collection, critical evaluation and synthesis of all relevant studies previously carried out on

the same theme. This method allows exhaustive investigation of a topic and provides a comprehensive and objective overview. By using these two research methods, as well as others, relevant and valid information can be obtained to support and bring value and novelty to the study.

Source: own computation
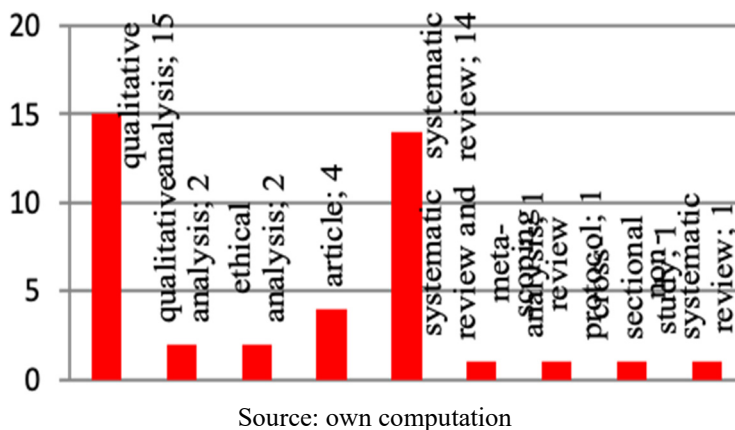
Figure 4. Methods used in selected papers

Out of the multitude of authors we selected, 13 come from Europe, with implicit representation from Romania, respectively 5. However, we cannot say that there are relatively fewer studies available from the United States (n=11). Encompassing both ethical challenges and ethical principles or policies, these European authors created works that have been subsequently cited. It is important to recognize that the other continents were represented as well.

Source: own computation
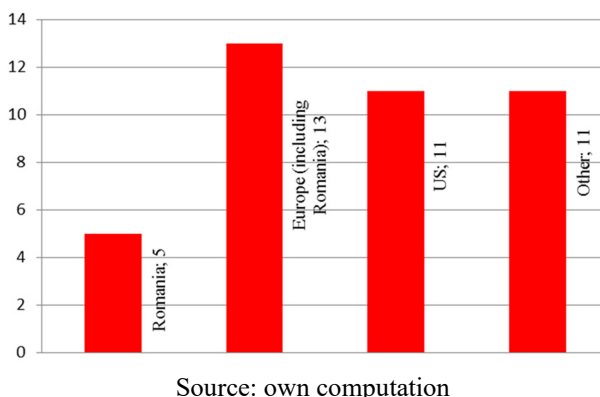
Figure 5. Country, author

Table 2. Codes/groups used

No.crt.	Code	Group	No.
1	autonomy	ethical principles	17
2	beneficence		26
3	privacy		23
4	consent		29
5	social benefits	benefits society	2
6	public policies		2
7	quality medical services	efficiency in the medical sector	4
8	the efficiency of medical services		12
9	performance indicators		3
10	quality standards		2
11	ethical dilemmas	ethical dilemmas	31
12	doctor - patient relationship	communication	7
13	physician-physician relationship		11

Source: own computation

The most representative are the documents dealing with ethical principles, 26 articles focus on the "doing good" principle and highlight the need for informed consent (n=29). 31 articles address ethical dilemmas, referring also to communication problems that may arise, respectively in the relationship between colleagues, professionals or in the relationship between professionals and beneficiaries. 12 of the documents focus on the efficiency of medical services, along with quality analysis (n=4) and presentation of quality standards (n=2). Analysis of public policies and reference to benefits for society are systematized in 4 of the articles. All of these expressions shown in the graphic below are codes used in Atlas.ti.
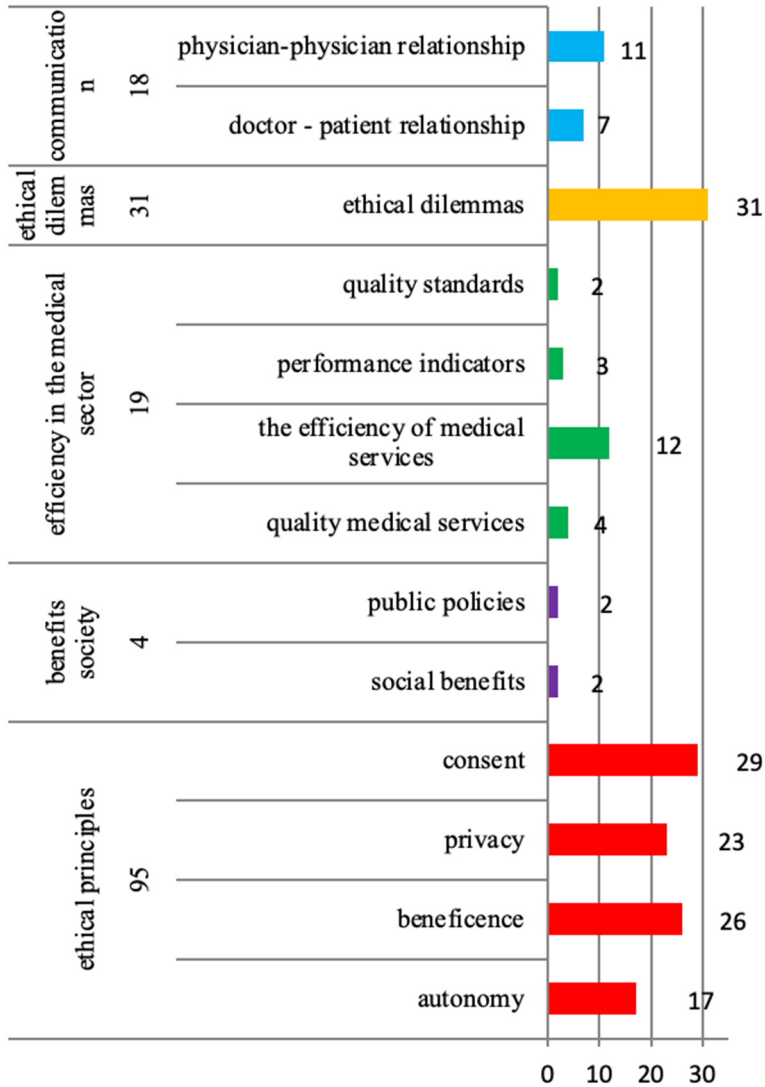
Source: own computation

Figure 6. Codes/groups

7. CONCLUSIONS

Ethics in healthcare and ethics management are multifaceted and fundamentally important issues for citizens of any society. The lack of knowledge of ethical principles is an important challenge that makes it necessary to conduct several studies focused on the analysis of the concept of medical ethics and the

quality of services and the development of appropriate tools for their knowledge, measurement and application.

In the field of medical services, the interaction of the conflicts between the fundamental principles of medical ethics represents a significant challenge in improving the quality of medical services. As health care providers strive to adhere to the ethical principles of beneficence, non-maleficence, autonomy, and justice, they often find themselves at a crossroads where one principle can conflict with another. Thus, ensuring the patient's autonomy in decision-making processes can sometimes conflict with benevolent imperatives, leading to complex ethical dilemmas. Moreover, respecting the principle of justice in the allocation of resources may be at odds with prioritizing the individual needs of patients. The interplay of these ethical dilemmas requires a delicate balance of ethical considerations within the health care system to support the integrity of patient care while promoting the quality and accessibility of health care services. Striking a balance between upholding ethical standards and providing optimal healthcare is a challenge that requires careful attention and ethical reflection to ensure that the patient's well-being remains paramount in every medical decision.

Highlighting the ethical principles in the provision and assurance of high quality medical services, attention is paid to the applicability of the results of studies that focus on the management of ethics and the influence on the quality of medical services, the knowledge and observance of the principles, the identification and resolution of ethical dilemmas, topical health policies are promoted, that meet society's standards. Adherence to these standards, and not just ethical ones, fosters trust between providers and their patients, leading to improved communication, patient satisfaction, and overall health outcomes. In addition, it strengthens the foundation of the doctor-patient relationship, creating a supportive and enriching environment for the delivery of medical services. Ultimately, integrating the principles of beneficence and non-maleficence into medical practice can not only increase the quality of care, but also strengthen the moral fabric of the medical profession.

The identification of ethical issues that influence the quality of medical services is a major concern in the health sector. One of the ethical aspects affecting medical care is the dilemma of patient confidentiality. The more pressure there is on medical actors to share their information with colleagues or healthcare institutions, the greater the risk of breaching patient confidentiality. Other ethical issues include the fair distribution of limited medical resources, the doctor-patient relationship, and how it may be influenced by financial interests or other conflicts of interest.

Informing patients correctly about medical treatment can have a significant impact on the quality of medical services provided. Well-informed patients are more likely to make informed decisions and choose the right treatments for their needs. An informed patient is more likely to follow the doctor's recommendations

and adhere to the prescribed treatment, which can lead to improved therapeutic outcomes and reduced complications. Also, informed patients can have better collaboration with the medical team, which can contribute to more effective communication and better disease management.

By educating patients about medical treatment, the risks of medical errors can also be reduced, as patients can report potential mistakes or negligence in a timely manner. At the same time, well-informed patients can more easily and quickly request quality medical services and can make more informed decisions regarding accessing certain treatments or medical services.

Thus, improving the quality of informing patients about medical treatment can contribute to increasing the quality of medical services offered, by improving collaboration between patients and medical personnel, reducing medical errors and improving therapeutic results.

An efficient use of resources can lead to cost reduction and more efficient management of the budget available to the health system. Adequate allocation of financial and material resources can increase the efficiency of the medical services offered and allow access to advanced treatments or technologies.

The efficient use of resources can lead to the improvement of the quality of medical services, by ensuring access to the latest medical technologies and procedures, but also by increasing the skills of the medical staff and modernizing the infrastructure of hospitals and other health facilities. A clear prioritization of the efficient use of resources can facilitate more effective medical case management by optimizing the processes of diagnosis, treatment and patient monitoring. Thus, the risk of errors can be reduced and medical care can be more coordinated and integrated.

Therefore, it is suggested that more studies should be done that focus on identifying the exact dimensions of compliance with ethical principles, developing appropriate tools to assess their involvement in improving the quality of medical services, and providing adequate training in this direction.

ACKNOWLEDGEMENTS

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Annex 1. Scientific papers

	Author	Paper	Year	Country	Method
1	Alonso M.B.	Are the management objectives for hospital physicians ethical	2018	USA	Qualitative Analysis
2	Adams JG, Walls RM.	Supporting the Health Care Workforce During the COVID-19 Global Epidemic.	2020	USA	A systematic review
3	Alahmad *et al.*	Ethical Challenges Related to the Novel Coronavirus (COVID-19) Outbreak: Interviews With Professionals From Saudi Arabia	2021	Saudi Arabia	Qualitative Analysis
4	Alan W.	Ethics and Efficiency in the Provision of Health Care	2023	UK	Qualitative Analysis
5	Aruna D.R., Papari N.	Ethical issues in health care sector: Myth or Reality?	2022	India	A systematic review
6	Balak N, Broekman MLD, Mathiesen T.	Ethics in contemporary health care management and medical education	2021	UK	A systematic review
7	Biesaga P.	Hippocratic ethics in relation to other trends in medical ethics	2019	Poland	Article
8	Blagorazumnaia O., Dreiher D.	Patient satisfaction with the quality of the services provided as an important aspect of management in a medical organization	2019	Moldova	Qualitative Analysis
9	Cheragi R. *et al.*	Clarification of ethical principle of the beneficence in nursing care: an integrative review	2023	Iran	A systematic review
10	Covalciuc S.A.	Key Issues of Medical Research Ethics	2019	Romania	A systematic review
11	Curcă C.	Moral values in medical practice: medical ethics in practice and the academic study of medicine	2019	Romania	Article
12	Draper N. *et al.*	Ethical challenges experienced by UK military medical personnel deployed to Sierra Leone (operation GRITROCK) during the 2014–2015 Ebola outbreak: a Analiză calitativă study	2017	UK/ Sierra Leone	Qualitative Analysis

	Author	Paper	Year	Country	Method
13	Epstein E.G. *et al.*	Enhancing Understanding of Moral Distress: The Measure of Moral Distress for Health Care Professionals	2019	USA	A systematic review
14	Forbes S., Phillips S.	Ethical Challenges Encountered by Clinical Trials Nurses: A Grounded Theory Study	2020	USA	Qualitative Analysis
15	Găşpărel C.M.	The Contribution of Ethics to the Development of the Healthcare System	2021	Romania	Article
16	Heggestad *et al.*	Ethical challenges in home-based care: A systematic literature review	2020	Norway	A systematic review
17	Hem *et al.*	Ethical challenges when using coercion in mental healthcare: A systematic literature review	2018	Norway	A systematic review
18	Hertzberg CK *et al.*	Blurred lines: Ethical challenges related to autonomy in home-based care	2023	Norway	Qualitative Analysis
19	Jakobsen R., Sørlie V.	Ethical challenges: Trust and leadership in dementia care	2016	Norway	Qualitative Analysis
20	Jia *et al.*	Nurses' ethical challenges caring for people with COVID-19: A Analiză calitativă study	2021	China	Qualitative Analysis
21	Larkin *et al.*	Ethical challenges experienced by clinical research nurses: A Analiză calitativă study	2019	USA	Qualitative Analysis
22	Marinescu A., Gheorghiu S.	Ethics Controlling. Military Medical Practice	2019	Romania	A systematic review
23	Moynihan R. *et al.*	Impact of COVID-19 pandemic on utilisation of healthcare services: a Revizuire sistematică	2021	UK	A systematic review
24	Nashte, A. *et al.*	Examining the Ethics of Public Health Interventions: Balancing Individual Rights and Collective Well-being	2023	India	Qualitative Analysis
25	*Onyebeke W. et al.*	A professional virtues–based ethical framework for medical missions	2021	SUA	Ethical review

	Author	Paper	Year	Country	Method
26	Rozel J.	Ethics, Engagement, and Escalating Interventions	2022	USA	A systematic review
27	Saffet O. *et al.*	Business ethics research in healthcare management: A Revizuire sistematică	2020	Turkey	A systematic review
28	Schofield, G. *et al.*	Defining ethical challenge(s) in healthcare research: a rapid review.	2021	UK	A systematic review
29	Shayestefar *et al.*	Ethical challenges in pediatrics from the viewpoints of Iranian pediatric residents	2018	Iran	Quantitative Analysis
30	Sinow *et al.*	How Anesthesiologists Experience and Negotiate Ethical Challenges from Drug Shortages	2020	USA	Qualitative Analysis
31	Slettebo S. *et al.*	Conflicting rationales: leader's experienced ethical challenges in community health care for older people	2018	Norway	Qualitative Analysis
32	Solvoll A. *et al.*	Ethical challenges in everyday work with adults with learning disabilities	2015	Norway	Qualitative Analysis
33	Stojanović G.	Religious foundations of medical ethics	2020	Bosnia and Herzegovina	Article
34	Sun R. *et al.*	Ethical challenges related to assistive product access for older adults and adults living with a disability: a scoping review protocol	2017	Canada	Scoping Review Protocol
35	Susanu I. *et al.*	Effect of Patient Satisfaction and Medical Ethics on the Performance of Health care System	2017	Romania	Qualitative Analysis
36	Taebi N. *et al.*	Ethical Challenges of Embryo Donation in Embryo Donors and Recipients	2018	Iran	Quantitative Analysis
37	Tafesse, N., Samuel, A. *et al.*	Clinical ethical practice and associated factors in healthcare facilities in Ethiopia: a cross-sectional study	2022	Ethiopia	Non-systematic review

	Author	Paper	Year	Country	Method
38	Tawfik, D.S. *et al.*	Evidence Relating Health Care Provider Burnout and Quality of Care	2020	USA	Systematic Review and Meta-Analysis
39	Varkey B.	Principles of Clinical Ethics and Their Application to Practice	2021	USA	A systematic review
40	Whaley C. M. *et al.*	Changes in Health Services Use Among Commercially Insured US Populations During the COVID-19 Pandemic	2020	USA	Transversal study

THE MAIN DISPARITIES IN PERCEPTIONS BETWEEN EMPLOYEES AND MANAGERS REGARDING THE BENEFITS, CHALLENGES, AND FEASIBILITY OF REMOTE WORK ARRANGEMENTS

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Abstract
This study provides a detailed examination of the differing perceptions between employees and managers regarding the benefits, challenges, and feasibility of remote work. In an age of rapid technological advancements and changing workplace dynamics, remote work has become a pivotal aspect of modern business, challenging traditional office structures and requiring strategic adaptation from both management and employees. Drawing on a comprehensive literature review and thematic analysis of qualitative data from semi-structured interviews with employees and managers across various industries, the research highlights key themes such as communication strategies, trust-building, and employee well-being. The findings reveal significant disparities in how managers and employees view remote work. Managers often express concerns about maintaining productivity, communication, and organizational culture, while employees emphasize the benefits of increased flexibility, improved work-life balance, and reduced commuting. The study also explores the challenges faced by both groups. Managers struggle with overseeing remote teams, fostering cohesion, and providing necessary support, while employees contend with distractions, staying motivated, and drawing clear boundaries between work and personal life. The lack of face-to-face interaction can heighten feelings of isolation and reduce engagement. Insights from both groups highlight the need for tailored remote work policies that address these varied challenges. The research offers actionable recommendations, such as establishing clear communication channels, leveraging collaboration tools, promoting a supportive culture, and implementing mental health programs. In conclusion, the study underscores the importance of understanding the complex dynamics of remote work. By addressing the perceptual gap between managers and employees, organizations can create a more inclusive, resilient, and productive remote work environment, fostering flexibility and innovation in the digital age.
Keywords: *remote work; disparities; challenges; employees; managers*
JEL Classification: J24, M54, O33, J81

1. INTRODUCTION

The rise of remote work has fundamentally transformed traditional work environments, posing new challenges and opportunities for both managers and employees. As technological advancements and evolving workplace expectations redefine how organizations operate, remote work has become a central aspect of the modern business landscape. This shift requires strategic adaptation on the part of management and employees alike, as both parties navigate the complexities of working outside the traditional office setting.

This literature review explores the divergent perceptions between managers and employees regarding remote work's benefits, challenges, and overall feasibility. By synthesizing contemporary research, the study aims to uncover insights that organizations can use to better align their remote work strategies with the needs and expectations of their workforce.

2. EVOLVING DYNAMICS OF REMOTE WORK

2.1. Technological Advancements and Workplace Flexibility

The rapid development of communication technologies, such as video conferencing tools, cloud-based collaboration platforms, and digital management systems, has enabled remote work across industries. According to La Porta (2021), these tools have significantly enhanced the feasibility of remote work, promoting greater flexibility and autonomy for employees. The COVID-19 pandemic further accelerated the adoption of remote work arrangements, highlighting the need for both employers and employees to adjust to new workflows quickly (Kramer and Kramer, 2020).

2.2. Management Concerns in Remote Work Settings

Managers face specific challenges when overseeing remote teams. Maintaining productivity, fostering team cohesion, and ensuring effective communication have emerged as critical concerns (O'Connor, Schmidt and Drouin, 2021). The absence of physical presence complicates efforts to monitor employee performance and manage accountability. Furthermore, the lack of face-to-face interactions may diminish team morale and collaboration, making it essential for managers to adopt flexible communication strategies (Baker, 2022).

2.3. Employee Challenges and Benefits

While employees generally appreciate the flexibility that remote work provides, they also face challenges. Common benefits include improved work-life balance and reduced commuting time (Kohont and Ignjatović, 2022), but employees often struggle with distractions at home, managing boundaries between personal and professional responsibilities, and maintaining motivation (Allen, Golden and Shockley, 2015). Additionally, feelings of isolation due to reduced social interaction can negatively impact engagement and job satisfaction (Feng and Savani, 2020).

3. WELL-BEING AND COMMUNICATION IN REMOTE WORK
3.1. Prioritizing Employee Well-being

Organizations must take proactive steps to ensure that remote employees' mental and physical well-being is protected. According to Galanti *et al.* (2021), remote work can lead to increased stress and burnout due to blurred boundaries between work and personal life. Mental health initiatives, such as access to counseling services, wellness programs, and regular breaks, are essential for maintaining employee well-being and productivity (Rodrigues *et al.,* 2023).

3.2. Enhancing Communication Strategies

Building effective communication systems is vital for remote work success. Managers and employees alike must rely on virtual meetings, messaging platforms, and shared project tools to stay connected. These technologies support real-time communication, allowing team members to collaborate regardless of geographic location. As Sharma *et al.* (2020) highlight, open communication and feedback loops help build trust and transparency, which are fundamental to the success of remote teams.

4. TRUST AND PRODUCTIVITY IN REMOTE WORK ENVIRONMENTS
4.1. Building Trust in Virtual Teams

Trust is a cornerstone of effective remote work, particularly in environments where direct supervision is limited. Managers can foster trust by setting clear expectations, providing regular feedback, and empowering employees to take ownership of their tasks (Contreras *et al.*, 2020). Encouraging informal virtual interactions, such as team-building exercises, can further enhance rapport among remote workers (Golden and Gajendran, 2019).

4.2. Productivity Concerns and Solutions

For many managers, concerns about reduced productivity in remote settings persist. However, research suggests that employees often report heightened productivity due to fewer office distractions and a more customized work environment (Park, Jeong and Han, 2022). Organizations can bolster productivity by providing employees with the necessary tools and training to work efficiently from home, while also promoting a culture of accountability and autonomy (Allen *et al.,* 2015).

5. CHALLENGES AND FUTURE RESEARCH DIRECTIONS
5.1. Long-Term Impact of Remote Work

Current literature primarily focuses on the short-term impact of remote work, but the long-term effects on organizational culture and employee engagement remain underexplored. McPhail *et al.* (2024) argue that sustained remote work

could redefine traditional business practices, necessitating further study into its evolving dynamics.

5.2. Equity and Inclusion in Remote Work

Another emerging area of interest is the potential for inequities in remote work arrangements. Marabelli *et al.* (2023) highlight the need for inclusive policies that ensure equitable access to technology and resources for all employees, particularly those from marginalized groups.

5.3. Cross-Cultural Collaboration in Remote Teams

As remote work connects employees from different cultural backgrounds, challenges related to communication, work norms, and team dynamics arise. Addressing cross-cultural differences in remote work settings is an area ripe for further research, as noted by Kahwema and Lichte (2023).

6.   FUTURE DIRECTIONS FOR REMOTE WORK RESEARCH

As remote work continues to evolve, there are several areas that warrant further investigation. One critical area is the long-term impact of sustained remote work on employee career development and progression. While short-term benefits, such as flexibility and reduced commuting, are well-documented, the effect on career growth, professional visibility, and mentorship remains unclear (Barnes, 2018; Rodrigues *et al.,* 2023).

Additionally, more research is needed to explore the role of leadership in remote work environments. Studies on leadership styles, particularly in the context of remote team management, could provide deeper insights into how managers can support employees and foster trust in virtual settings (Ganguly *et al.,* 2022). Understanding how different generations of managers, such as Gen X and Gen Y, approach remote work leadership can offer valuable perspectives on adapting to evolving workplace expectations (Shirmohammadi, Au and Beigi, 2022).

Lastly, investigating the technological tools that support remote work, including collaboration platforms and communication technologies, can highlight the ways in which they facilitate or hinder remote team productivity and cohesion. As more advanced technologies such as AI and machine learning become integrated into remote work, research can help assess how these tools impact both productivity and employee satisfaction (Iqbal, Khalid and Barykin, 2021; Kacprzak and Chrząszcz, 2023).

By focusing on these emerging areas of remote work research, organizations can better prepare for the future of work, addressing both the opportunities and challenges presented by an increasingly remote workforce.

7. CONCLUSIONS

The shift to remote work represents both an opportunity and a challenge for organizations. By understanding the differing perceptions of managers and employees, businesses can craft more inclusive and flexible remote work policies. This review emphasizes the importance of fostering open communication, promoting employee well-being, and building trust within virtual teams. Moving forward, future research should explore the long-term implications of remote work on productivity, equity, and cross-cultural collaboration.

In addition, it will be important to conduct qualitative research in future studies to delve deeper into the personal experiences and perspectives of both managers and employees regarding remote work. Qualitative methods, such as in-depth interviews, will allow for a richer understanding of the challenges and strategies employed by different generations in adapting to remote work environments. This approach will help uncover the nuanced dynamics of communication, trust-building, and work-life balance that are not easily captured through quantitative methods. The findings from such qualitative research will complement the existing literature and provide valuable insights for organizations seeking to navigate the evolving landscape of remote work more effectively.

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ANALYZING CONCEPT OF TALENT IN ROMANIAN PUBLIC INSTITUTIONS: A QUALITATIVE APPROACH

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Abstract
In a world characterized by constant and continuous change, influenced by artificial intelligence and socio-economic issues, identifying talented employees within public sector organizations is becoming increasingly difficult. Although globally research in the field of talent management has intensified in recent years, in Romania the interest of practitioners and the academic community for this field remains limited.
Present theories emphasize that the absence of clear definitions and conceptual uncertainties around the terms "talent" and "talent management" create significant challenges in implementing talent management practices on a broad scale.
The aim of this study is to contribute to the improvement of existing scientific knowledge in Romania by obtaining a deeper understanding of the concept of talent in the labor market. We conducted a qualitative analysis based on a review of current scientific literature and the use of an Interview Guide applied in Romanian public institutions.
The results obtained confirm the existence of an acute crisis of talented personnel and emphasize the need to update human resources policies, strategies and practices in all areas of activity in the public sector.
Keywords: *talent; talent management; public institutions; Romania*
Jel Classification: O15, M12

1. INTRODUCTION

The global labor market has been deeply affected by a number of factors, including the lack of skilled labor in many sectors, economic crises, the increasing influence of artificial intelligence, and mass migration to higher-paying jobs. These changes are not temporary but reflect a profound structural change and have led to the emergence and development of a new field of research in the management of valuable human capital within organizations. The evolution of artificial intelligence has led to changes in skill requirements, and the shortage of skilled personnel, especially in the technical and technological industries, has led

organizations to re-evaluate their strategies for recruiting, developing, and retaining talent. These phenomena have generated a redistribution of the labor force, contributing to migration to better-paid jobs or to emerging markets that offer new opportunities, and have fueled the need to develop a more sophisticated approach to talent management to meet the needs of increasingly complex organizations and anticipate future developments.

In the absence of specific methods and tools for measuring unique skills and individual competencies, identifying high-potential human resources has become increasingly challenging (Lee, 2018).

After its initial use in 1997 by McKinsey consultant Steven Hankin, the term "War for Talent" has subsequently become popular due to the 2001 publication of the book entitled "The War for Talent", authors Michaels, Handfield-Jones and Axelrod (Keller and Meaney, 2017).

Currently, talent is not just a buzzword; it has become a crucial requirement for public institutions to deliver high-quality services and meet the growing demands of the labor market. Unlike the private sector, where organizational goals are clearly defined, public sector objectives are often harder to measure. Consequently, effective talent management in public institutions presents a significant challenge for senior management and human resources specialists (Collings *et al.,* 2017; Blom *et al.,* 2020).

Current approaches to talent management in Romania are inadequate to meet the rising demand for exceptionally qualified employees possessing specialized skills and competencies, particularly in the public sector, and there is a dearth of academic literature and empirical research in this area.

We believe that this approach will make a significant contribution to the development of the existing literature by clarifying the notion of talent in the context of the labor market.

Investigating the concept of talent in public institutions in Romania is a priority and essential step in order to attract human capital with high potential to add added value to the organizations of which it is a part.

We managed to achieve this goal by using an interview guide that was applied to people employed in organizations in the fields of public administration, higher education, post-secondary education, pre-university education, cultural institutions, mass media and in the health field.

The objectives pursued in this approach are:
O1 Clarifying the concept of talent based on literature review
O2 Identifying how talent is conceptualized in Romanian public institutions
O3 Developing a working definition for the concept of talent

2. LITERATURE REVIEW

O1 Clarifying the concept of talent based on literature review

In order to provide a well-grounded perspective on the concept of talent, the literature review includes articles and book chapters published in specialized journals and magazines and highlights empirical research findings on the perception and assessment of talent in higher education and research institutions. public health in Europe, Africa and Asia. The aim is to clarify the concept of talent without entering into debates about the ethical or psychological implications of these definitions.

We have identified that there is a variety of approaches to the concept of talent despite the fact that there is no agreement between the academic world and practitioners nor is there a universally recognized definition of talent. According to Dries (2022) the word "talent" has its origins in antiquity and originally referred to a unit of measurement that was equivalent to 36 kg. In the New Testament the term Talent (Talant) is associated with a rare coin of great value equivalent to 6000 denarii and by comparison a working day was worth 1denarii (Gallardo-Gallardo *et al.,* 2013). Throughout the Middle Ages and until the 19th century the term "talent" was utilized to refer to exceptional talents and capabilities that were bestowed upon a selection of few of our fellow human beings by God (Dries, 2022). In the immediate aftermath talent was regarded to be a distinguishing characteristic of those who possessed advanced super-gifted intellectual ability or extraordinary artistic abilities but who also struggled with mental health issues by being referred to as "mad genius" (Baudson, 2016).

In the New English Bible the word "talent" is synonymous with the word "capital" which has led to the use of this concept in human resource management with the meaning of human capital (Tansley, 2011) and the Explanatory Dictionary of the Romanian language describes talent as "an innate or acquired ability to perform in a particular field of activity".

Ulrich and Smallwood (2011) and Gallardo-Gallardo *et al.* (2013) believe that talent can be analyzed from two perspectives: the subjective perspective that "talent" is considered exclusive or inclusive or a combination of these and objective that "talent is considered a multiplication of three main characteristics: competence commitment and contribution."

The development of the field of talent management is due to the consulting company McKinsey. According to McKinsey practitioners' talent refers to a select group of employees who possess a combination of abilities: knowledge experience intelligence judgment attitude character strategic thinking leadership skills emotional maturity communication skills the ability to attract and inspire other talented individuals entrepreneurial instincts functional skills and the ability to achieve desired outcomes (Michaels *et. al.,* 2001).

To better understand the concept of talent we consider that it is very important to present a summary of the definitions that are most frequently used in the

analyzed scientific literature. These will help us gain a deeper comprehension of the manner in which talent is conceptualized in a variety of activity sectors.

Table 1. The concept of talent in literature

Talent Concept	Authors/Publication Years/Paper Title
Michaels, Handfield-Jones and Axelrod (2001): "Talent can be defined as the sum of a person's abilities, intrinsic gifts, skills, knowledge, experience, intelligence, judgment, attitude, character and ability to be a leader. It also includes his ability to learn and grow."	Ansar, N. and Baloch, A. (2018). *Talent and Talent Management Definition and Issue* Dahshan *et al.* (2018). *Talent Management and Its Effect on Organization Performance among Nurses at Shebin El-Kom Hospitals* Lee, C. and Rezaei, R. (2019). *Chapter 13 in Handbook of International Talent Management. Talent management strategies in the public sector: A review of TM schemes in Southeast Asia* Sparrow, P. (2019). *A historical analysis of critiques in the talent management debate*
Gallardo-Gallardo, Dries and Gonzales-Cruz, (2013): "Talent can be conceptualized as naturalness, commitment and matching revealed in the innate skills, abilities, knowledge and acquired skills of employees that lead to achieving outstanding results". Dries, (2013). "Talents are unique strategic resources that can be used to gain competitive advantage"	Ingram, T. and Glod, W. (2015). *Talent Management in health care organization qualitative research results* Gandy, R., Harrison P. and Gold, J. (2018). *management in higher education is turnover relevant?* Kravariti, F. and Johnston, K. (2019) - *Talent management: a critical literature review and research agenda for public sector human resources management* Bartrop-Sackey *et al.* (2022) *Exploring the talent retention strategies of Cape Coast Technical University in Ghana* Kozjek., T. and Franca, V. (2020). *Talent Management in the Public Sector* Dries, N. (2022). *Whats your talent Philosophy? Talent as Construct versus Talent as Phenomenon, chapt. 2 in the Book Talent Management A Decade of Development*
Nijs *et al.,* (2014): "Talent is the innate, systematically developed skills of individuals who are engaged in activities they like, consider important, and want to invest energy in".	Yogalakshmi, J., A. and Supriya, M.V. (2019). *Talent quotient: development and validation of a measurement scale*

Talent Concept	Authors/Publication Years/Paper Title
Ulrich (2011), argues that "talent is a self-evident concept and can represent everything a leader or writer wants to mean".	Zhang, Y. E. and Nesbit, P. (2018). *Talent Development in China: Human resource managers perception of the Value of the MBA*
Berger and Berger (2011): "Talented workers are super-keepers or a small group of individuals, about 3% of the organizations employees, who can inspire others to attain superior accomplishment and embody the creed, core competencies and values of their organization"	Čizmić, E. and Ahmić, A. (2021). *The Influence of talent management on Organizational performance in Bosnia & Herzegovina as a Developing countries*
Collings and Mellahi (2009): "Talent refers to high-potential individuals who have the ability to continuously develop their skills to occupy key positions in the organization"	Singh, R. P. (2021). *Talent management literature review*
China State Council (2010): "Talent is represented by people with specialized skills and knowledge who contribute to the development of society through creative work and are part of human resources, but with higher levels of skills and qualities."	Brown, P. *et. al.* (2020). *Higher education, graduate talent, and the prospects for social mobility in Chinas innovation nation*
Shamsi Uzma *et al.* (2010): "Talent is defined as a well-trained person with professional experience and special skills that benefits the organization through their own contribution and creative work."	Saddozai *et al.* (2017). *Investigation of Talent, Talent Management, its policies, and its impact on working environment*
Thunnissen *et al.* (2013): "Talent is a collection of individual characteristics that vary with an organizations internal organizational environment, type of work, and external circumstances over time"	Ewerlin, D. and Süß, S. (2016). *Dissemination of talent management in Germany: myth, facade or economic necessity?*

Source: adaptation after Gallardo-Gallardo, Dries and Gonzales-Cruz (2013) definition of the concept of talent taken from other authors

We present distinctly the articles that develop their own definitions for the concept of *Talent,* as we consider its approach from the perspective of other authors to be essential.

Table 2. Definition of Talent concept developed by the authors

Talent Concept	Authors/Publication Years/Paper Title
"Talent refers to those individuals who have the knowledge, skills and values necessary for the present and the future, work hard, expend their energy and bring through their efforts a real benefit to the organization to which they belong."	Cho, H. J. and Ahn, J. Y. (2018). *The Dark Side of War for Talent and Layoffs: Evidence from Korean Firms*
"Talent is considered an elite subset of individuals or all employees within an organization	Ruchira, S., Perera, D., Lasanthika Sajeevanie, T. and Gamage, P. (2020). *Talent, Talent Management & its Practices: A Critical Review.*
"Talent is a genetic code of skills, abilities, knowledge, experiences, values, intelligence, attitude, character, competence, commitment and contribution that adds value to the organizations objectives"	Musakuro, R. N. and De Klerk, F. (2021). *Academic talent: Perceived challenges to talent management in the South African higher education sector*

Source: adaptation after Gallardo-Gallardo, Dries and Gonzales-Cruz (2013) - definition of the concept of talent developed by the authors of the analyzed articles

As a result of our review of specialized literature, we have determined that the concept of talent has evolved from being a unit of measurement for rare and valuable goods to being a characteristic that defines people who possess exceptional abilities. This evolution has resulted in the development of a new field of research known as Talent Management.

According to Michaels *et al.* (2001), the process of improving the performance of an organization involves identifying and evaluating the three existing categories of employees. These categories are as follows: type A players, who are the most valuable in the organization; type B players, who have average results; and type C players, who are employees who do not have potential and who do not show any interest in the organizations goals.

Several studies that were conducted not too long ago have demonstrated that it is of the utmost importance not to disregard the acquired aspect of skill (De la Calle-Duran, Fernandez-Alle and Valle-Cabrera, 2021). In addition, it is vital to establish a harmonious balance between intrinsic abilities and learned abilities, which is crucial at the organizational level (Skuza and Woldu, 2022).

At this point in the literature there are three currents of opinion regarding valuable human capital: talented, high potential and celebrities (Vardi and Collings, 2023) and four philosophies about talent are identified (Dries, 2022): exclusive/innate - the philosophy that associates the talent of a small number of people who have acquired exceptional skills at birth; exclusive/developed - a small number of people acquire and develop special skills and competences

throughout their lives; inclusive/innate – all people are born talented; inclusive/developed - all people can acquire and develop the necessary skills and competences throughout their lives in a particular field of activity.

Existing research does not provide sufficient empirical evidence on the quantification of talent (Lee, 2018), and it demonstrates that the effectiveness of existing talent identification practices requires further exploration (Ready, Conger and Hill, 2010; McDonell and Skuza, 2021).

Despite the fact that significant progress has been made in the field of talent management since the publication of article The War for Talent in 1998, there is still a need for further investigation. Among all the articles that were examined, the great majority of them make use of definitions of talent that were obtained from other writers. Only fifteen percent of the articles come with their own definitions for the notion of talent, which denotes a lack of clarity and a conceptual ambiguity not accepted by practitioners and academics alike.

We also identified the fact that different cultural, economic and academic contexts influence what is considered "talent" in these regions and how these differences affect the selection and development of future leaders. In the current context of globalization, talent becomes an international resource, and organizations must adopt common strategies for managing talent from diverse cultures and regions. In order to provide a deeper understanding of the concept of Talent and how it can be managed efficiently, it is necessary to expand studies and an interdisciplinary approach that combines aspects from psychology, sociology, economics and management.

The skils of the future will be determined by how the demands of the labor market will evolve in the current context of economic crises, which will generate social and political disputes at the global level. In public institutions, as well as in the private sector, human capital, which is the engine of organizations, will be forced to make decisions that have never been made before. Many of them will have to give up job security or substantial earnings to avoid the danger of job loss that are associated with technological progress and increasing levels of automation (Amtz, Gregory and Zierahn, 2016; Frey and Osborne, 2017).

3. DATA COLLECTION AND ANALYSIS
O2 Identifying how talent is perceived in Romanian public institutions

In order to investigate the manner in which talent is conceived of in Romanian public institutions, we conducted an exploratory research project that was based on the Interview Guide and was applied to a sample that was selected at random. The selection of the sample was based on the position that the individual held in the institution of origin, and it was also guided by the objectives of the research.

There were a total of 26 individuals who were sent the Interview Guide. However, due to the fact that the domain of talent management has not been

developed or widely known in Romania, only 16 persons accepted to take part in the research study, which is equivalent to 62% of the sample that was chosen.

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We present below the socio-demographic structure of the sample:

a) By field of activity, the study participants work in the fields of: public administration, 3 people; culture, 1 person; pre-university education, 4 people; higher education, 4 people; post-secondary education, 2 people; media, 1 person and health field, 1 person.

b) By seniority within the organization: 38 % of respondents are over 25 years within organization, 19 % are between 15 and 25 years within organization, 31 % are between 5 and 15 years within organization, and 12 % are less than 5 years of experience in the organization

c) According to the position held within the organization: 7 persons hold management positions in public institutions, 2 persons work in human resources departments, and the rest of the research population consists of academic staff, teachers in pre-university education and specialists in the field of culture and public administration.

d) Six of the respondents are between 35 and 45 years old, five participants are between 46 and 55 years old, and five respondents between 56 and 65 years old.

e) 25% of respondents are from Bacău county, 50% of respondents are from Iași county and 25% of respondents are from Suceava county.

It is essential to present the definition of the concept of Talent, as offered by the people who participated in the survey in order to provide a detailed picture of the current vision of talent in Romanian public institutions:

P1: "A sum of qualities needed in a profession, of attributes that, harnessed and practiced through specialized training, ensure success."

P2: "A summation of innate abilities or acquired abilities, which the individual uses and constantly improves in order to achieve the desired results in a certain field of activity."

P3: "A characteristic of the individual with a high heritable contribution, which is manifested by the persons outstanding abilities in a certain field."

P4: "An innate and time-enhanced ability to perform in a particular domain of activity."

P5: "It is characteristic of a person endowed with remarkable abilities, who has a calling, grace, gift, vocation."

P6: "A Gift from God (Talants)."

P7: "A sum of qualities needed in a profession, of attributes, which capitalized and practiced through specialized training, ensures success."

P8: "A special ability of an individual, with which he manages to handle certain situations or realize certain products of his activity."

P9: "An aptitude of a person in a certain field that can be born or acquired through constant effort, through discipline, education and a lot of patience, leading in some situations to a creative activity"

P10: "A persons innate ability to do something special in a particular field."

P11: "A multitude of qualities and attributes of a person, manifested in a certain field of activity."

P12: "Talent is something we are born with and which, if we have the chance to discover and cultivate it, can bring us self-fulfillment and many satisfactions, on various levels (personal, professional, family, etc.)."

P13: "Talent is a persons ability to perform a specific activity effectively."

P14: "Talent is a persons ability to perform a particular activity or task with skill, efficiency, and skill."

P15: "Talent? I have not thought until now to define talent...or what talent is; I think its the ability with which we do certain things in life that we really like."

P16: "Innate ability in a certain field that can favor the achievement of special results in that field, under the conditions in which the respective person "polishes" his/her respective aptitude."

According to the findings of the study, 81% of the participants believe that talent is innate and can be developed through involvement, devotion, hard work, and the desire for self-improvement. On the other hand, 19% of the respondents believe that talent is a skill that is acquired and developed over time while working within organizations.

Talent is a vital requirement for employment in fields of activity such as media and culture, and the cultivation and development of professional abilities is an absolutely necessary step in order to achieve great performance. As a consequence of the aforementioned, we are able to argue that being talented is an essential requirement for work in these specific professions.

The results obtained following the application of the interview guide confirm that there is currently a lack of genuine effort in Romanian public institutions to discover highly qualified people. Furthermore, there is a general lack of importance placed on the development and retention of valuable human resources. Due to these reasons, the overwhelming majority of participants hold the belief that in order to attain outstanding performance in their respective organizations, it

is crucial to adopt an innovative approach to human resources management by implementing novel recruitment practices. This approach would involve the careful selection, effective motivation, and retention of valuable human resources.

O3 Developing a working definition for the concept of talent

Based on the review of the scientific literature and the qualitative analysis undertaken within some Romanian public institutions, referring strictly to the talented personnel within the organizations, we develop the following working definition for the concept of Talent which will be used in future research: "*Talent is the innate gift of a person who allows him to excel in a certain field of activity and who, together with the skills acquired throughout his life, his efforts, tenacity, initiative, creativity, devotion, leadership skills, a brilliant mind, the ability to adapt to the needs of the organization, the need for continuous development and self-improvement, differentiates him from others.*"

4. DISCUSSIONS

The review of specialized papers and the analysis that was carried out in Romanian public institutions have both indicated that efficient talent management will lead to an increase in organizational performance. This is true regardless of the region, culture, or sector of activity that the organization is operating in. Due to the disparity that exists between the academic world and practitioners, the absence of significant empirical research, and the absence of a generic definition that is applicable across all sectors of activity, the theories that are now in use are not even close to being generalized.

While certain authors (Swailes and Blackburn, 2016; Holck and Stjerne, 2019) argue that the mere use of the term "Talent" promotes subjectivism and favoritism, resulting in negative consequences that lead to lower self-esteem in less gifted individuals, we argue that in order to improve organizational performance, it is essential to develop innovative new techniques to identify workers who possess distinct capabilities and personality characteristics that are unique to each industry and field of activity.

Talent is a crucial component for the development of public institutions, and by adopting effective talent management strategies, public institutions can attract top performers and create a prosperous work environment. In a constantly changing world, public institutions must adopt a proactive approach to talent management and implement strategies that favor the growth and development of employees to withstand todays competitive environment and face tomorrows challenges.

5. CONCLUSIONS

We conclude that the identification of people with special abilities in Romanian public institutions, as well as the implementation of new methods for their development, motivation and retention, will lead to an increase in the quality of health and public administration services and the development of an education system at the highest standards that will facilitate the achievement of outstanding research results and will provide qualified personnel in all fields of activity. Without a doubt, conducting a comparative study across various areas of the Romanian public sector will have a major impact on the advancement of talent management in this subject.

In order to develop methods and tools for measuring talent that enable the identification of valuable employees who can contribute to the performance and success of the organization in which they operate, we intend to extend the research to public sector institutions located in other counties of Romania.

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THE EVOLUTION OF GENDER STEREOTYPES
IN LEADERSHIP NARRATIVES

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Abstract
This paper critically examines the evolution of gender stereotypes in leadership narratives from 1970 to 2024, focusing on the shift in portraying male and female leaders. Using a comprehensive theoretical framework that integrates feminist theories, linguistic insights, and leadership representation perspectives, the study explores how leadership narratives have gradually moved away from traditional gendered expectations. Key themes discussed include tokenism, gendered organizations, bias in leadership evaluations (Eagly, Makhijani and Klonsky, 1992), workplace humor (Holmes, 2000), backlash against agentic women (Rudman and Glick, 2001), the communality deficit (Heilman & Okimoto, 2007), emotional expression (Brescoll and Uhlmann, 2008), the glass ceiling (Powell and Butterfield, 2015), and the Queen Bee phenomenon (Derks, Van Laar and Ellemers, 2016). The analysis is anchored in key theoretical foundations such as Role Congruity Theory (Eagly and Karau, 2002) and Social Role Theory, which offer insights into how societal expectations have historically shaped perceptions of leadership competence and authority. The study's findings, derived from textual analysis, reveal a marked evolution in the language, narrative structures, and gendered portrayals of leadership. The paper highlights the persistence of contradictions, such as the communal deficit and biases favoring male leaders, but also underscores a growing trend toward inclusivity, where leadership traits are evaluated based on competence rather than gender. The discussion contextualizes these changes within broader societal shifts, particularly in the workplace, where efforts to dismantle gendered leadership stereotypes have gained traction. Limitations of the study are acknowledged, particularly the need for empirical data to supplement textual analysis, and future research avenues are proposed. These include further exploration of intersectional dynamics and the implications of global societal changes on leadership narratives.
Keywords: *gender stereotypes; feminist theories; leadership representation; tokenism, Queen Bee phenomenon*
JEL Classification: J16, M12, M14, J71

1. INTRODUCTION

In contemporary society, leadership narratives significantly influence perceptions, expectations, and opportunities based on gender. Understanding the evolution of gender stereotypes within these narratives unveils historical and cultural influences shaping leaders' conceptualization. This sets the stage for a comprehensive exploration of gender stereotypes in leadership. As societal norms evolve, unraveling gendered expectations in leadership becomes imperative. The central research question guiding this inquiry is: How have gender stereotypes in leadership narratives evolved? This question navigates the nuanced landscape of leadership discourse, exploring historical, cultural, and perceptual dimensions that shaped gendered narratives. Addressing this question aims to contribute valuable insights into the dynamic nature of gender stereotypes and their historical impact on leadership narratives.

2. THEORETICAL FRAMEWORK

The study employs several theoretical frameworks to understand the perpetuation and evolution of gender stereotypes in leadership narratives. Kanter's structural empowerment, Acker's gendered institutions, Eagly's Social Role Theory, role congruity theory, and social identity theory offer crucial foundations. Concepts such as homosocial reproduction, gendered subtexts, role incongruity, prescriptive gender stereotypes, and status conferral deepen our comprehension of societal norms, organizational structures, and individual behaviors.

Feminist, linguistic, and leadership representation theories guide the analysis of gendered leadership narratives. An intersectional approach, as proposed by Crenshaw (1989), integrates with feminist theories, emphasizing diverse experiences of women in leadership. Holmes' (2000) linguistic exploration of workplace humor introduces linguistic and politeness theories, offering insights into language's role in power dynamics.

Eagly and Karau's (2002) Role Congruity Theory contributes to understanding societal expectations influencing the competence perception of female leaders. Eagly, Makhijani, and Klonsky's (1992) meta-analysis, rooted in Social Role Theory, explores how gender roles shape perceptions of leadership competence. Acker's (1990) theory of gendered organizations reveals how organizational structures embed gender norms. Derks, Van Laar, and Ellemers' (2016) exploration of the "Queen Bee" phenomenon adds insights from Social Identity Theory, focusing on intra-gender dynamics. Heilman and Okimoto's (2007) study on the implied communality deficit integrates prescriptive gender stereotypes and role congruity theory. Powell and Butterfield's (2015) empirical study on the "glass ceiling" contributes to the Glass Ceiling Theory, examining barriers to women's advancement.

This comprehensive theoretical framework, drawing on feminist, linguistic, and leadership theories, provides a lens for analyzing the intricate dynamics of gendered leadership narratives, unraveling the evolution of gender stereotypes within organizational contexts.

3. LITERATURE REVIEW

This study delves into the gendered dimensions of leadership narratives from 1970 to 2024, drawing from various academic sources, including peer-reviewed articles, seminal works, and meta-analyses, to trace the evolution of scholarly discourse on gender portrayals in leadership. By examining themes such as tokenism, bias in leadership evaluations, and the glass ceiling, the review contributes to a more coherent and comprehensive understanding of the changing gender dynamics in leadership.

Rosabeth Moss Kanter's pivotal work in Men and Women of the Corporation (1977) is central to understanding gender dynamics in male-dominated organizational environments. She introduces the concept of tokenism, which explains the unique challenges women face when they are a small minority in the workplace. Tokenism not only amplifies women's visibility but also subjects them to greater scrutiny, often leading to stereotyping. Women in these positions are seen less as individuals and more as representatives of their gender, which hinders their ability to advance.

Kanter's structural empowerment theory reveals how organizational power dynamics are perpetuated through homosocial reproduction. In this framework, those who conform to the dominant group's norms, usually male, are more likely to be promoted and mentored. This process reinforces existing power structures and ensures that leadership continues to reflect masculine ideals. Women, therefore, struggle to rise to leadership positions unless they adapt to these norms, limiting diversity in leadership styles.

Kanter's insights resonate today, especially in discussions about women's leadership trajectories. Her work underscores that organizational cultures are structured in ways that favor those who fit into pre-existing norms, making it difficult for women to break into top leadership roles. Her analysis's relevance is evident in women's ongoing challenges in gaining access to networks, mentorship, and promotions in male-dominated industries.

Joan Acker's (1990) influential framework on gendered organizations critically explains how organizational structures inherently reinforce gender disparities. Acker argues that hierarchies, job roles, and workplace expectations are not gender-neutral but are deeply intertwined with gender. This process systematically reinforces biases that favor men, particularly in leadership roles, while marginalizing women.

Acker's theory of gendered subtexts reveals that everyday organizational practices, from hiring to promotion, embed gender norms that perpetuate

inequality. These practices create environments where men are often seen as the default for leadership roles, while women's contributions are overlooked or devalued. Even seemingly neutral job descriptions and evaluations are laced with implicit gender expectations, making it harder for women to rise to leadership positions unless they conform to male-dominated standards.

Acker's feminist analysis is crucial in understanding why leadership stereotypes persist over time. Her work highlights how organizational structures— rules, roles, and expectations—are technical and deeply gendered. This framework remains relevant today, as it helps explain why, despite advancements in gender equality, leadership roles are still largely male-dominated in many sectors.

Eagly, Makhijani, and Klonsky's (1992) meta-analysis on gender bias in leadership evaluations underscores how societal expectations profoundly shape perceptions of leadership competence. Their study, rooted in Social Role Theory, highlights the influential role that gender norms play in determining how leaders are evaluated. These norms dictate that women, who are traditionally seen as nurturing and communal, are often perceived as less effective in leadership roles that require assertiveness and decisiveness—qualities typically associated with male leaders.

The concept of role incongruity is central to their analysis. Women face challenges when their leadership style deviates from traditional expectations, leading to negative evaluations even when they demonstrate the same level of competence as their male counterparts. This bias is particularly evident when women adopt more agentic or authoritative leadership styles, which are seen as inconsistent with societal expectations of femininity. As a result, women in leadership positions are often judged more harshly or seen as less likable, regardless of their effectiveness.

The insights from this meta-analysis are instrumental in addressing ongoing leadership biases. By revealing how gender norms influence evaluations, the study provides a foundation for understanding why women face greater scrutiny in leadership positions. These findings remain relevant in combatting gender bias, as they demonstrate the need for systemic changes in how leadership competence is defined and evaluated.

Janet Holmes' (2000) study on workplace humor introduces an essential dimension to understanding gender dynamics, significantly how humor can reinforce and challenge power structures. Although her work is not directly focused on leadership, it offers valuable insights into the role of humor as a communicative tool in shaping workplace interactions. Holmes' analysis highlights how humor, particularly in professional settings, fosters relationships, establishes dominance, enforces norms, or provokes subordinates.

In her exploration of politeness, provocation, and power, Holmes shows that humor in the workplace often reflects underlying power relations. When used by those in leadership positions, humor can subtly reinforce hierarchical structures, maintaining control over subordinates. Conversely, when used by those with less power, humor can serve as a means of resistance or a way to critique authority.

Holmes' work also sheds light on gendered interactions in the workplace. Humor is often employed differently by men and women, and these differences can affect how leadership is perceived. Women may use humor to navigate male-dominated environments, employing politeness or self-deprecating humor to soften their assertiveness. However, this can reinforce stereotypes about women being less authoritative or competent in leadership roles. Holmes' analysis provides a nuanced lens to understand how humor shapes perceptions of leadership, revealing the subtle ways gender and power intersect in workplace dynamics.

Rudman and Glick's (2001) study on prescriptive gender stereotypes and the backlash agentic women face highlights the double bind women experience when they exhibit traits traditionally associated with male leaders. Their research demonstrates that women who display assertiveness, decisiveness, and confidence—qualities valued in leadership—often face adverse reactions because these behaviors conflict with societal expectations of femininity.

Applying Role Congruity Theory in this context is critical to understanding how societal norms shape perceptions of women in leadership. According to this theory, there is a mismatch between the communal traits expected of women, such as warmth and nurturing, and the agentic characteristics associated with leadership, like dominance and ambition. Women who demonstrate these agentic qualities often encounter backlash, as their behaviors are perceived as violating the traditional gender norms that dictate how women should act.

This backlash can manifest in various ways, from being seen as less likable or too aggressive to being passed over for promotions or leadership opportunities. Women in leadership roles are thus caught in a double bind: they must demonstrate leadership qualities to succeed, but doing so may lead to penalties because they are seen as deviating from expected feminine behavior.

Rudman and Glick's research adds complexity to the evolving narrative of gendered leadership by revealing the societal penalties women face when they challenge traditional gender roles. It highlights the need for organizations to address these biases and create environments where leadership is valued based on competence rather than conformity to gendered expectations.

Role Congruity Theory, as explored by Eagly and Karau (2002), analyzes the tension between the communal qualities traditionally expected of women and the agentic attributes associated with leadership. This theory is crucial in understanding how societal expectations create systemic biases that hinder female leadership. Women are typically expected to embody communal traits such as

warmth, nurturing, and empathy—qualities perceived as incompatible with the assertiveness, decisiveness, and ambition required for leadership roles.

Eagly and Karau's analysis reveals that when women adopt agentic behaviors necessary for leadership, they often face negative evaluations because their actions deviate from these expected feminine qualities. This incongruity leads to double standards, where women must navigate the delicate balance of being perceived as competent leaders while also adhering to societal expectations of femininity. Women who emphasize agentic traits may be seen as competent but unlikable, while those who maintain communal qualities may be liked but perceived as less capable in leadership.

The systemic biases illuminated by Role Congruity Theory underscore how deeply ingrained gender stereotypes shape the perceptions and evaluations of female leaders. These biases affect how women are judged in leadership roles and create significant barriers to advancement. By exposing the conflict between gendered expectations and leadership behaviors, Eagly and Karau's work provides a critical foundation for understanding women's challenges in ascending to and succeeding in leadership positions.

Heilman and Okimoto's (2007) research on the implied communality deficit contributes significantly to the discourse on gender stereotypes in leadership by examining why women are penalized for excelling in male-dominated roles. Their study highlights a key challenge: when women demonstrate competence in areas traditionally associated with male strengths, they are often perceived as lacking in communal qualities, such as warmth, nurturing, and empathy—traits society typically expects from women.

This communal deficit arises because competence in male-typed tasks conflicts with the gendered expectation that women should prioritize communal behaviors. As a result, women who succeed in these roles may be seen as capable but unlikable or cold, facing penalties in evaluating their interpersonal skills. This dynamic puts women in a double bind, where demonstrating leadership and competence can lead to negative perceptions because it challenges societal norms about femininity.

Heilman and Okimoto's study adds nuance to understanding gender stereotypes in leadership, illustrating how deeply embedded societal expectations penalize women for breaking away from traditional gender roles. Even when women meet or exceed expectations in male-dominated fields, they are often judged harshly for not conforming to stereotypical female behaviors. This penalty for success is a powerful deterrent for women in leadership, perpetuating systemic barriers to gender equality in top leadership roles.

Brescoll and Uhlmann's (2008) research on emotional expression explores how societal norms disproportionately affect female leaders based on their emotional displays. Their study applies Social Role Theory, which emphasizes

society's different expectations for men and women regarding behavior and expression. In leadership, women are often expected to maintain a calm, composed demeanor while avoiding displays of anger or assertiveness, which are typically deemed acceptable or even desirable for male leaders.

Their research reveals that when women display emotions like anger or frustration, they are more likely to be seen as unstable, overly emotional, or unfit for leadership. This contrasts with how male leaders are perceived; men's emotional expressions, particularly anger, are often interpreted as signs of strength, control, and authority. These differential treatments reinforce gender stereotypes, making it harder for women to navigate leadership roles where emotional expression is judged more critically.

This emotional double standard significantly affects how women are evaluated regarding their competence and suitability for leadership. Women who display agentic emotions, such as anger, may face backlash for violating gender norms, while those who maintain composure may be seen as lacking the assertiveness needed for leadership. Brescoll and Uhlmann's findings underscore the challenges women face in balancing emotional expression with leadership expectations, further highlighting the systemic biases that limit women's advancement in leadership roles.

Powell and Butterfield's (1994) empirical study examines the glass ceiling phenomenon, highlighting the barriers preventing women from reaching top management. This concept refers to the invisible obstacles restricting women's advancement despite their qualifications. Powell and Butterfield's research sheds light on practical manifestations of gender stereotypes, particularly in promotions and leadership evaluations. Their study shows how gender bias affects promotion decisions, with women being overlooked for leadership roles because they are seen as lacking assertiveness. The research also identifies how women's exclusion from informal networks within organizations limits their access to leadership positions. Gender stereotypes, which frame women as more suitable for support roles rather than top management, further reinforce the glass ceiling. This phenomenon ties into broader discussions of role incongruity (Eagly & Karau, 2002), where traits associated with women conflict with those expected of leaders, perpetuating gender biases in leadership evaluations.

Lastly, the **Queen Bee phenomenon**, a significant concept in gender dynamics within leadership, refers to senior women distancing themselves from junior female colleagues, sometimes reinforcing rather than challenging gender stereotypes. It complicates the assumption that women in leadership automatically support other women (Derks, Van Laar and Ellemers, 2016).

Women in male-dominated environments who overcome substantial challenges may adopt behaviors that distance them from other women, aligning with male norms to survive. Instead of mentoring younger women, they may see them as competitors, hindering collective female progress (Derks *et al.,* 2016).

This behavior often stems from systemic pressures in organizations where opportunities for women are scarce. As a result, successful women may adopt individualistic strategies, weakening collective efforts to dismantle gender barriers (Derks *et al*., 2016).

Women in leadership may also feel compelled to conform to masculine leadership styles, avoiding associations with feminine traits perceived as weak. This can create a divide between senior and junior women, complicating efforts toward solidarity (Eagly and Karau, 2002).

Societal expectations further shape these behaviors, with women facing greater scrutiny and bias. They may need to prove their competence by distancing themselves from other women. This pressure reflects societal expectations that female leaders must conform to masculine traits, exacerbating gender inequality (Heilman and Okimoto, 2007).

Queen Bee's behaviors also reflect internalized gender biases, as women leaders may adopt the same biases they encountered, downplaying femininity and avoiding gender-related discussions, reinforcing male-dominated structures (Eagly and Karau, 2002).

This phenomenon aligns with broader issues like role incongruity, as women are often viewed as less competent unless they adopt masculine behaviors (Eagly and Karau, 2002). It also relates to the communality deficit, where women face penalties for excelling in male-dominated environments (Heilman and Okimoto, 2007). Addressing intra-gender competition and systemic pressures is essential for dismantling gender stereotypes and promoting accurate gender equity in leadership roles.

4. SYNTHESIS AND GAPS

Exploring gender stereotypes in leadership narratives across these seminal works reveals a complex tapestry of themes, including tokenism, gendered organizations, leadership bias, workplace humor, backlash against agentic women, emotional expression, the glass ceiling, and intra-gender dynamics like the Queen Bee phenomenon. These themes highlight women's ongoing challenges and offer insights into societal expectations and organizational dynamics that continue to shape leadership.

The evolution of gender stereotypes in leadership is closely tied to societal norms and organizational structure changes. As research reveals, gendered subtexts and bias continue to favor male leaders, underscoring the need for further interventions. While significant progress has been made, particularly in challenging traditional gender expectations, the intersectionality of gender with race, ethnicity, and socioeconomic status remains underexplored.

This literature review provides a solid foundation for understanding the current landscape of gender stereotypes in leadership. However, more empirical studies are needed to examine how these evolving societal norms play out in

diverse global contexts. Future research should also focus on intersectional perspectives and how they affect leadership dynamics in various cultural and organizational settings.

5. SUMMARY

Language shifts in leadership portrayals signal evolving societal norms. In the 1970s, male leaders were often depicted as "assertive decision-makers," while female leaders were characterized by "supportive and nurturing qualities" (Eagly and Karau, 2002). These gendered representations reflected societal expectations tied to traditional roles. However, contemporary studies (Derks et al., 2016; Powell & Butterfield, 2015) depart from these frameworks, portraying leaders, irrespective of gender, as "visionary," "strategic," and "collaborative."

In earlier decades, narrative structures framed male leaders as authoritative figures and female leaders as consensus-builders (Kanter, 1977). Contemporary analyses challenge these gendered roles, emphasizing competence over gender-based expectations. For instance, Eagly, Makhijani, and Klonsky's (1992) meta-analysis revealed how gendered expectations shape evaluations of leaders, often to the detriment of female leaders. The evolution in portraying male and female leaders reflects a broader societal shift toward inclusive representation and diminishing gender-biased norms.

Textual analysis reveals persistent incongruities in expectations despite changing norms (Eagly and Karau, 2002). Gender biases that favor male leaders continue to prevail (Eagly, Makhijani and Klonsky, 1992). Still, recent work by Derks, Van Laar, and Ellemers (2016) highlights the complexity of female solidarity in leadership settings, especially within the Queen Bee phenomenon. Heilman and Okimoto (2007) examine the penalties women face in male-dominated tasks, illustrating the "communal deficit" that affects female leaders' perceptions. Similarly, Rudman and Glick (2001) explore prescriptive gender stereotypes, revealing tensions restricting women's agentic behaviors. Powell and Butterfield's (2015) study on the glass ceiling reveals the structural barriers impeding women's advancement to top leadership roles.

Holmes' (2000) study on workplace humor brings a unique dimension to the discussion, examining how humor plays into power dynamics and gendered interactions in leadership contexts. The evolution of leadership stereotypes points to a growing need for organizations to adopt inclusive environments, promoting leadership based on merit rather than gender.

6. CONCLUSIONS

The evolution of gender stereotypes in leadership narratives underscores the shifting dynamics of leadership representation, moving from gendered expectations to more inclusive perspectives. While early leadership portrayals favored traditional masculine traits such as assertiveness and decision-making,

recent analyses reveal a gradual shift toward valuing collaborative, strategic, and visionary leadership styles, irrespective of gender.

Despite these positive shifts, the challenges remain significant. Persistent gender biases, particularly those that favor male leaders, still hinder women's progress significantly when they deviate from communal expectations or demonstrate agentic behaviors typically associated with male leadership (Eagly and Karau, 2002). The glass ceiling remains a barrier to women reaching senior management roles (Powell and Butterfield, 2015), and intra-gender dynamics, such as the Queen Bee phenomenon (Derks, Van Laar and Ellemers, 2016), present further complications.

To foster truly inclusive leadership environments, organizations must actively dismantle these entrenched stereotypes and create pathways for women to rise to leadership roles without the constraints of gendered expectations. The Role Congruity Theory (Eagly and Karau, 2002) and the Social Role Theory (Eagly, Makhijani and Klonsky, 1992) highlight the importance of addressing biases that persist in evaluating leadership competence.

Future research should continue to explore these evolving dynamics, focusing mainly on the intersection of gender with other identity markers such as race, ethnicity, and socioeconomic status. By doing so, we can further contribute to achieving equity in leadership representation and decision-making structures across organizations.

7. LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

This study may limit understanding women's leadership challenges by excluding real-world organizational practices. The evolving nature of societal norms might only partially capture this. Emphasizing the dynamic evolution of gendered leadership narratives, the discussion concludes by stressing the importance of challenging stereotypes for fostering diverse and equitable leadership.

Future research should explore real-world organizational practices to better understand women's leadership challenges, contributing valuable insights to ongoing discussions on gender equity. Further studies might explore gender intersectionality, including race, ethnicity, and sexual orientation, unveiling nuanced experiences. Understanding the influence of evolving societal norms on leadership expectations in diverse cultural contexts adds a global dimension. The study underscores continuous research's significance in shaping leadership roles in environments prioritizing inclusivity, equity, and diversity.

research. Their contributions have been instrumental in shaping the direction and depth of this study.

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STRATEGIC PERFORMANCE MANAGEMENT: BRIDGING TRADITIONAL AND CREATIVE ACCOUNTING METHODS

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Abstract
This article explores the concept of Strategic Performance Management to bridge the gap between conventional accounting practices and the demands of modern business environments. By integrating traditional financial metrics with creative accounting methods, organizations can gain a more holistic understanding of their performance and drive strategic decision-making. Strategic Performance Management is enabling organizations to move beyond the limitations of conventional accounting practices. By incorporating creative accounting techniques, such as non-financial metrics and forward-looking indicators, companies can develop a more holistic view of their performance and align their strategies with the demands of today's competitive markets.
The article presents a compelling case for the adoption of Strategic Performance Management to bridge the gap between traditional and creative accounting methods.
By embracing this integrated approach, organizations can unlock new opportunities for growth, innovation, and long-term success in the continuously changing business landscape.
Keywords: *accounting; performance management; financial performance; creative accounting*
JEL Classification: M42, M41, M00

1. INTRODUCTION

Strategy is crucial for any organization as it provides a clear roadmap for achieving long-term objectives, defines competitive positioning, and guides decision-making in response to market dynamics. It helps allocate resources efficiently, anticipate future challenges, and seize opportunities for growth and sustainability. Strategy and strategic performance management (SPM) are intrinsically linked, as SPM serves as the operationalization of an organization's overarching strategy. A company's strategy outlines its long-term goals and value creation pathways, while SPM ensures that these objectives are systematically

translated into actionable performance metrics. Through tools like balanced scorecards, key performance indicators (KPIs), and data analytics, SPM aligns individual, departmental, and organizational efforts with strategic goals, enabling real-time tracking of progress. This linkage allows for dynamic adjustments, ensuring the business remains agile in the face of external changes while maintaining focus on long-term objectives (Kaplan and Norton, 1996). Furthermore, SPM facilitates continuous feedback loops, providing critical insights into whether strategic initiatives are driving the desired outcomes, which in turn informs decision-making and resource allocation. Thus, SPM is not only a tool for performance monitoring but a mechanism that ensures strategic goals are realized through structured, data-driven management.

2. ABOUT STRATEGIC PERFORMANCE MANAGEMENT

Strategic performance management (SPM) plays a pivotal role in modern business operations by systematically aligning organizational objectives with performance metrics, thereby facilitating the achievement of both short- and long-term goals. SPM enables organizations to operationalize their strategies through the establishment of key performance indicators (KPIs) and performance benchmarks that provide measurable insights into efficiency, effectiveness, and progress toward desired outcomes (Healy and Wahlen, 1999). The scientific rigor of SPM lies in its ability to employ data-driven methodologies, such as balanced scorecards and performance dashboards, which allow for continuous monitoring, analysis, and realignment of business strategies. This continuous feedback loop ensures adaptability in dynamic market conditions, optimizes resource allocation, and enhances decision-making processes. Furthermore, by integrating both financial and non-financial metrics, SPM provides a holistic view of organizational health, fostering resilience, innovation, and competitive advantage. As such, SPM not only improves operational efficiency but also serves as a strategic tool for risk management and long-term sustainability in an increasingly complex business environment.

Strategic performance management (SPM) has emerged as a key factor in sustaining organizational success, especially in the face of rapid technological advancements and global market volatility. Accounting, being an essential part of SPM, has traditionally relied on standardized methods to ensure accuracy and compliance. However, creative accounting, often viewed skeptically, offers innovative techniques to present financial data in ways that better reflect organizational strategies. The article investigates how traditional and creative accounting can be strategically aligned within a performance management system, allowing organizations to better manage risks, improve decision-making, and achieve long-term objectives.

Traditional accounting methods, rooted in principles like accruals, conservatism, and historical cost, provide transparency, consistency, and comparability of financial data. These methods adhere to established standards such as the Generally Accepted Accounting Principles (GAAP) or International Financial Reporting Standards (IFRS), ensuring that financial statements reflect the true and fair view of an organization's financial position.

Despite these advantages, traditional accounting is sometimes seen as rigid and backward-looking. It often falls short in providing real-time insights or capturing the nuanced value generated by intangible assets, such as intellectual property, brand value, and human capital. As organizations face increasing complexity and competitiveness, these limitations highlight the need for more flexible approaches.

Creative accounting refers to the use of accounting techniques that deviate from standard practices to present financial statements in ways that better align with organizational goals. Techniques such as earnings management, revaluation of assets, and manipulation of depreciation schedules allow for flexibility in financial reporting, providing a more favorable portrayal of a company's financial health.

While creative accounting offers potential benefits by allowing firms to tailor financial reports to strategic goals, it also raises ethical concerns. These methods can easily be misused to obscure liabilities, inflate earnings, or mask financial distress, leading to mistrust among investors, regulators, and the public. The fine line between innovative financial strategy and deceptive financial practices calls for stringent oversight.

The core principle of SPM is to align organizational objectives with performance metrics that drive success. By integrating both traditional and creative accounting methods, SPM offers a holistic approach to financial management, balancing integrity with innovation.

Incorporating creative accounting methods within an SPM framework can enhance an organization's financial agility. For example, firms can use creative approaches to better reflect market-driven asset values, align expenses with revenue cycles, or adjust financial ratios to secure financing. These innovations, when employed ethically, provide decision-makers with a more accurate and forward-looking view of financial performance (Jensen and Meckling, 1976).

The fusion of traditional and creative accounting under SPM requires a robust governance framework to prevent misuse. This entails establishing clear ethical guidelines and creating checks and balances that prevent creative techniques from undermining the credibility of financial reports. SPM tools like balanced scorecards and key performance indicators (KPIs) can help monitor both financial integrity and strategic alignment.

The rise of data analytics further bridges traditional and creative accounting methods. Advanced algorithms and predictive analytics allow organizations to

generate more accurate financial forecasts, enabling a forward-looking approach that complements historical financial data. Analytics can also detect potential risks of financial misrepresentation, strengthening the ethical application of creative accounting techniques.

Several organizations have successfully incorporated both traditional and creative accounting techniques within their SPM systems to achieve superior performance. For example, tech companies with heavy investments in research and development often leverage creative accounting to capitalize research and development expenses over extended periods, presenting a clearer picture of future value creation (Schipper, 1989). Meanwhile, more traditional industries like manufacturing stick closely to established accounting norms while using creative approaches in specific areas such as inventory valuation or depreciation management.

Integrating traditional and creative accounting within an SPM framework presents challenges. The key risk remains the potential for ethical breaches and financial manipulation. Organizations must invest in a culture of transparency and ethical conduct, supported by ongoing training and the adoption of advanced audit technologies. Additionally, regulators must evolve to address the growing complexity of creative accounting techniques within the digital economy.

The future of SPM lies in creating accounting frameworks that are both flexible and responsible, blending traditional accounting's stability with the innovative potential of creative approaches. Emerging technologies such as AI-driven accounting systems and blockchain-based financial reporting will play a critical role in ensuring the ethical integration of these methods.

3.   CONCLUSIONS

Strategic performance management (SPM) offers a compelling pathway for organizations to integrate both traditional and creative accounting methods, creating a more dynamic and responsive financial strategy. While traditional accounting ensures compliance, accuracy, and consistency, creative accounting introduces the flexibility needed to adapt to evolving business environments. However, the integration of these methods must be guided by strong ethical principles to avoid the risks of financial manipulation. Through a well-structured SPM framework, organizations can achieve a balance between maintaining financial integrity and fostering innovation, allowing for enhanced decision-making, risk management, and long-term sustainability. The future of this integration will rely on advancements in technology and a continued emphasis on transparency and accountability, ensuring that creative accounting techniques are employed ethically to support, rather than undermine, organizational success.

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GREEN SKILLS AND SUSTAINABILITY EDUCATION: LESSONS FROM A MULTI-COUNTRY PARTNERSHIP

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Abstract

According to the United Nations, over 55% of the world's population currently resides in urban areas, and this figure is projected to rise to nearly 70% by 2050. This rapid urbanisation underscores the urgency of transforming urban environments to be greener and more sustainable. One pivotal aspect of this transformation is the development of skills within the green education sector. Green education equips individuals with the skills necessary to address environmental challenges and fosters innovation in sustainable practices. This article explores the impact of the European Platform for Urban Greening (EPLUG), a Centre of Vocational Excellence, an initiative of the European Commission. EPLUG represents a public-private partnership across Romania, the Netherlands, Finland, Denmark, Spain, and Czechia. EPLUG partners include (vocational) education and training providers, NGOs, companies, European associations, and public authorities. This multi-country partnership enhances learning by allowing partners to share resources and best practices, thereby enriching the educational experience and fostering a more cohesive approach to sustainability. This article investigates the key successes of the EPLUG project, focusing on the enhancement of green skills and sustainability education. Through interviews with various stakeholders from different countries, the article examines a) the added value of collaboration at national, regional, and European levels; and b) examples of green skills and education initiatives. The findings underscore how such partnerships facilitate better skilling, upskilling, and reskilling to meet the challenges posed by the green transition, climate change, among others. Some countries are transforming green curricula with new technologies, while others are expanding green education to broader audiences through public learning experiences or integrating new professional qualifications.

Keywords: *Centres of Vocational Excellence; green education; green skills; multi-country partnership; public-private partnership*
JEL Classification: I2, P36, P46

1. WHY GREEN SKILLS AND SUSTAINABILITY EDUCATION?

Over 55% of the world's population currently resides in urban areas, and this figure is projected to rise to nearly 70% by 2050 (United Nations, 2018). This rapid urbanisation greatly impacts our environment, emphasising the urgency of transforming urban environments to be greener and more sustainable. Green education is critical in addressing these environmental challenges. It equips individuals with the skills necessary to foster innovation in sustainable practices. By promoting green education, we can better manage resources, reduce pollution, and create healthier urban environments. However, to maximise these benefits, there is a growing need for green skills - specialised knowledge and abilities related to sustainable practices, environmental management, and urban planning. Developing green skills ensures that the creation and maintenance of these spaces are efficient, sustainable, and resilient, contributing to the overall quality of urban life and addressing the challenges of climate change.

2. THE EUROPEAN PLATFORM FOR URBAN GREENING

The European Platform for Urban Greening (EPLUG) is a good example of how collaborative efforts can enhance green skills and sustainability education. It serves as a Centre of Vocational Excellence (CoVE). Centres of Vocational Excellence are networks of partners that develop local "skills ecosystems" to provide high quality vocational skills to young people and adults, and contribute to regional development, innovation, industrial clusters, smart specialisation strategies and social inclusion (European Commission, 2020).

In the period 2021-2027, the Erasmus+ programme is allocating an indicative budget of €400 million to finance the creation of and the collaboration among CoVEs, signifying a strong commitment to vocational training excellence across Europe (European Commission, 2021). Projects covering diverse sectors such as: hydrogen technologies, offshore energy, climate smart agriculture, construction, and tourism, biodiversity, 3D printing, battery sector and data management.

EPLUG brings together partners from Romania, the Netherlands, Finland, Denmark, Spain, and Czechia. These partners include vocational education and training providers, NGOs, companies, European associations, and public authorities. This diverse coalition enriches the educational experience by sharing resources and best practices, creating a cohesive approach to sustainability.

EPLUG project aims to: a) increase knowledge and skills for climate adaptation, biodiversity, and well-being in urban environments; b) strengthen the collaboration within the knowledge triangle (VET, research, and business) to develop high-quality, adaptable curricula; c) promote the proactive role of VET in local and regional development by integrating scientific findings into practical training for green professionals (EPLUG, 2024).

3. METHODOLOGY

The article examines a) the added value of collaboration at national, regional, and European levels; and b) examples of green skills and education initiatives. An (online) semi-structured survey was sent to the members of the EPLUG project. The survey was divided in six sections: "General information" with two questions, "Involvement in the EPLUG project" with two questions, "Collaboration and partnership" with four questions, "Green Skills and Sustainability" with four questions, "Impact and outcomes" with 3 questions and "Future directions" with four questions.

Eight respondents (further named R1, R2…R8) filled in the survey. Four of them represent vocational education and training providers, two of them are NGOs, one is a company and one is a European association. Four of them are from the Netherlands, two from Romania, one from Finland and one from Denmark. Six of them joined the project since the beginning of the project (four years), one for three years and half and the last one for three years.

4. ANALYSIS

"Involvement in the EPLUG project" section

Six of the respondents joined the project since the beginning of the project (four years), one for three years and half and the last one for three years.

The responses to *"Can you describe the primary goals and objectives of your organization within the EPLUG framework?"* reveal a diverse yet interconnected set of priorities across the different types of organisations. While each approaches the framework with its unique context, several common themes emerge, particularly around education, innovation, sustainability, and international collaboration.

The NGOs, R1 and R2, focus on systemic changes and international collaboration. R1 aims to transform Romania's VET sector by introducing the EQF level 3 Urban Gardener qualification, enhancing agricultural education. R2 seeks to improve Dutch VET programs by testing public-private partnerships on an international scale and learning from other European countries' approaches, including the Centers of Vocational Excellence (CoVEs).

VET providers (R3, R4, R5, and R8) prioritise curriculum development, teacher training, and making green education more attractive. R3 focuses on creating a European network to improve environmental sustainability, while R4 aims to develop high-quality curricula for urban green spaces, fostering collaboration between VET institutions, research, and businesses. R5 and R8 focus on hands-on training, ensuring students and professionals gain practical green skills.

R6, a company, focuses on developing Romania's green sector by creating educational programs and infrastructure to support lifelong learning and professional practice. R7, a European association, targets workforce development

at lower EQF levels, aiming to create opportunities for entry-level workers in the green sector across Europe. *"Collaboration and partnership" section*

The responses to *"How would you describe the level of collaboration between the different partners in EPLUG?"* offer a nuanced picture of how various organisations perceive their working relationships. Overall, there is a general sense of positive collaboration, though the depth and quality of interaction vary across partners and regions, reflecting the diverse nature of the partnerships involved.

R1 and R2, provide slightly different insights into their experiences of collaboration. R1 emphasises a practical aspect of the partnership, noting that their organisation shares both VET expertise and technical knowledge, which has been well-received by partner companies. R2, meanwhile, offers a more strategic overview of collaboration, describing it as "high and layered." They highlight the commitment of partners, attributing the strength of collaboration to the focus on addressing real needs in the regional skills ecosystems. R2 also points out the importance of allowing for diversification between regions and types of partners, with subgroups forming around specific topics relevant to each group. This suggests that collaboration is structured in a way that fosters focused, relevant cooperation, rather than attempting a one-size-fits-all approach.

R3, R4, R5, and R8, reflect a range of experiences, from highly successful collaborations to areas that still need improvement. R3, after four years of participation in EPLUG, notes that a strong network has been built, with each organisation's strengths and expertise becoming clear over time. This indicates a level of maturity in the collaboration, where roles and contributions are well-understood, allowing for more effective partnerships.

R4, in contrast, provides a more structured response, underscoring the establishment of six CoVEs connected through a unified platform. This response highlights both the high level of collaboration within each regional CoVE and across borders on the European platform. The creation of CoVEs suggests a coordinated effort among partners, resulting in a sturdy and well-organised partnership framework. This response illustrates the formalised and institutionalised nature of collaboration within the EPLUG framework, particularly when it comes to creating cross-regional partnerships that operate cohesively.

R5 notes that while collaboration with some partners has been good and fruitful, there has been little interaction with others. This suggests that while some partnerships are thriving, there are still gaps in the collaboration network, possibly due to differing priorities, communication issues, or geographical challenges.

R8 shares a similarly mixed experience, describing collaboration as "complex". They acknowledge that collaboration with some countries has been excellent, while with others it needs improvement. This reflects the challenges inherent in cross-border cooperation, where differences in national contexts,

institutional priorities, and communication can sometimes impede the level of partnership desired.

R6 describes the collaboration as one of the most rewarding professional experiences of their career. This suggests that the open and helpful nature of the partners has fostered a positive working environment, where different stakeholders contribute meaningfully to shared goals. For R6, the sense of cooperation and openness among partners has been particularly beneficial, reflecting the rewarding nature of the collaboration within the EPLUG framework from a business perspective.

R7 provides a generally positive assessment of collaboration. They note that each partner brings a unique set of skills, expertise, and perspectives, which creates a productive environment for cooperation.

The responses to *"What are the key benefits you have observed from collaborating with partners at national, regional, and European levels?"* highlight the multifaceted advantages of cooperation within the EPLUG framework. These benefits range from curriculum development and knowledge transfer to the strengthening of educational programs and fostering innovation across the green sector.

For R1 and R2, the benefits of collaboration reflect a blend of educational innovation and strategic learning from international partners. R1 highlights the key outcomes of their involvement, which include generating valuable insights for curriculum development and increasing the overall attractiveness of VET. The collaboration has also spurred innovation in urban greening, a sector critical to sustainability efforts, and has led to greater recognition from both the market and government entities. Furthermore, their research has been validated through this collaborative framework, enhancing the credibility of their educational innovations.

R2 focuses on the insights gained from learning about the diverse local contexts of the various participating countries. A significant benefit for them is seeing how the concept of CoVEs is implemented in different national contexts, each with unique focus areas and varying roles for the partners involved. This diversity has provided R2 with a deeper understanding of how regional CoVEs can be supported by the broader European platform, reflecting the principle of "think global/European, act local." The ability to adapt global or European-level strategies to local conditions has proven to be a key advantage of this collaboration, allowing them to tailor their activities effectively while benefiting from the overarching framework of EPLUG.

R3, R4, R5, and R8, emphasise the tangible outcomes of cross-border knowledge exchange and innovation. R3 underscores the value of knowledge transfer, which has facilitated international mobility for both students and teachers. They also note the benefit of having access to a robust network for addressing questions related to VET education and innovations in the green sector.

R4 takes a more comprehensive view of the benefits, focusing on several key areas. One major advantage is the boost to educational innovation, which extends across borders and enhances the quality of green education throughout Europe. They also note the strengthening of applied research at the VET level, an important component of vocational education that ties academic knowledge directly to practical, real-world applications. Collaboration has strengthened their partnerships with stakeholders in the green sector at the regional level, leading to a more cohesive "green education column" that spans from kindergarten through to PhD levels. This has allowed for the creation of more up-to-date and attractive training offers that are better aligned with the needs of the green sector in various EU regions. Beyond the educational benefits, R4 also sees their collaboration as a meaningful contribution to the broader Green Transition in Europe, highlighting the role that VET can play in addressing environmental challenges on a continental scale.

While R5 simply expresses the need for new ideas, R6 and R7 describe the more personal and professional benefits of collaboration. R6 notes the value of knowledge transfer and professional exchange but also highlights cultural and personal enrichment as key benefits of working with partners across different regions. This suggests that beyond the technical and educational gains, the collaboration fosters a deeper understanding of different cultures and perspectives, enriching the overall experience for participants.

R7 echoes these sentiments, emphasising the expansion of their network, which has provided new inspiration and access to shared experiences. The diversity of knowledge and expertise among the partners has broadened their understanding of VET and green sector innovations, contributing to a more well-rounded and enriched partnership.

R8 highlights the faster exchange of skills and knowledge as a key benefit of the collaboration. The speed at which new skills and innovations are shared among partners has helped streamline the development of educational programs and training initiatives, ensuring that they remain relevant and up-to-date in a rapidly changing green sector.

The responses to *"Can you provide specific examples of successful collaborative efforts within EPLUG?"* reveal a wide range of impactful projects and initiatives that have arisen from this partnership, demonstrating the depth and diversity of the collaboration. These examples span curriculum development, innovative educational tools, cross-border projects, and spinoff initiatives that have led to significant advancements in the green sector, vocational education, and sustainability efforts.

For R1, a key success has been the development of two major projects: the Atlas of Professions and Competences in Urban Greening and the creation of a new EQF level 3 qualification called Urban Gardner. These projects exemplify the practical impact of collaboration within EPLUG, as they provide essential

resources for educators and professionals in the green sector. The new qualification opens pathways for students and workers to acquire valuable skills in urban greening, an area critical to sustainable urban development. Both initiatives highlight how collaboration within the EPLUG network has directly contributed to curriculum innovation and professional development in this emerging field.

R2 offers a rich array of successful examples, starting with the International Urban Greening Weeks, which bring together students, teachers, and experts to tackle real-life challenges. These intensive weeks have proven to be highly successful in promoting hands-on learning and knowledge exchange. Another success is the creation of Metro Maps, which help communicate what courses are available in each region at various EQF levels. R2 also highlights the value of showcases that facilitate knowledge transfer across regions, with Urban Greening topics being presented online. Additionally, the innovation deep dives and hackathons have provided an avenue for deep exploration of specific topics, leading to actionable plans for further collaboration. The spinoff projects have been particularly impactful, generating additional funding and resources beyond the initial Erasmus grant, with projects like BARCOVE, GreenVEU, and Breathe Green leading to applied research, recruitment initiatives, and the development of green facades across EPLUG countries. These examples illustrate how collaboration within EPLUG has not only strengthened education but also driven innovation and secured significant funding to expand these efforts.

R3 echoes the success of the International Urban Greening Week and further highlights the development of the biodiversity course (EQF 5), along with projects like BARCOVE and Breathe Green.

R4 emphasises the reinvention of green education for the 21st century, a process fuelled by cross-border collaboration and the integration of new technologies like virtual reality (VR). By adapting the curriculum to the latest advances in the sector, EPLUG partners have helped redefine the scope and audience of green education, extending its reach from elementary school to professional qualifications. One of the standout collaborative efforts for R4 isthe inaugural International Urban Greening Week. R4 also points to the success of challenge-based cooperative learning experiences, which have helped vocational educators, students, and industry professionals acquire new knowledge and apply it in dynamic environments. Moreover, spinoff projects like BARCOVE and GreenVEU have been particularly successful in promoting applied research and recruitment in the green sector. R4's description of collaborative projects like the Deep Dives into urban water management illustrates how these efforts have resulted in valuable white papers and practical solutions that benefit the green sector across Europe.

R5 focuses on two successful collaborative efforts: the Urban Greening Week and the development of the Wonda platform, both of which have helped facilitate collaboration and learning within the green sector. R6 highlights the success of spinoff projects such as Breathe Green, which focuses on vertical green structures, and the development of a virtual course dedicated to vertical green education. R7 underscores the success of designing curricula for lower EQF levels (1 and 2) in collaboration with other partners. This effort has provided a foundation for training individuals at the entry level, ensuring that they are equipped with the necessary skills to participate in the green workforce. This is a prime example of how collaboration within EPLUG has helped address skill gaps at the lower levels of vocational education. R8 points to the development of the biodiversity course, where collaboration with partners brought in a wealth of expertise. This course has been instrumental in advancing education in the biodiversity field and showcases how expertise from multiple sources can come together to create high-quality, specialised curricula.

The responses to *"What challenges have you encountered in collaborating with partners from different countries and sectors? How were these challenges addressed?"* reveal a variety of obstacles that arose during the EPLUG project. These challenges include cultural differences, language barriers, differing expectations, and logistical hurdles. However, the responses also show how these issues were addressed through proactive communication, trust-building, and adaptability.

R1 faced challenges with the administrative burden of EU project paperwork, a common issue in EU-funded initiatives. R2 struggled to align industry and education, which operate at different speeds and cultures across countries. To overcome this, they increased in-person meetings for better communication and trust-building. They also addressed misunderstandings about CoVEs by focusing on regional needs and clarifying the flexibility in partner activities. R3 encountered language barriers and differences in VET programs, resolving them by fostering patience and open dialogue to build mutual understanding.

R4 noted similar language issues, along with burdensome paperwork and travel restrictions due to COVID-19. Differences in national education systems and changes in partnerships also created challenges. R5 mentioned disparities in collaboration, where some partners worked closely while others did not have the same opportunity to engage. R6 highlighted the challenge of busy partners, addressing it by postponing activities to accommodate their schedules. R7 identified differing perspectives between schools and companies, which requires ongoing dialogue to align goals. R8 had "sleeping partners" who were not actively contributing, but their coordinator activated them, even replacing one to improve collaboration. Strong leadership was key to addressing participation issues.

"Green Skills and Sustainability" section

The responses to *"How has the EPLUG project contributed to enhancing green skills and sustainability education in your country/organisation?"* highlight the significant impact the initiative has had across sectors. The contributions range from curriculum development and teacher training to broader institutional changes and heightened awareness among policymakers and industry stakeholders.

R1 explains that, through EPLUG, they developed a new curriculum titled Education for Biodiversity in Urban Areas, alongside a handbook for both teachers and students. This curriculum targets K12 students and not just vocational education, covering around 40 hours of classroom time. Impressively, the curriculum has already reached over 30,000 students across Romania, demonstrating its broad impact. As EPLUG draws to a close, several companies have expressed interest in supporting the continuation of the curriculum for at least two more years, reflecting its lasting influence on green education in the country.

In collaboration with schools and companies, R2's organisation updated the learning outcomes for future urban gardeners, ensuring they are prepared for the challenges ahead. They also trained teachers and developed new courses. The project not only improved the skillsets of students but also raised awareness among policymakers and government stakeholders about the importance of Urban Greening and sustainability. However, R2 also acknowledges that there isstill room for improvement, particularly in making the trade of urban greening itself more sustainable and refining the definition of what green skills entail in practice.

R4 refers back to the previous response, which discussed the broad reinvention of green education for the 21st century, the integration of new technologies, and curriculum development. This suggests that EPLUG has played a key role in modernising and adapting green education to contemporary needs in their country or organisation.

R5 highlights that EPLUG has raised their profile nationally within the green industry, identifying them as a developing organisation in this sector. This reflects the project's role in bringing visibility and recognition to institutions working to promote green skills and sustainability.

R6 emphasises the institutional impact of EPLUG, noting that the project has provided an opportunity to work on developing the legislative and institutional framework necessary to support educational programs in the green sector. This is a significant contribution, as it addresses the systemic and regulatory foundations required to sustain green education in the long term.

R7 mentions that they have been able to provide training and expand their network of trainers thanks to their collaboration with EPLUG partners. This enhanced network allows them to draw from a wider pool of expertise, ensuring

that their green skills and sustainability training programs are more effective and far-reaching.

R8 reports that EPLUG has enabled them to improve their curriculum and create new courses specifically designed for companies. This shows how the project has not only impacted formal education but also extended its benefits to corporate training, helping companies upskill their workforce in green skills and sustainability practices.

The responses to *"Can you provide examples of specific projects or initiatives that have been successful in improving green skills and education?"* highlight a wide variety of successful endeavours, ranging from curriculum development to teacher training and hands-on learning experiences. These initiatives have helped improve education and awareness around green skills in several key areas, such as biodiversity, urban greening, and sustainable practices.

R1 directs attention to a specific project titled "Education for Biodiversity in Urban Areas", which provides a comprehensive resource for educators and learners, focusing on biodiversity in urban environments, which is crucial for raising awareness and practical knowledge in this field.

R2 highlights several impactful initiatives that have successfully advanced green education. The International Urban Greening Weeks are mentioned as one of the standout projects. Also, the development of white papers on critical topics like water management, measuring biodiversity in cities, and building nature-inclusive environments has provided valuable research and practical guidance for educators and policymakers. R2 also underscores the importance of teacher trainings and the creation of specific courses on subjects like biodiversity, the food soil web, and tree maintenance.

R3 points to specific examples like the Education Roof at Yuverta and field trips to Wonderwoods, illustrating hands-on, experiential learning opportunities that have enriched green education. These projects provide tangible experiences for students, allowing them to engage directly with green environments and practices.

R5 mentions the Wonda platform and the Urban Greening Week as key initiatives that have positively impacted green skills education. The Wonda platform likely serves as a digital resource or educational tool, while the Urban Greening Week provides an immersive, hands-on learning experience for participants.

R6 discusses the introduction of the Urban Gardener occupation within the COR code (the Romanian equivalent to ESCO at the European level) and the development of a professional standard for Urban Gardener.

R8 highlights their efforts in sending teachers abroad for various courses and having students participate in competitions organised by EPLUG partners. These opportunities for international exchange and competition have allowed teachers and students to gain new skills and experiences, enriching their understanding of green education and sustainability.

The responses to *"How have new technologies been integrated into green curricula as part of the EPLUG efforts?"* demonstrate the diverse and innovative ways that technology is enhancing green education. From virtual reality (VR) to AI and digital platforms, these technologies are being used to make learning more interactive, immersive, and aligned with real-world applications.

R1 highlights the integration of a Learning Management System (LMS) platform, Lerero, to deliver curriculum. This platform enables teachers to provide outdoor education on biodiversity while using digital tools to enhance the learning experience. The LMS allows for a flexible, location-based approach to teaching, enabling educators to take the classroom into natural environments.

R2 points to an industry trend of increased crossovers between green skills and other sectors like construction, water management, installation technology, and sensoring. This has led to several concrete projects, including the development of smart green roofs, vertical green facades, smart irrigation systems, and the use of electric machinery. AI technology has been employed for monitoring biodiversity, showing how digital solutions are becoming integral to green education and professional practices. R3 also mentions the integration of sensoring, green roofs, and green facades into the curriculum, reflecting how these technologies are being used in practical training and education to enhance the learning of sustainable urban greening practices.

R4 provides examples of multiple technological innovations:

a) the Virtual Green Academy which allows users to explore green environments using VR headsets, mobile phones, or computers. This immersive experience helps students and professionals engage with green spaces in a highly interactive way;

b) the Virtual Platform for Vertical Green which offers a similar virtual journey to learn about the design, construction, maintenance, and benefits of vertical green structures; c) Biodiversity Podcasts which offer a unique form of micro- learning, allowing landscapers, gardeners, and other green sector workers to learn on-the-go. This is an innovative way to provide continuous professional development outside of traditional classroom settings.

R5 points to the Wonda VR platform as a key technological integration, suggesting that virtual reality is playing a significant role in making green education more immersive and hands-on.

R6 acknowledges that integrating new technologies is still a work in progress. However, they are working on developing 3D courses and have applied for national funding to acquire cutting-edge equipment that has never been used before in Romania's green sector. R7 mentions the development of an immersive training hub, which serves as an innovative way to learn and experience green skills. R8 shares that they have conducted applied research with students using virtual glasses, providing students with an interactive way to

engage in research and green education.

The responses to *"In what ways has EPLUG expanded green education to broader audiences (e.g., public learning experiences, new professional qualifications)?"* demonstrate a variety of efforts aimed at reaching not just students and professionals, but also the general public, policymakers, and international stakeholders. These initiatives highlight the diverse approaches taken to make green education more accessible and impactful.

R2 provides several examples of successful efforts across different countries. In Romania, a skills atlas was developed, and the profession of urban greener was created, providing a formal pathway for training in this field. They also produced various white papers on topics like biodiversity and urban greening, which help inform a broader audience about the importance of these issues. Additionally, R2 highlights the creation of a YouTube channel with showcases on urban greening, making these resources widely available to the public. In Finland, Ahlman Edu's campus was awarded a Green Flag award based on their work within EPLUG, further elevating public recognition of sustainability efforts. The Czech Republic partners developed Parc 360, which is open to the public and showcases urban greening solutions. In Denmark, several lifelong learning (LLL) courses were developed and have been adopted by professionals outside the project partner organisations. To further engage a wider audience, the metroline concept was developed to demonstrate which skills are needed for a future-proof urban greening sector. This was tested during the annual Green Days in Finland. Lastly, in Spain, over 70 municipalities participated in technical trainings on greening cities, providing policy makers with knowledge about the importance and benefits of urban greening.

R3 mentions collaborations with schools and Nationaal Dakenplan (a national roof plan), which helped integrate green skills and awareness of sustainable roof practices into broader educational and industry contexts.

R4 adds to previous examples, discussing how partners in the Czech Republic raised awareness about biodiversity and urban greening through practical demonstrations in local towns like Pyšely and Prague. The Virtual Green Academy in Denmark offers an interactive experience open to students, professionals, and the public, expanding access to green education. In collaboration with the Mayor of Aarhus, a hands-on biodiversity course was developed for the public, engaging citizens in fun and educational activities about climate adaptation and biodiversity. Other initiatives, such as the Vertical Green digital platform in Finland and community-engaged projects in Tampere, further illustrate how green education is being expanded to include public participation in urban greening efforts. R4 also describes the role of IKEA's Biodiversity Garden in Bucharest, initially designed for employees but now open to the public, where high school students monitor and maintain the garden. This project provides an immersive learning environment for the public to engage

with biodiversity. In Spain, urban greening practices in Valencia's Central Park are being promoted through plant species identification knowledge transfer, helping raise awareness among visitors and policymakers.

R6 discusses the development of an educational program focused on biodiversity in urban environments for students aged 3 to 18 years old. In the second year, 19,000 students across Romania were enrolled in this program, demonstrating a significant reach in green education.

R8 explains that green education was offered as part of both formal education and lifelong learning programs to all interested individuals, making it widely accessible to those looking to improve their knowledge and skills in sustainability.

"Impact and outcomes" section

The responses to *"What are the most significant impacts of the EPLUG project on your organisation and the broader community?"* highlight a range of transformative outcomes, from the introduction of new qualifications and curricula to enhanced collaboration and expanded networks.

For R1, the most significant impact has been the introduction of a new VET qualification called Urban Gardener and the development of a K12 curriculum on Education for Biodiversity in Urban Areas. These initiatives have directly improved the educational offerings in Romania, broadening access to green education for both vocational students and younger learners in schools, thus promoting sustainability and environmental awareness from an early age.

R2 notes that the biggest impact for their organisation has been learning how to effectively execute public-private collaboration in VET within an international context. Additionally, they have gained extensive insight into the role of CoVEs in transforming sector-wide collaboration among stakeholders. They are now actively sharing these lessons within the Katapult network of 550 public-private partnerships and the Green Pact network in the Netherlands, as well as through the Community of Practice of CoVEs. The knowledge they've gathered is also being shared internationally, with requests for keynotes from VET organisations in countries such as Switzerland, Norway, Ireland, and Australia, demonstrating the broad impact of their EPLUG experiences.

R4 offers a comprehensive list of recent impacts, showcasing the breadth of EPLUG's influence. Highlights include the promotion of urban greening during EU Green Week 2023 in Brussels, and significant outreach and educational initiatives, such as the introduction of 300 students to green professions during an event in Denmark. In Finland, several hands-on initiatives have been launched, including students working on the Soil Food Web Method to improve the soil at the Tampere Wood Nursery, and traditional mowing techniques being used at the Piikahaka meadow. The Working Landscapes of the Future project aims to transform over 3,000 industrial estates across the Netherlands into sustainable

environments, further highlighting the project's broad-reaching goals. Other initiatives include the Green Roofs Qualification in the Netherlands and the IKEA Biodiversity Garden in Bucharest, which is open to the public and supported by high school students. These examples illustrate the diverse and far- reaching impact EPLUG has had on green education and urban greening efforts across multiple countries.

For R5, the most significant impact has been the opportunity to conduct experiments and trainings that would not have happened without EPLUG. This reflects the project's role in providing resources and support for innovative educational and practical training initiatives in green skills.

R6 emphasises the development of a framework for green space management as the most significant outcome. This framework will allow for improved management of green spaces in Romania, particularly within the organisation's own projects, but it will also benefit Romanian cities more broadly by setting standards for sustainable urban greening practices.

R7 states that the most significant impact has been the expansion of their network and the opportunity to spread their message to a broader audience. R8 highlights the development of teachers and the collaboration with stakeholders involved in CoVE as the most notable impact. This has not only strengthened their educational programs but has also improved relationships with key partners in the green sector, contributing to long-term success in green education.

The responses to *"How have students, trainees, or employees benefited from the green skills and education initiatives under EPLUG?"* demonstrate the wide-ranging positive effects of the project. From increased access to new learning opportunities to the development of cutting-edge skills, the initiatives have provided significant advantages to participants across multiple sectors.

R1 highlights that over 30,000 people have directly benefited from the green education initiatives.

R2 describes several specific ways in which students, trainees, and employees have benefited. For students, EPLUG provided opportunities for short-term international mobility, allowing those who cannot participate in longer programs due to age, caregiving responsibilities, or financial constraints to still gain international experience. A memorable example from LCTN in Romania shows that once students realised they could participate in the International Urban Greening Week, their motivation to learn English significantly increased. This type of international exposure has helped to raise enthusiasm and interest in green education. Additionally, tailored courses developed through EPLUG have allowed students to access programs not available in their own countries, such as the collaboration between Romania and the Green Academy. For employees, lifelong learning courses developed have provided valuable upskilling opportunities, while participation in deep dives and site visits during project meetings has enhanced their professional development.

Some employees even used these opportunities for their own career growth, underscoring the project's wide-ranging benefits.

R3 emphasises the use of the design thinking method in hackathons and during the International Urban Greening Week. This approach has allowed students and teachers to work in innovative ways on solutions for future challenges, and the method has now been integrated into regular educational programs. This is an example of how EPLUG has brought innovative learning practices into mainstream education, encouraging creative problem-solving and collaboration.

R4 outlines the various ways students, trainees, and employees have benefited, including through mobility learning, which allows participants to gain international experience and exposure. Knowledge exchange and innovation sessions, like the Innovation Deep Dives, have helped participants develop new skills and ideas. New learning tools, such as the Virtual Platform for Vertical Green and Podcasts for micro-learning, have made education more accessible, offering flexible and on-the-go learning options. Additionally, shared, uniform learning outcomes across the European Platform for green skills and new courses and professional qualifications have provided standardised pathways for learning and professional growth in the green sector.

R5 reports that over 500 participants in Finland alone have benefited from EPLUG's initiatives, further demonstrating the broad impact of the project on education and professional development in green skills.

R7 explains that their members have gained a better overview and more knowledge about where they can study different green skills.

R8 highlights that participants have gained access to the newest knowledge in the field and have had the opportunity to travel abroad, where they experienced new learning environments and broadened their perspectives. This exposure to cutting-edge knowledge and international experiences has been akey benefit for participants, enhancing their skills and understanding of global green practices.

Responses to *"Can you share any success stories or case studies that highlight the positive outcomes of EPLUG?"* demonstrate a variety of successful initiatives and impactful collaborations across different countries and sectors.

R1 and R6 refer to the "Education for Biodiversity in Urban Areas" project. R2, 3, 4 suggests referring to examples mentioned in previous answers and directs attention to the EPLUG's website, where case studies and success stories are available. R5 mentions several stories, including LUMOtarhuri, Wonda, and Soil Food Web experiments. The Soil Food Web experiments stand out as a key example of how EPLUG has promoted hands-on learning and experimentation in environmental management, particularly in the green sector.

R7 points to the six CoVEs as a major success story. These centres have become hubs of expertise in green education, playing a critical role in promoting

sustainability and green skills across Europe. R8 shares the success story of CoVE Denmark, which has gained 15 new active partners at the national level.

"Future directions" section

The responses to *"What opportunities do you see for the future growth and improvement of the EPLUG project?"* provide valuable insights into how the project can continue to evolve and expand, even beyond its official timeline. Key themes include sustainability, expanding partnerships, integrating new sectors, and securing additional funding.

R1 highlights that even though EPLUG is ending on October 31, 2024, there are significant opportunities in its sustainability phase.

R2 emphasises the exciting transformation of EPLUG from a project into a movement, driven by various spin-off projects and a proposal for a scale-up project that includes new partners and countries. This evolution showcases the potential for EPLUG to continue expanding its reach and impact. R2 also notes that many stakeholders are eager to be involved with the regional CoVEs, even without formal project funding, because these centres provide a platform for discussing the latest advancements in Urban Greening. For example, in Denmark, 11 organisations are involved in CoVE activities without direct funding, demonstrating strong engagement and interest from stakeholders.

R3 suggests that future growth could come from practicing what EPLUG preaches by integrating topics such as water, health, and green spaces into amore cohesive framework.

R4 focuses on the need to secure new funding sources to ensure the sustainability of regional CoVEs. They mention that they have already secured multiple sources of funding from both private and public bodies, which is essential for keeping the project's momentum. R4 also highlights the importance of scaling up with new partners and regional CoVEs in additional countries. Some notable partnership successes include plans for a digital knowledge hub for Urban Greening in Europe, the involvement of the Church of Denmark, and the establishment of Green Cities 2030+ Centre in the Czech Republic. Over 50 entities are actively collaborating with EPLUG partners in Spain, and there are plans for a new Urban Greening Pavilion in Valencia, indicating that the platform is actively growing its network and capacity.

R5 sees future opportunities in expanding collaboration with partners and conducting more experiments. This suggests a continued emphasis on innovation and practical applications of green skills through hands-on projects.

R6 envisions growth through the development of similar initiatives in other parts of Romania, as well as collaborating with new countries not currently involved in EPLUG.

R7 emphasises the need to expand the network and involve more partners inthe project. This would allow EPLUG to bring in new ideas and expertise,

ensuring the project remains dynamic and responsive to the evolving needs of the green sector.

R8 stresses the importance of strengthening collaboration with different stakeholders by initiating follow-up projects. This approach would help maintain relationships and build on the successes of EPLUG, ensuring that the project's work continues in meaningful ways.

The responses to *"How can the EPLUG model be replicated or adapted in other regions or contexts?"* suggest that while there is no strict "EPLUG model," key principles and processes can be adapted to fit the unique needs of different regions and sectors. Flexibility, collaboration, and a focus on shared goals are seen as essential for success.

R1 emphasises that only the CoVE principles can be adapted in other contexts, and they do not believe there is a singular "EPLUG model" that can be directly replicated. This response highlights the idea that the core principles of collaboration and excellence in vocational education are adaptable, but each region or sector may need to develop its own approach.

R2 reinforces the importance of focusing on the process that EPLUG partners went through rather than trying to replicate a fixed model. They suggest that rather than providing a rigid blueprint, the best approach would be to coach partners in other regions by sharing examples and tools used in EPLUG while allowing them to develop their own processes that suit their specific context.

R3 views the EPLUG approach as a toolbox with practical methods that can be adjusted to fit any context. This metaphor suggests that the project's core principles and strategies can be selectively applied or modified depending on the local environment, making it a versatile framework for different regions.

R4 suggests focusing first on the content, rather than governance, and encourages finding a shared dream with stakeholders. They recommend taking small steps, building trust, and allowing time for the process to unfold. This advice reflects the importance of collaboration, patience, and long-term commitment when adapting the EPLUG principles to new regions or sectors.

R6 highlights the transfer of skills, the development of a national framework, and the importance of support from all partners as key elements for replicating or adapting the EPLUG model. This response suggests that creating an organised framework, supported by all stakeholders, is essential for successful adaptation.

R7 believes that successful adaptation requires inspiring leadership, sustainable involvement, and a systematic approach. This suggests that strong leadership, long-term commitment, and structured planning are necessary for replicating the EPLUG model in other contexts.

R8 suggests that others can use the existing EPLUG platform or contact the CoVE in each country for guidance on how to adapt the model. This indicates

that there are existing resources and networks that can help guide other regions in implementing similar initiatives.

The responses to *"What recommendations do you have for policymakers, educators, and stakeholders to further advance green skills and sustainability education?"* emphasise several key themes, including continued investment in CoVEs, collaboration, practical action, and the need for scaling successful initiatives.

R2 offers a detailed set of recommendations, starting with the need to continue investing in the CoVE approach and making more funding available for these initiatives. They stress the importance of connecting national CoVE initiatives (funded through mechanisms like the Recovery and Resilience Facility) with Erasmus CoVEs to create synergies and avoid duplicating efforts. R2 also advocates for clarity in the definition of CoVEs, ensuring that they involve both industry and education partners. They caution against initiatives that call themselves CoVEs but lack the crucial public-private partnership element. R2 highlights the importance of upscaling CoVEs, recommending that those which have proven to be financially sustainable should receive additional funding to expand. This would help these CoVEs reach more students, teachers, and small and medium-sized enterprises (SMEs), making a broader impact and establishing them as world-class reference points.

R3 takes a more straightforward approach, recommending that stakeholders should just do it and focus on action rather than endless discussions. R4 points out that despite the best intentions, funding is crucial for creating any real impact. They suggest moving beyond theoretical discussions by engaging in face-to-face dialogue with stakeholders, emphasising the importance of personal connection in fostering collaboration. R4 also recommends supporting and facilitating mobility learning and applied research in VET, which have proven to be highly effective in green skills education. R5 advocates for piloting initiatives, emphasising that there are no results without embarking on a journey. This recommendation underscores the value of experimentation and testing new ideas as a means of advancing green skills and education.

R6 highlights the inevitability of the green sector's growth and poses a critical question: can action be taken to speed up this development and improve the quality of life in cities sooner rather than later? This recommendation is a call to act proactively in the green sector, recognising the urgency of implementing green education and sustainability practices to meet the needs of urban areas.

R7 takes a more philosophical stance, suggesting that to adapt to the necessary changes, individuals must start by transforming their own thinking and habits. This reflects the importance of personal responsibility and mindset shifts in driving the broader adoption of green skills and sustainability.

R8 emphasises the need for scale-up projects to make the green skills and sustainability initiatives more sustainable. R8 recommends that stakeholders continue the good work already started by building on established projects and ensuring their long-term success.

The responses to *"Do you have any additional comments or insights that you would like to share regarding the EPLUG project and its impact?"* highlight its impact, challenges, and the strong sense of community that has developed within the project.

R2 provides a thoughtful reflection on the importance of focusing on impact, rather than strictly adhering to what is outlined in project applications. They explain that EPLUG allowed for a certain degree of flexibility, enabling the partners to focus on the specific needs of each regional skills ecosystem. This freedom was crucial for adapting to changes and ensuring the project met real-world demands. R2 also points out a challenge with the rigid format of some project applications, which can sometimes limit innovation. They note that while project plans are made years in advance, rapid developments in the field can render some initial ideas outdated by the time the project is underway.

R3 reflects on the project as a "beautiful learning period" for themselves, their organisation, and the wider EPLUG community, affectionately referred to as the "Eplugfamily." They acknowledge that not everything went perfectly, but they emphasise the value of learning through experience, a key takeaway from their participation in the project. R6 echoes the sentiment of community and collaboration, noting that the EPLUG team has become like a family. This strong sense of connection and mutual support was instrumental in achieving the great results the project produced. R8 describes EPLUG as one of the best CoVE projects and advocates for the EU to allocate more funding to similar initiatives. This comment reinforces the value of EPLUG and its potential for continued growth and success if provided with additional resources.

5.   CONCLUSIONS

In conclusion, the EPLUG project has demonstrated significant added value through collaboration at national, regional, and European levels. Each type of organisation involved—NGOs, VET providers, companies, and associations—has contributed unique perspectives, working together to foster innovation and drive sustainability in the green sector. The collaborative framework has enriched green education through curriculum development, professional training, and real-world initiatives, promoting knowledge exchange and international cooperation. Despite some challenges, such as language barriers and differing expectations, EPLUG partners have successfully navigated these issues through strong leadership, flexibility, and open communication.

The project has also made notable strides in advancing green skills and education, introducing new qualifications, integrating cutting-edge technologies,

and expanding access to green education for diverse audiences. Whether through practical training, virtual platforms, or lifelong learning programs, EPLUG has strengthened the capacity of educators, students, and professionals to engage with sustainability practices. Furthermore, the project's impact extends beyond education, contributing to regional development and workforce improvement across Europe.

Looking forward, there are clear opportunities for EPLUG to continue growing by securing funding, expanding partnerships, and integrating new sectors. The flexibility and adaptability of its approach allow the EPLUG model to be "replicated" in other regions, furthering its positive impact on green skills development and sustainability education.

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BURNOUT IN WORK: FACTORS AND SOLUTIONS

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Abstract
The burnout syndrome appears when emotional, mental, and physical exhaustion is caused by several stress periods that were not properly managed by employees. Burnout affects individuals and organisations as well. On the one hand, employees start to be and feel unmotivated, discouraged, and without chances of doing something well and productive at work. On the other hand, organizations' performances start to suffer in terms of productivity, quality, demission's, and atmosphere. So, both parties can be affected by burnout. Burnout is not identified from the very beginning by organizations, but with the results revealed in terms of key performance indicators. Employees could not be aware at their first burnout of it, but they could understand something about this first bad stage in their life post factum. In this paper a literature review regarding the burnout syndrome is made, revealing factors that conduct to this, and possible solutions to manage it properly.
Keywords: *stress; burnout; factors; employee well-being*
JEL Classification: O15, M12, M54

1. INTRODUCTION

According to the World Health Organization's International Disease Classification (ICD-11), the official compendium of diseases, burnout is more than a simple stress, representing a "syndrome" that occurs from "chronic workplace stress that has not been successfully managed" on time (Berg, 2019). Burnout is accompanied by (Guangguo, Kanjanapathy and Saat, 2024):

- The feeling that you can't do it anymore and you are exhausted;
- Negative and cynical feelings about the workplace;
- Reduced individual efficiency and effectiveness;
- Decreased commitment in what concern social care providers.

Burnout was first described by Herbert Freudenberger in 1974, and since then the term was very highly debated (Heinemann and Heinemann, 2017). If at the

innitial stage, the burnout syndrome was found out in specific field of activity, for professions such doctors, nurses, and social workers, in time, many studies approved that burnout can occur even if in personal activities, not only in the professional one (Berg, 2019; Channawar, 2023; Maslach and Leiter, 2016).

And it is natural for it to be so. Each burnout period begins with the state of stress at work (deadlines, highly quality requirements, pressing work volumes, tense work relationships - individually or together, forming a mix) or with the state of stress in personal life (combining work tasks with home tasks, too many demands of children and other family members, health problems, etc.). These problems, which generate stress, not solved on time, become chronic, and conduct to burnout. Thus, burnout can appear in the professional field, in personal life, or in both fields.

The Masclach and Jackson tridimensional burnout model (Maslach and Jackson, 1981) describes the burnout process through three main dimensions, emphasizing the development and evolution over time:
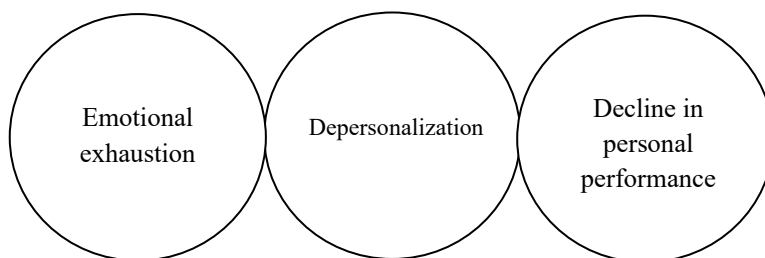
Source: Diaconu (2020)

Figure 1. Burnout main dimensions

Emotional exhaustion appears when somebody is feeling overwhelmed and emotionally drained. It is characterized by a deep feeling of fatigue and emotional exhaustion that appears after constant and overwhelming demands. Those who are emotional exhausted often feel exhausted at the end of the workday, and have difficulties of recovering even after rest periods. These signals can lead to physical symptoms such as headaches, sleep disturbances and decreased immune system (Diaconu, 2020).

Depersonalization appears when somebody develops a detached attitude towards work and people with whom professionally interacts. The main signals for this dimension are: distancy, insensitivity, and negative behaviour towards colleagues, clients, employers, or patients. People are seen as objects or numbers, not as individuals with feelings and specific needs. At the first impression this is a negative behaviour, but the real cause of this is a defensive reaction to previous

intense emotional stress, that protects individuals from further exhaustion (Diaconu, 2020).

The decline of personal performance appears with inefficiency feelings and lack of achievement at work. Employees with a decreased individual performance feel that they are no longer able to perform tasks at the requested level. This leads to a decreased individual motivation and satisfaction. Also, this negative self-perception can lead to a significant reduction in self-esteem and to feelings of uselessness (Diaconu, 2020).

2. WHAT DETERMINES BURNOUT

In different jobs, there are different factors that determine the state of burnout. Burnout in general, however, can be determined by several factors, among which we list: higher objectives that individuals can't manage anymore, perfectionism, too many professional and personal tasks assumed, unrealistic workloads, continuous stress, insufficient/ demotivating wage, etc.

Maslach and Leiter (2016) approve that there are six main factor groups that can determine burnout: high workload, control activities, the reward system, community in general, fairness, and values/ principles (Maslach and Leiter, 2016).

3. HOW EMPLOYEES AND EMPLOYERS ARE AFFECTED

As a result of the appearance of burnout, employees may feel that they are working in a drift, that they cannot concentrate well enough, that they are not connected to their work tasks or to their colleagues and managers, that they are physically and mentally exhausted, etc. Also, due to a weakened immune system as a result of the prolonged stress period, health problems can also occur, including depression and anxiety.

Of course, employers also suffer in the case of employees' burnout states. In these conditions, it is possible not to make themselves understood in front of employees, not to have the work finished on time because employees feel stressed and because they are very slow in carrying out work tasks, they could experience even failures in various projects and to become thus, preoccupied by the lack of motivation and commitment of people.

4. EMPLOYEES' WELL-BEING

Happy employees are the most productive. And we are not referring here to personal happiness, but to that from a professional point of view, for which the employer is responsible. Paying salaries on time, adequate wages, a safe and pleasant working environment, creating working conditions so that people feel relaxed, maintaining a reasonable workload - such factors pave the way for employees' well-being. And employers should not overlook such circumstances that would considerably increase their economic efficiency and productivity. Employees' well-being are also related to issues such as working hours, work

environment, occupational health and safety, staff development, employee services, environmental care and other social incentives, that together, form the system of employees' benefits (Steffensen *et al.,* 2019).

Usually, benefits of the employees' well-being are included and presented in the job offer. Thus, a clear differentiation could be made between pro-well-being employers and those who are neutral in this regard. Attention to such details will make the difference between employers, in the ranking preferred by potential employees of competing companies. Employees being treated with well-being will be motivated, and they will positively evaluate employers (Steffensen *et al.,* 2019).

Today's employers are increasingly aware of the fact that their success and competitiveness depend on the employees' quality (Lunenburg, 2011). And we approve that the quality can be achieved through well-being, that counteracts burnout. In order to gain stability in terms of maintaining employees at work, human resources specialists recommend periodic surveys that can evaluate employees' perceptions regarding their motivation and satisfaction in work (Lunenburg, 2011). In this way, people will feel more comfortable and important to their organizations.

Employers are also obliged by law to respect some human working conditions. These include air quality, lighting, noise and other determinants of the work environment (Dodu, Raboca and Tripon, 2017). Other working conditions that can bring employees' well-being and that can make the difference are: the quality of catering services, the existence of canteens, changing rooms, toilets, rest rooms, classified as social and hygienic working conditions (Dodu, Raboca and Tripon, 2017).

Flexible working hours can bring well-being to employees. If people solve their personal problems and adapt their schedule according to their own needs, they will work more productively and will have greater satisfaction. Employers could benefit at the same time with this benefit, from a greater maintenance of employees who, for personal reasons, could not fit into a standard work schedule.

Good working conditions can be transmitted to the labour market by employees, thus creating a "hook" that could attract new talents to the organization (Armstrong and Taylor, 2020). So, the way employers treat employees can attract new excellent employees. In this way, employees would be considered the most important asset of the organization.

Another idea related to employees' well-being is that burnout is the rephrasing of burnout as an erosion of engagement (Schaufeli, Leiter and Maslach, 2009). The same authors agree the fact that the future of burnout lies in the realization that it constitutes the negative pole of a continuum of employee well-being, of which work engagement constitutes the opposite positive pole (Schaufeli, Leiter and Maslach, 2009).

5. SOLUTIONS

Burnout can be generated by employers, but it is not mandatory. In this case, employers should adopt techniques that prevent stress and burnout. Encouraging employees to take legal breaks during work, small parties organized by the company, short films for fun shown once a week, and other recreational and relaxation activities - can prevent and significantly reduce the number of employees who end up in burnout.

Guangguo, Kanjanapathy and Saat (2024) recommended to companies to promote supportive work environments, to empathize with all their employees and to encourage positive mental health (Guangguo, Kanjanapathy and Saat, 2024). The same authors put accent on equity, leadership, work relationships, work-life balance, safety, and well-being employees at work (Guangguo, Kanjanapathy and Saat, 2024).

6. CONCLUSIONS

Stress that is not managed on time leads to burnout. The three main dimensions of burnout are: emotional exhaustion, depersonalization, and the decline of personal performance. Burnout has negative effects on employees, but also on organizations. Burnout can be both personal and professional, or in both areas together.

Burnout can be managed and ideally it should be prevented through personal and organizational actions.

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DIGITALISATION AND FINANCIAL PERFORMANCE OF BANKING SECTOR: AN EMPIRICAL INVESTIGATION IN EUROPEAN COUNTRIES

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Abstract
In the last two decades, digital technologies have significantly transformed the economic environment, including the banking landscape. The emergence of a wide range of digital financial services has led to accelerating the digitalisation of the banking sector, which is thus experiencing profound structural changes. Digitalisation would allow banks to improve the quality of products and services, develop new products and financial services, reduce operational costs and increase the efficiency of their operations. In this context, our study aims to explore the link between digitalisation and the financial performance of the banking sector. Specifically, we strive to empirically investigate the effects of digitalisation on the financial performance of the banking sector, but also to examine how different forms of digitalisation would influence banking performance. Our empirical analysis is based on panel data, covering a time frame of 10 years (from 2012 to 2021) and 28 member states of the European Union, divided into two subgroups, namely euro zone states and non-eurozone states. In our empirical model, we include a representative indicator for measuring banking

performance and a set of indicators measuring the digitalisation of the banking sector. In addition, we include several control variables, represented by both macroeconomic indicators and indicators specific to the banking sector. The results of the empirical analysis suggest that digitalisation significantly impacts the financial performance of the European banking sector. Our estimates indicate that the number of ATMs and the value of card transactions through points of sales are negatively and significantly associated with the financial performance of the banking sector in the analysed countries. On the other hand, we find that Internet banking has a positive effect on financial performance. Through its content, our research provides new insights into the implications of digitalisation in the banking sector.

1. INTRODUCTION

In the last two decades, digital technology has profoundly changed the economic environment, including banking. The International Monetary Fund points out that the rapid advances made by digital technology have significantly transformed the financial services landscape, creating opportunities and challenges for financial service providers, consumers, and regulators (He *et al*., 2017). From the perspective of the banking sector, digital technology is a catalyst for its development because it contributes to expanding the delivery of financial products and services, introducing new products and financial services, diversifying sources of income, improving risk management, increasing operating efficiency and, thus, improving financial performance. At the same time, the implementation of digital technologies in the activity of banks would contribute to the improvement of financial inclusion, given that through the use of digital channels, a significant increase in customer access to banking products and services can be recorded. On the other hand, the use of digital technologies by banks causes the emergence of new risks, such as cybersecurity threats, data privacy issues and operational vulnerabilities (Chen *et al*., 2023).

Our study aims to empirically examine the link between digitalisation and the financial performance of the banking sector but also to investigate how different forms of digitalisation would influence bank performance. Our empirical analysis is based on panel data covering ten years (from 2012 to 2021) and 28 member states of the European Union, divided into two subgroups, namely euro zone states and non-eurozone states. We opted for these states because we identified a small number of studies focused on the banking sector in European states. Most studies focus on samples specific to emerging economies or developing countries.

To achieve the research objective, our paper is organised as follows: section 2 provides a brief review of the literature, followed by a description of the data, variables and methodology in section 3. The results of the empirical estimates and their discussion are illustrated in section 4. The paper concludes with some conclusions.

2. BRIEF REVIEW OF THE LITERATURE

Digitalisation and its implications on the activity of banks is a topic of great interest, both for researchers and decision-makers. The literature review reveals a considerable number of studies investigating the relationship between the use of digital technology and various aspects of banking activity (such as performance, efficiency, stability and competition), using data from samples of banks and countries from different geographical regions.

From the perspective of the link between the use of digital technologies by the banking sector and its performance, a large number of studies (such as Hernando and Nieto, 2007; El-Chaarani and El-Abiad, 2018; Orji *et al*., 2018; Chindudzi *et al*., 2020; Do *et al*., 2022; Kolawole *et al*., 2024) have focused on exploring the effects of banks' use of various forms of digital technology on their performance. In general, the empirical results indicate a positive impact of the use of digital technologies on the financial performance of banks, expressed by the return on assets (ROA) and the return on equity (ROE).

According to Hernando and Nieto (2007), the adoption of the Internet would contribute to the improvement of banking profitability, expressed by the return on assets (ROA) and return on equity (ROE). Also, the authors point out that the Internet delivery channel would serve as a complementary means of transacting with customers rather than a substitute for physical branches.

The study conducted by El-Chaarani and El-Abiad (2018) argues that Internet banking and automated teller machines would have a positive and significant relationship with the performance of Lebanese banks, measured by ROA and ROE indicators.

Another research (Orji *et al*., 2018) empirically tests the impact of electronic banking innovations (such as ATM transactions, mobile banking transactions, and point of sales transactions) on the performance of banks in Nigeria in the period 2007-2016. Overall, the study results indicate a positive and statistically significant impact of digitalisation on banking performance, expressed by return on asset (ROA).

Using data from the banking sector in 28 EU countries, Del Gaudio *et al.* (2021) empirically analyse the impact of digital technology adoption on bank profitability and risk. The study results show that the adoption and use of digital technologies contribute to the banking sector's stability and the increase of its profitability.

The significant role of digitalisation in increasing the performance of the banking sector is also argued by the study developed by Doran *et al.* (2022), which focuses on Central and Eastern European countries. The authors emphasise the importance that banks must give to digitalisation, both to improve their performance and increase competitiveness, but also to face unexpected future events.

Similarly, the empirical study developed by Do *et al.* (2022) argues the positive impact of digitalisation on the performance of commercial banks in Vietnam. In addition, the authors show that the effects of digitalisation are more significant the larger the size of the bank.

Financial technology is also of great interest to the banking sector because there is empirical evidence showing that investments in financial technology would contribute to reducing costs, increasing employee productivity and improving banks' revenues because more attractive business models are created for customers (Chhaidar *et al*., 2023). Regarding a sample of 23 European banks analysed for the period 2012-2019, the study by Chhaidar *et al.* (2023) claims that investments in financial technology are positively and significantly related to banks' financial performance, expressed by the return on asset (ROA).

A recent study (Kolawole *et al*., 2024) focuses on examining the effect of different forms of digital financial services on the financial performance of listed commercial banks in Nigeria for the period 2012-2022. The authors argue that, in the long term, innovative banking channels (such as Agency Banking, ATM, Internet Banking, Mobile Banking, and POS systems) are positively and statistically significantly associated with the performance of the banks included in the analysis. The authors point out that these channels allow banks to expand their customer base, reduce costs and provide quality services to customers, contributing to increased profitability.

Compared to the previously mentioned studies, another segment of the literature indicates a negative relationship between digitalisation and bank performance. Thus, some authors (such as Vijayalakshmi and Jayalakshmi, 2019; Druhova *et al.,* 2021; Nguyen-Thi-Huong *et al.,* 2023; Shanti *et al*., 2023) highlighted that the adoption of digital technologies and the digital transformation of banks would harm banking performance, at least in the short term, due to the high costs of the technological infrastructure. From the perspective of the negative relationship between digitalisation and banking performance, it is emphasised that banks should pay attention not only to investments in digital technology but also to improving the financial literacy of the population, including customer education, through digital technology, such as Chatbot Technology (Druhova *et al*., 2021).

Our research adds to the literature by providing new evidence on the influence of the use of digital technologies on the financial performance of the banking sector.

3. DATA, VARIABLES AND RESEARCH METHODOLOGY

The main objective of our study is to empirically investigate and analyse the impact of digitisation on the performance of the banking sector in EU countries for a period of 10 years (from 2012 to 2021). Our research focuses on the 28 EU

member states. In addition, we also follow an analysis of the two subgroups of countries, namely euro zone states and non-eurozone states.

The statistical data underlying the research were provided by the ECB Data Portal (Consolidated Banking Data), IMF (Financial Access Survey section), Eurostat (Digital Economy and Society section) and World Bank DataBank.

In our empirical model, we include, in addition to the main independent and control variables, dummy variables because, during the analysed period, the composition of the European Union has seen changes, such as those caused by Brexit and the accession of new member states.

The dependent variable used in our model is the return on assets (ROA), which is calculated as the ratio between net profit and total assets. This indicator is a proxy for the financial performance of the banking sector. Concerning the independent variables included in the multiple linear regression model, they are represented by three indicators, which are used as proxies for the digitalisation of the banking sector, namely *card transactions through points of sales* (POS), *the number of Automated Teller Machines* (ATM) *concerning the population and the share of internet banking users* (IBU).

The POS variable expresses the value (in millions of EUR) of all card transactions (issued by payment service providers to residents) through POS terminals. According to the results of some studies, the impact of this variable is expected to be positive (Kamau and Oluoch, 2016; Mustapha, 2018) because the use of cards can lead to the reduction of some operational expenses by eliminating some cash operations. On the other hand, the effect can also be negative (Orji *et al.*, 2018; Skvarciany *et al.*, 2019; Druhova *et al.*, 2021) as a result of possible additional expenses related to the security of transactions and the provision of the necessary infrastructure making transactions.

The number of ATMs could contribute to the reduction of some operational expenses and, thus, to the increase of banks' profit and their financial performance, as expressed by ROA (Kamau and Oluoch, 2016; El-Chaarani and El-Abiad, 2018; Orji *et al.*, 2018; Del Gaudio *et al.*, 2021; Mahardini *et al.*, 2022). At the same time, it should be emphasised that the costs of maintaining ATMs and ensuring the security of operations carried out through them can harm ROA (Mustapha, 2018; Skvarciany *et al.*, 2019). In the case of the ATMs variable, we considered the total number of ATMs in relation to the number of inhabitants in each country included in the analysis for the period 2012 – 2021.

The share of Internet banking users (IBU) represents, in percentage form, the ratio between the number of people who use the Internet for banking services and the number of inhabitants within a certain country. From the perspective of association with ROA, a positive impact is expected (Hernando and Nieto, 2007; Kamau and Oluoch, 2016; El-Chaarani and El-Abiad, 2018; Del Gaudio *et al.*, 2021; Doran *et al.*, 2022) because an increase in internet banking users leads to a decrease in the interaction between customers and employees, which reduces the

need for personnel and their related expenses. However, we also consider the possibility of a negative effect (Druhova *et al.*, 2021; Mahardini *et al.*, 2022) because processing banking operations through digital channels may involve additional expenses, negatively affecting ROA.

In our model, were included several control variables specific to the banking sector and the macroeconomic environment, similar to other specialised studies. Thus, we include some proxies of the efficiency of the banking sector (such as the ratio of bank nonperforming loans and cost-to-income ratio), the GDP growth rate and the inflation rate.

The synthetic description of the variables used in our study is reflected in Table 1.

Table 1. Description of the variables included in the analysis

Variable	Measurement units	Data source	Expected effect
Dependent variable			
Return on assets (ROA)	%	European Central Bank Data Portal (2024)	
Independent variables			
Variables that measure the level of digitization of the banking sector			
Value of transactions made with cards through points of sales (POS)	Millions of euros	European Central Bank Data Portal (2024)	+/-
Number of ATMs per population (ATM)	Units / person	IMF (Financial Access Survey) (2024); World Bank, DataBank (World Development Indicators) (2024)	+/-
Share of internet banking users (IBU)	%	European Comision, Eurostat Database (2024)	+
Control variables			
Nonperforming loans ratio (NPL)	%	World Bank, DataBank (Global Financial Development) (2024)	-
Cost to income ratio (CIR)	%	World Bank, DataBank (Global	-

Variable	Measurement units	Data source	Expected effect
		Financial Development) (2024)	
Annual growth rate of GDP (GDP)	%	World Bank, DataBank (World Development Indicators) (2024)	+
Infation ratio (INFL)	%	European Central Bank Data Portal (2024)	+/-
Dummy variables			
Member States of the European Union (EU)	Binary coefficient		
Member States of the Euro area (EURO)	Binary coefficient		
Non-Euro area Member States (NON-EURO)	Binary coefficient		

Source: authors' elaboration

The general linear regression model used in the empirical analysis is:

$$Y_{it} = \beta_0 + \beta_{it}X_{it} + \beta_{it}D_{it} + \varepsilon_{it} \qquad (1)$$

where: Y_{it} – the dependent variable for time t (2012, ..., 2021) and country i (1, ..., 28); X_{it} – the independent variables; β_0 – constant term; β_{it} – matrix of variable coefficients; D_{it} – dummy variable; ε_{it} – the error term.

The data used in the econometric research is organised as a panel, and the selected sample can be described as very diverse. The heterogeneity caused by the different characteristics of the states must be taken into account when estimating the empirical model because their camouflage by summing to the error term (ε_{it}) leads to the appearance of unwanted correlations between the errors and the explanatory variables, which cause erroneous estimates of the β parameters. The traits vary for the sample components, not having a strong influence in terms of the time factor for the chosen interval thus, we can consider them as fixed effects. For estimating the econometric model, we will resort to a fixed effects panel analysis. The dummy variables, which take values of 0 or 1, along with the fixed effects, eliminate the influence of the variables characteristic to non-EU states for the entire investigated time interval. Through the lens of the analysed period, the

composition of the European Union has changed. For example, concerning the years 2020 and 2021, from the analysed time interval, the United Kingdom was no longer a member state of the EU, and the value of the dummy variable in this case is 0, while for the period 2012 - 2019, the value of the dummy variable is 1. The same procedure is also applied in the analysis of the impact of digitalisation on the performance of the banking sector at the level of the euro and non-eurozone so that the changes in the composition of the region we are analysing have been taken into account.

In estimating the model, we must also consider that the recorded values of the variables are close in range because, in this way, the estimates of the β coefficients are easy to interpret and can give rise to plausible economic conclusions. Within the dataset, all variables have fairly small values, relatively close to zero, except for the POS variable, which reflects the total value of card transactions through POS terminals, with records in the hundreds of billions. To reduce this significant difference and obtain a result without additional errors and statistically significant, we resort to the logarithm of that variable. Thus, the POS variable now has values between approximately 6 and 14. The same problem persists for the ATM variable. An optimal solution to that problem is to relate the number of ATMs to the total population for each state in the sample, yielding the values of the variable ATM. It should be noted that these transformations have no influence on the actual result regarding the impact of digitalisation on the performance of the banking sector but only change the manner of its interpretation.

Based on the (1) relationship and considering the variables selected for our study, the mathematical equation shown in Table 2 can be obtained. In addition, since our research also covers the two subgroups of countries, as mentioned, the analysis is based on a total of three equations (see Table 2).

Table 2. The mathematical equations used to estimate the multiple linear regression model

Sample	Mathematical Equation
European Union	$ROA = \beta_0 + \beta_1 logPOS + \beta_2 ATM + \beta_3 IBU + \beta_4 NPL + \beta_5 CIR + \beta_6 GDP + \beta_7 INFL + \beta_8 EU$
Euro area	$ROA = \beta_0 + \beta_1 logPOS + \beta_2 ATM + \beta_3 IBU + \beta_4 NPL + \beta_5 CIR + \beta_6 GDP + \beta_7 INFL + \beta_8 EURO$
Non-euro area	$ROA = \beta_0 + \beta_1 logPOS + \beta_2 ATM + \beta_3 IBU + \beta_4 NPL + \beta_5 CIR + \beta_6 GDP + \beta_7 INFL + \beta_8 NONEURO$

Note: log(POS) – natural logarithm of the value of card transactions through POS; EU – Member States of the European Union (dummy); EURO – Member States of the Euro area (dummy); NONEURO – Non-Euro Area Member States (dummy); $\beta 0$ – constant term; βit – matrix of variable coefficients for country i, at time t.

Source: authors processing based on specialised literature

Table 3 shows the descriptive statistics for the variables included in the multiple linear regression models. Analysing the descriptive statistics, we notice that at the level of the EU28 banking sector, the ROA indicator registers an average of approximately 0.45%. Comparatively, the average of the ROA indicator is 0.32% and 0.69%, at the level of the banking sector in the eurozone, respectively, in the case of non-eurozone states. Therefore, the banking sector in the non-euro area recorded a higher financial performance for the analysed period. From an economic point of view, this can be explained by the fact that countries in the non-euro area can establish their monetary policies, which allow them to react promptly in the context of economic challenges at the national level. We also found that the GDP variable has a higher average in the case of the respective countries, which reflects better economic growth respectively a higher demand for credits, which positively influences ROA. Both the minimum and the maximum values recorded by the ROA at the level of the banking sector in the EU member states coincide with those recorded for the sample formed by the eurozone states and correspond to Slovenia (2013) and Estonia (2012). Regarding the variables expressing digitalisation, the share of Internet banking users (IBU) registers an average value of approximately 52.11% for the EU, and the indicator related to ATMs has an average of 0.68, which highlights the openness of the population towards digitalisation. Analysing the database, we can also add that, during the analysed period, the European banking sector registered an upward trend in adopting digital technologies, which became an essential element of its activity. Regarding the standard deviations of the variables, normal values are observed, underlining the absence or minimal presence of extreme values, which could disturb the results of the empirical analysis. The average values of the dummy variables (EU, EURO, NONEURO) are between 0 and 1, which underlines the manifestation of some changes in the structure of the selected sample for the period 2012 - 2021.

Table 3. Descriptive statistics of the variables

Variable	Mean	Max.	Min.	Std. Dev.	No. obs.
Member States of the European Union					
ROA	0.447636	2.007300	-7.989900	0.908471	277
log(POS)	9.883996	13.67749	6.213766	1.744335	277
ATM	0.678653	1.599512	0.221202	0.311658	277
IBU	52.11289	0.945900	3.450000	23.11028	277
NPL	7.252328	47.74785	0.145588	8.789019	277
CIR	0.594515	0.971709	0.259377	0.111144	277
GDP	2.191520	24.47525	-11.16730	3.907181	277
INFL	1.310519	5.652145	-2.096998	1.362276	277
EU	0.989286	1.000000	0.000000	0.103138	277

Variable	Mean	Max.	Min.	Std. Dev.	No. obs.
Member States of the Euro area					
ROA	0.323864	2.007300	-7.989900	1.003934	185
log(POS)	9.870332	13.01554	6.213766	1.793127	185
ATM	0.709434	1.599512	0.252781	0.327894	185
UTIL	54.92189	93.26000	9.130000	19.73044	185
IBU	7.704979	47.74785	0.145588	10.05298	185
CIR	0.607924	0.971709	0.259377	0.119997	185
GDP	2.040394	24.47525	-11.16730	4.253613	185
INFL	1.166015	4.683544	-2.096998	1.225157	185
EURO	0.660714	1.000000	0.000000	0.474315	185
Non-Euro area Member States					
ROA	0.689949	1.613800	-2.037100	0.609475	93
log(POS)	9.896886	13.67749	6.930740	1.648077	93
ATM	0.620412	1.339646	0.221202	0.268085	93
IBU	46.18710	94.59000	3.450000	27.98304	93
NPL	6.315926	21.87298	0.494909	5.311864	93
CIR	0.566466	0.788506	0.429132	0.084903	93
GDP	2.443421	13.78495	-8.591424	3.118471	93
INFL	1.577840	5.652145	-1.544797	1.586530	93
NONEURO	0.332143	1.000000	0.000000	0.471825	93

Source: authors' calculations

Figure 1 shows the evolution of the dependent variable (ROA). In the case of the banking sector in the European Union and, similarly, in the euro area, there was a slight increase in return on assets between 2012 and 2014, followed by a relatively stable period, which can be explained by the efforts made to recover the economic-financial situation after the international economic crisis of 2008. Moreover, in Figure 1, the effect of the COVID-19 pandemic in 2020, for all three groups of states is also noted. However, in the case of the banking sector in the non-euro area, we observe the presence of extreme values, such as in the year 2014, when the ROA recorded a value twice lower than in the previous year, explained by the recording of negative values by the banking sector in some states, like Romania and Hungary. Besides the economic context, other causes of these variations can be considered the changes produced in the composition of the respective samples. For example, in 2014, Latvia adopted the euro currency, and the ROA indicator for its banking sector is subsequently taken into the calculation of the average for the euro area.
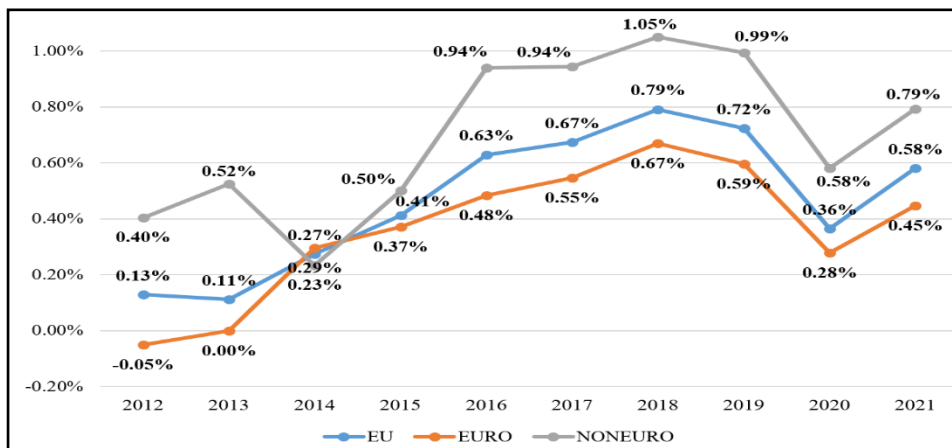
Source: authors elaboration based on the data available on the ECB Data Portal

Figure 1. The evolution of ROA at the level of the banking sector in the European Union, the euro area and the non-euro area in the period 2012-2021

Next, the overall model is estimated and tested to determine if it is statistically significant for an assumed risk of 10%. The statistical assumptions underlying our study are:

H0 – digitalisation does not influence the financial performance of the banking sector;

H1 – digitalisation significantly influences the financial performance of the banking sector.

4.   EMPIRICAL RESULTS AND DISCUSSIONS

To analyse the results obtained from the estimation of the econometric models, it is important first to examine the matrix of correlation coefficients (see Table 4).

Based on the Pearson coefficients (r), which we find in the second column of the table, we can underline the existence of a dependency between the dependent variable ROA and each of the independent variables. So, in the case of the log(POS), ATM, NPL and CIR variables, an inverse relationship with the ROA variable was identified. In the case of the IBU, GDP and INFL variables, a positive and significant correlation was found.

However, it should be noted that there are variables whose Pearson coefficient is quite high, for example, in the case of the NPL and IBU variables (r = -0.58491). This highlights the possibility of collinearity of the independent variables.

Table 4. Correlation matrix

	ROA	*logPOS*	*ATM*	*IBU*	*NPL*	*CIR*	*GDP*	*INFL*
ROA	1.00000 ---------							
logPOS	-0.09736 0.104	1.00000 ---------						
ATM	-0.09818 0.100*	0.22330 0.000***	1.00000 ---------					
IBU	0.17476 0.003***	0.26203 0.000***	-0.28788 0.000***	1.00000 ---------				
NPL	-0.45224 0.000***	-0.27924 0.000***	-0.01426 0.812	-0.58491 0.000***	1.00000 ---------			
CIR	-0.21385 0.000***	0.37911 0.000***	0.27312 0.000***	-0.06532 0.276	-0.02278 0.704	1.00000 -------		
GDP	0.27398 0.000***	-0.18661 0.002***	-0.13481 0.024**	0.07653 0.202	-0.07142 0.233	-0.17987 0.002***	1.00000 ---------	
INFL	0.17021 0.004***	0.03590 0.549	-0.04675 0.435	0.08538 0.154	-0.33087 0.000***	0.00269 0.964	0.15668 0.008***	1.00000 ---------

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Source: authors' calculations

For testing the collinearity, the specialised literature recommends the VIF (Variance Inflation Factor) test. VIF = 1 emphasises the lack of collinearity, while a high value of this indicator (in practice, VIF>10) highlights the phenomenon of collinearity. Table 5 presents the results of the VIF test for the equations in the model, and we can see that the highest values are recorded for the IBU variable in the case of the sample composed of EU member states (VIF = 2,951) and the sub-sample formed by the states of Non-euro area (VIF = 2,056). However, they do not exceed the value threshold equal to 10, which proves to us that the variables of the model are not multicollinear.

Table 5. The results obtained after running the VIF test

Variabila	European Union	Euro area	Non-euro area
logPOS	1.960542	1.861187	1.957054
ATM	1.221939	1.141239	1.153236
IBU	2.950993	1.575697	2.056398
NPL	1.675963	1.764650	1.750971
CIR	1.129820	1.128242	1.132127
GDP	1.093653	1.093755	1.093694
INFL	1.120074	1.119099	1.124194

Source: authors elaboration based on the results obtained in E-views

Based on the results obtained from the regression model estimation (see Table 6), we find that digitisation has a similar effect on the performance of the banking sector in the main sample and the two sub-samples.

Table 6. The impact of the use of digital technologies on the financial performance of the banking sector

Variable	Member States of the European Union	Member States of the Euro area	Non-Euro area Member States
C	5.544384 0.0000***	4.829471 0.0000***	5.020992 0.0000***
log(POS)	-0.379182 0.0000***	-0.322374 0.0000***	-0.354554 0.0000***
ATM	-0.298473 0.0108**	-0.397808 0.0006***	-0.377685 0.0012***
IBU	0.005520 0.0078***	0.001757 0.2755	0.002983 0.1040
NPL	-0.049422 0.0000***	-0.053213 0.0000***	-0.050359 0.0000***
CIR	-0.987452 0.0000***	-0.956070 0.0000***	-0.969975 0.0000***
GBP	0.026679 0.0000***	0.026526 0.0000***	0.026618 0.0000***
INFL	-0.013639 0.1486	-0.015010 0.1130	-0.014101 0.1367
EU	-0.524099 0.0041***		
EURO		-0.141505 0.3225	
NONEURO			-0.171698 0.1737

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.10$

Source: authors' calculations

Regarding *POS* card *transactions*, our results indicate that they would have a statistically significant and very strong negative impact on the financial performance of the banking sector, both in the EU and in the euro area and non-euro area. The explanation concerns the costs related to payment processing, which the banks bear. Among them, the commissions that banks pay to the card networks (for example to MasterCard or Visa), as well as the expenses related to the technological infrastructure for the realisation of POS payments, stand out. Also, banks invest considerable sums in ensuring the cyber security necessary to carry out transactions, costs that are difficult to cover from the commissions for using cards at the POS, especially in the case of banks that offer this service for free to attract customers. Thus, all these

expenses harm the profit recorded by the banking sector and lead to a decrease in financial performance (expressed by ROA). Our findings are consistent with those obtained by some studies (e.g., Kamau and Oluoch, 2016; Orji *et al*., 2018; Skvarciany *et al*., 2019; Kolawole *et al.,* 2024).

Similarly, the *ATM variable* is negatively and strongly statistically significantly related to the financial performance of the banking sector in all three groups of states. The negative effect would be due to several factors. First of all, the installation and maintenance of an ATM involves a series of costs, to which are added the expenses incurred to ensure a high degree of security of the operations carried out through it. Secondly, the income from commissions generated by ATMs is not always sufficient to cover the related costs, and their increase could lead to a decrease in the number of bank customers. Thus, the bank's profit is negatively affected, which leads to a decrease in the ROA indicator. Our results are in line with those obtained by Mustapha (2018) and Skvarciany *et al.* (2019) but in disagreement with the findings of Doran *et al*. (2022), El-Chaarani and El-Abiad (2018), Kolawole *et al*. (2024), Orji *et al*. (2018).

The third variable used as a proxy for expressing the digitalisation of the banking sector, namely the *share of Internet banking users* (IBU), has a positive and very strong significant impact on the financial performance of the banking sector in the European Union. The increase in the number of customers who opt for banking products and services provided through Internet banking contributes to the reduction of operational expenses of the bank, the need for employees and bank branches being reduced. Our findings are similar to those of a significant number of studies (such as Hernando and Nieto, 2007; Kamau and Oluoch, 2016; El-Chaarani and El-Abiad, 2018; Orji *et al*., 2018; Mustapha, 2018; Skvarciany *et al*., 2019; Vijayalakshmi and Jayalakshmi, 2019; Chindudzi *et al*., 2020, Del Gaudio *et al*., 2021).

The results regarding the *control variables specific to the banking sector* indicate, as expected and also validated by the economic practice, a negative and highly statistically significant association with the ROA indicator of the banking sector in all three groups of states. A high value of the *cost-to-income ratio* (CIR) negatively affects banks' profits and may signal the need to make changes in their operational structure, while a high level of the *nonperforming loans ratio* (NPL) would indicate a precarious level of efficiency in the banking sector in the allocation of resources. Our findings are in line with those obtained by a large number of studies (e.g., Phan *et al*., 2020; Del Gaudio *et al*., 2021; Doran *et al.,* 2022; Chhaidar *et al*., 2023; Li *et al.*, 2023; Shanti *et al.*, 2023). In the case of the control variables represented by macroeconomic indicators, as expected, we find that the *GDP growth rate* has a positive and highly statistically significant coefficient for all three groups of states, in line with the findings of Do *et al*. (2022), Chhaidar *et al.* (2023), Nguyen-Thi-Huong *et al*. (2023). Regarding the *inflation rate*, we note similar results for all three groups of states, namely a

negative but insignificant influence on the financial performance of the banking sector. Our results are consistent with those obtained by some studies (Phan *et al.*, 2020; Almulla and Aljughaiman, 2021; Haddad and Hornuf, 2023).

The coefficients related to the dummy variables show how much the dependent variable (Y) changes when a narrower segment is analysed compared to the entire available sample. Thus, hypothetically speaking, if all 28 states had been members of the EU in the period 2012-2021, the ROA indicator would have recorded a higher value on average by 0.52 units. In the case of the eurozone, the dependent variable is 0.14 units lower than the value it would have recorded for all 28 analysed states. Similarly, for countries in the non-euro area, the ROA indicator is on average 0.17 units lower than the entire sample.

Table 7. Regression model testing results

	European Union	**Euro area**	**Non-euro area**
R-squared	0.800783	0.803170	0.804304
Adjusted R-squared	0.772207	0.774936	0.776233
Prob (F-statistic)	0.000000***	0.000000***	0.000000***

Note: *** *p<0.01*

Source: authors' calculations

Overall, the quality of the econometric model can be highlighted by the information provided in Table 7, where we find the Prob(F-statistic) value, which is equal to 0. Therefore, we can state that hypothesis H0, mentioned in the paper, is rejected, and the empirical model proposed in our research is statistically significant for all three analysed cases. Therefore, digitalisation has a significant impact on the performance of the banking sector both in EU member states and in the eurozone and non-eurozone. As Table 7 indicates, the value for R squared is about 80% in all three cases, which means that about 80% of the variation in the dependent variable (ROA) is explained by the variation in the independent variables.

5. CONCLUSIONS

Our study aimed to explore the link between digitalisation and the financial performance of the banking sector. Specifically, we aimed to empirically investigate to what extent digitalisation can improve the financial performance of the banking sector.

In our analysis, we used data specific to the banking sector from the 28 member states of the European Union, broken down into two subgroups (euro zone states and non-eurozone states), for the period 2012-2021.

Our study was based on a quantitative analysis method, and as a tool, we used multiple linear regression. After estimating the parameters of the equation, we identified that the variables that characterise the level of digitalisation of the European

banking sector have a significant impact on its financial performance. However, two variables, namely the number of ATMs reported to the population and the value of card transactions through points of sales (POS) have a negative impact. At the same time, the share of Internet banking users in the total population has a positive effect on the financial performance of the banking sector, expressed by (ROA). Considering the positive association of the use of Internet banking with the financial performance of the banking sector, it would be necessary for banks to develop the offer of financial products and services, which can be accessed through this digital channel and thus increase their financial performance.

The results obtained are in agreement with the findings of a large number of studies in the specialised literature and can be explained by the fact that digitalisation involves not only benefits but also additional costs related to the maintenance and implementation of the infrastructure necessary to carry out digitalised banking activities.

At the same time, we obtained similar results for the estimators specific to the EU28 sample, the euro area and the non-euro area. This does not correspond to our expectations, given that the European Union includes both states with a very high level of development and economies with weaker macroeconomic performance. Considering the heterogeneity of the states, we anticipated obtaining different results after estimating the equations specific to each group. However, obtaining similar results can be explained by technological convergence and standardisation of technologies, given that ATMs, POS and Internet banking are widely adopted in the EU. EU regulations and directives on financial and banking services are applied in all member states, which can even out the impact of digitalisation on the banking sector.

The digitalisation of the banking sector is difficult to quantify because the adoption of digital technologies occurs differently from case to case and there is no predefined algorithm or pattern that reflects the list of digital technologies or the order in which they must be included in the activity of banks. Also, no official index has yet been created to reflect the banking sector's level of digitalisation. Thus, some researchers resort to creating their indices (based on available data) to reflect to what extent banking performance is influenced by technological innovations.

One of the limitations of our research is related to the unavailability of data for several indicators, which could be used as proxies for the digitalisation of the banking sector. As a future research direction, we propose to investigate the link between digitalisation and other indicators that describe banking activity, such as indicators specific to lending activity.

Digitalisation has become an essential part of human life and contributes to changing the needs, expectations and requirements of bank customers. It is recommended that banks consider the opportunities presented by digital

innovations, and it is crucial to consider their associated risks to ensure efficient allocation of resources and sound banking performance.

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BENEFITS AND EFFECTS OF USING AI IN INSURANCE

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Abstract
Insurance is one of the financial fields which registered an extraordinary evolution during the time. Even if the existence of different forms of insurance has been attested since ancient times, there is a mentality that looks at the financial products offered by this branch like "something new on the market". While some insurances are compulsory, the vast majority are optional, so that the individual's priorities list often does not include the purchase of such services. Thus, the insurance consultant's ability to identify together with the potential client, the latter's needs, so that he can offer appropriate financial solutions to the client, is important in carrying out such transactions.
Artificial intelligence, one of the most frequently used IT trends of late, can help in this area, making up for the lack of experience that many insurance consultants may have.
Keywords: *life insurance; insurance sales; artificial intelligence*
JEL Classification: G22, O33

1. INTRODUCTION

Over the past few decades, technology has evolved fast and artificial intelligence (AI) has proven to be a transformative force in many fields, including the insurance industry. The implementation of AI in insurance brings with it a

series of significant benefits, but also inherent effects that deserve to be analyzed in detail. Weterings (2019) noted that artificial intelligence can be used for: insurance advice, signing policies, claims processing, fraud prevention, risk management, direct marketing. We set out to analyze the aspects that involve insurance counseling, in fact the stages preceding the sale, but also after the sale. Insurance has often been perceived as complex and difficult to understand. On the other hand, mentioning the word sales will generate a variety of responses, many negative, even hostile: "immoral", "dishonest", "unsavoury", "degrading" and "wasteful" (Jobber and Lancaster, 2015, p. 12). Moreover, combining the two concepts, insurance (especially life) and sales, complicates the respective activity a lot. The effective integration of artificial intelligence through personalized approaches increases the chances of product sales improves customer satisfaction and customer loyalty.

2. THE INFLUENCE OF DIGITALIZATION ON THE DYNAMICS OF CONSUMER BEHAVIOR IN THE FIELD OF INSURANCE

The global investments in insurance digitalization rise fast and it could indicate strong attention to digitalization among insurance companies (Łyskawa *et al.,* 2019, p. 842)

It is natural to accept that the use of digital capabilities in insurance brings multiple benefits, for example (Wang, 2023, p. 103):

- can increase premium income;
- can improve operational efficiency by defining specific objectives of digital transformation;
- can also help insurance companies to reduce costs and risks.

Nepochatenko *et al.* (2023, pp. 52-53) mention several positive factors that influence insurance behavior in the digital economy, as can be seen in Table 1.

Table 1. Transformation of insurance behavior under the impact of digitalization

Factors	Technologies	Impact
Social trend	- virtual communication; - information, electronic and mobile technologies; - internetization; - robotization; - online-payment.	- change in the shape of society communication; - change forms, terms and conditions Information exchange; - complete lack of routine; - provision of financial services; - beyond time and place.
Changes in insured characteristics	- digitization of insurance products; - telematics.	- incentives to use new types of insurance products; - stimulation of the provision of data to insurance institutions.

Source: Nepochatenko *et al.* (2023, pp. 52-53)

3. IMPACT OF ARTIFICIAL INTELLIGENCE ON EFFICIENCY AND INNOVATION IN INSURANCE INDUSTRY

Ressel *et al.* (2024, p. 2) mention that the insurance industry provides an excellent use case to address the notions of trust and trustworthiness in large language model (LLM)-based systems (e.g. ChatGPT) in high-stakes decision scenarios. The use of artificial intelligence in the insurance industry generates a few significant advantages, which contribute to the transformation of the business model and to the optimization of the services provided to customers. These benefits include:

- *Risk assessment and underwriting.* Machine learning algorithms can evaluate individual risks based on a multitude of factors, such as behavioral history, demographics and external information. This detailed evaluation allows companies to set more accurate premiums and reduce financial risks.
- *Process automation*. AI can automate many of the administrative and operational processes within insurance, from claims processing to policy management, helping to streamline these processes, thereby reducing costs and time required to complete tasks.
- *Improving the customer experience.* By using chatbots and virtual assistants, insurance companies can provide 24/7 customer support, quickly answering questions and helping during the policy purchase process.
- *Fraud detection*. AI can identify patterns and anomalies that indicate possible fraud; by analyzing data from claims, AI can detect suspicious behavior, helping companies reduce losses caused by fraudulent activity.
- *Product customization*: Using advanced data analytics, companies can develop personalized customer offers, tailoring policies to individual needs and preferences. By using AI prediction, an alternative can be presented, which could change what is produced based on predicted demand (Agrawal *et al.,* 2024, p. 3).

4. IMPLEMENTATION OF ARTIFICIAL INTELLIGENCE IN INSURANCE: CHALLENGES AND IMPLICATIONS

Although the integration of artificial intelligence brings many advantages, it also generates a few effects that require special attention from insurance companies to ensure a responsible and sustainable implementation. These effects include:

- *Data privacy issues*: Implementing AI requires access to a large amount of personal data, which raises questions about privacy and data protection. Insurers must ensure that they comply with legal regulations and protect sensitive customer information.

- *Dependence on technology*: As companies become more reliant on AI, there are risks related to technology disruptions or errors in algorithms, an error in data processing can lead to incorrect risk assessments and ultimately financial losses.
- *Labor force impact*: Automation of processes through AI can lead to the reduction of jobs in certain fields. Employees may have to adapt to new technologies and develop digital skills, which can lead to anxiety and uncertainty in the labor market.
- *Bias and equity*: Machine learning algorithms can be influenced by the data they analyze. If this data contains historical biases, the results generated by AI may perpetuate inequalities, negatively affecting certain customer groups. It is essential that insurers monitor and correct these biases to ensure fair treatment.
- *Cybersecurity risks*: The use of AI in insurance increases exposure to cyber-attacks. As the amount of data handled increases, companies need to invest in cybersecurity measures to prevent security breaches and protect customer information.

5. THE ROLE OF ARTIFICIAL INTELLIGENCE IN OPTIMIZING THE SALES STAGES

Selling is a difficult communication process, which calls on numerous psychological, technical, relational, economic mechanisms (Corcos, 2008, p. 10). Jeffrey Gitomer (2006, p. 57), pointed out that customers generally buy *first* because of the salesperson, so a quick professionalization will not result in losing customers from the first meetings. From this point of view, the challenge called Artificial Intelligence has the role of quickly compensating the potential gaps that a beginner consultant may have, but also for those with experience, given that we must accept that human memory can sometimes be volatile.

According to Kumar *et al.* (2019, p. 81) insurers focus on implementing AI to the extent of 58% on customer experience.

5.1. The sales process

A sales process structure includes seven steps (Hase and Busch, 2018, p. 14): (1) prospecting and acquiring new customers through cold calling, (2) building trust in the initial meeting, (3) identifying needs and problems, (4) presenting the product's values and benefits, (5) conducting a price talk, (6) closing the deal, and (7) doing after sales, as it can be seen in Figure 1.
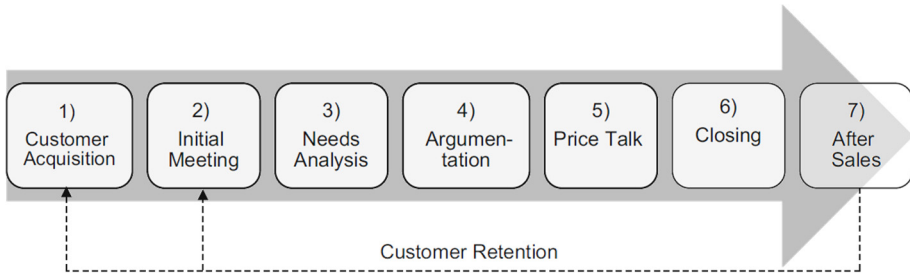
Source: Hase and Busch (2018, p. 14)

Figure 1. The sales process

As one can see in Figure 1, we have some interdependence between the first two steps and the last one, given that the post-sales activity has the role of being able to ensure the acquisition of new potential customers, through the recommendation technique, in addition to maintaining the customer relationship.

A scheme with a few small differences, which we will use to analyze the sales process, is the one in Figure 2, where the stage of presentation and demonstration is the most important section.
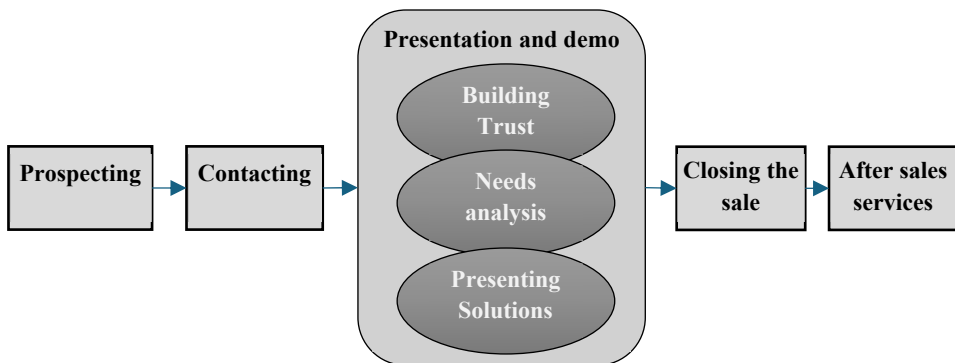
Source: authors' own creation

Figure 2. Sales steps

1. *Prospecting* is the stage in which the consultant prepares his database with potential clients, obtaining contact data
2. *Contacting* represents the approach of potential clients to establish a discussion.
3. *Presentation and demonstration* have the strongest charge, from the negotiation point of view, and it involves three steps:
   a) *building trust* (small talk),

b) *needs analysis* (careful observation of what interests the potential client) and
c) *presentation of solutions* – the actual offer appropriate to the needs of the potential client.
4. *Closing the sale* – the practical action of filling out the insurance application.
5. *Post-sales services* – maintaining contact with the client

5.2. The approach of artificial intelligence platforms in sales guidance

Starting from the structure mentioned in the previous subsection, we asked several artificial intelligence platforms to give us suggestions on how to be efficient in making the sale. Thus, we asked in the same way on several platforms. We reproduce the identified points, common or distinct. We must say that some activities have similar names, which allowed their grouping.

5.2.1. Preparing the list of potential customers

An important stage in the sales process, and the one that overlaps most often with the customer development role of sales, is prospecting (Syam and Sharma, 2018, p. 140). Brian Tracy (2008, p. 113) mentioned that a good potential customer is: "a person who can buy and pay within a reasonable period of time, and who will".

Table 2. Prospecting

	ChatGPT	Copilot	Gemini	Toolbaz	Writer AI	Perplexity AI	Phind	Notion AI
Research and segmentation	☑	☑	☑	☑	☑	☑	☐	☑
Automation and AI	☑	☐	☐	☐	☐	☐	☐	☐
Building the database	☑	☑	☑	☐	☐	☑	☑	☐
Qualification	☐	☑	☐	☐	☐	☐	☐	☐
Candidate profile. Lead qualification	☐	☐	☑	☑	☐	☐	☐	☐
Networking	☐	☐	☐	☑	☐	☐	☑	☑
Getting recommendations	☐	☐	☐	☐	☐	☑	☑	☐
Targeted advertising	☐	☐	☐	☐	☐	☐	☑	☐

Source: authors' own creation

We can note the interesting aspect that ChatGPT is the only one that even suggests automation and... AI. All the platforms recommend two of the important, even vital, prospecting activities: research and segmentation, but also building the database.

5.2.2. Contacting the potential clients

Even if the success of a salesperson does not depend on the number of contacts he has, but on the number of completed sales, focusing on this second aspect, skipping certain steps, generates far too few sales compared to the number of approaches made (Stofor and Toderaşcu, 2022, p. 195).

Table 3. Contacting

	ChatGPT	Copilot	Gemini	Toolbaz Writer AI	Perplexity AI	Phind	Notion AI
Message customization	☑	☑	☑	☑	☑	☑	☑
Communication channels	☑	☑	☑	☐	☑	☑	☑
Timing	☑	☐	☐	☐	☐	☐	☐
Persistence	☐	☑	☐	☐	☐	☐	☐
Clarity and conciseness	☐	☐	☐	☑	☐	☐	☐
Identification of common points	☐	☐	☐	☑	☐	☐	☐
Added value. Invitation to a webinar	☐	☐	☑	☐	☐	☐	☐
Friendly and professional attitude	☐	☐	☐	☐	☐	☑	☑

Source: authors' own creation

The customization of the message, considering the potential expectations and interests of the client, but also the choice of communication channels for the approach (email, phone calls, social media) are of quasi-unanimous interest.

5.2.3. Presentation and demonstration

Presentation and demonstration have the strongest charge, from the point of view of negotiation. We can notice, in Tables 4-5, a certain heterogeneity of the actions, but not in Table 6, where the presentation of the solutions is more technical, so it is easier to be framed in some universally valid procedures.

If gaining trust usually means a simple small talk, identifying needs requires a high degree of communication where listening is more important than talking, but also the art of asking open questions.

Table 4. Building trust

	ChatGPT	Copilot	Gemini	Toolbaz Writer AI	Perplexity AI	Phind	Notion AI
Authenticity and transparency	☑	☑	☑	☐	☑	☑	☑
Authority and expertise	☑	☑	☑	☐	☑	☑	☑
Building relationships. Empathy	☑	☑	☑	☑	☐	☐	☑

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	ChatGPT	Copilot	Gemini	Toolbaz Writer AI	Perplexity AI	Phind	Notion AI
Consistency	☐	☐	☐	☑	☐	☐	☐
Testimonials, reviews, case studies	☐	☐	☑	☑	☐	☑	☐

Source: authors' own creation

Table 5. Identifying needs

	ChatGPT	Copilot	Gemini	Toolbaz Writer AI	Perplexity AI	Phind	Notion AI
Active listening	☑	☑	☑	☐	☑	☐	☑
Needs analysis	☑	☐	☐	☐	☐	☐	☐
Adaptation	☑	☐	☐	☐	☐	☐	☐
Open questions	☐	☑	☑	☑	☑	☑	☑
Clarifications. Summarizing	☐	☑	☑	☑	☐	☐	☑
Observation. Pattern identification	☐	☐	☐	☑	☐	☐	☐
Empathy	☐	☐	☐	☐	☑	☐	☐

Source: authors' own creation

Table 6. Presenting solutions

	ChatGPT	Copilot	Gemini	Toolbaz Writer AI	Perplexity AI	Phind	Notion AI
Relevance. Customisation	☑	☑	☑	☑	☑	☑	☑
Benefits vs. Features	☑	☑	☑	☑	☑	☑	☑
Demo and social proof	☑	☑	☑	☑	☑	☑	☐

Source: authors' own creation

5.2.4. Completion of sale

At this stage we can mention that selling involves the creation of a set of solutions that meet the needs and desires of people, because human behavior is not dictated by the conscious side of the mind (Hogan, 2006, p. 244). Objection management is the delicate procedure on which, most of the time, the completion of the sale depends. So, almost all platforms that we have queried recommend it.

Table 7. Closing the sale

	ChatGPT	Copilot	Gemini	Toolbaz Writer AI	Perplexity AI	Phind	Notion AI
Clarification of next steps	☑	☐	☐	☑	☑	☐	☐
Handling objections	☑	☑	☑	☑	☐	☑	☑
The closure itself. Call to action	☑	☐	☑	☑	☑	☐	☐

	ChatGPT	Copilot	Gemini	Toolbaz Writer AI	Perplexity AI	Phind	Notion AI
Buying signals	☐	☑	☐	☐	☑	☐	☐
Benefits summary	☐	☐	☐	☐	☐	☐	☑
Clear offer	☐	☑	☐	☐	☐	☐	☑
Feeling of urgency	☐	☐	☑	☐	☐	☑	☐
Discount/bonus	☐	☐	☐	☐	☐	☑	☐

Source: authors' own creation

5.2.5. After-sales services

Post-sales services are those that can offer the customer the opportunity to buy other types of insurance or offer recommendations to other people to purchase such financial products.

Table 8. After-sales services

	ChatGPT	Copilot	Gemini	Toolbaz Writer AI	Perplexity AI	Phind	Notion AI
Follow-up	☑	☑	☑	☑	☑	☐	☑
Feedback	☐	☑	☐	☑	☑	☑	☐
Free ongoing support	☑	☑	☑	☑	☑	☑	☑
Loyalty building. Long-term relationship	☑	☐	☑	☐	☐	☐	☐
Cross-selling. Up-selling	☐	☐	☐	☐	☐	☐	☑
Training sessions	☐	☐	☐	☐	☐	☑	☐

Source: authors' own creation

After the sale is completed, it is recommended to contact the customer to ensure that they are satisfied with the product and to obtain useful feedback.

6. CONCLUSIONS

Optimizing insurance procedures by using artificial intelligence may involve several aspects:
- automation and customization of offers,
- reduction of response time and increase of efficiency,
- predictive analysis and risk evaluation,
- detection and prevention of fraud,
- improving customer relations,
- optimization of sales and cross-selling processes.

The use of artificial intelligence in insurance brings both significant benefits and impacts that need to be carefully managed. From improving operational processes and customer experience to privacy and equity challenges, insurance companies must find a balance between innovation and responsibility. Investment

in technology must be accompanied by a commitment to professional ethics and data protection, thus ensuring that the benefits of AI are maximized while the risks are minimized. These additional benefits contribute to an increase in competitiveness and a faster adaptation to the demands of an increasingly digitalized market.

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ENTREPRENEURSHIP IN THE CZECH REPUBLIC AND SLOVAKIA REPUBLIC: CASE OF KARVINÁ AND ČADCA

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Abstract
Historically important towns where business, particularly in forestry, mining and quarrying, has only prospered. Today, these are almost forgotten jewels of the countries. Time has gradually left its mark on these towns and the interest of investors has faded from these two important border towns. As time passed and everything changed, these cities failed to react in due season and adapt to these dynamic conditions. The reason for choosing these cities is also their similarity. Apart from the fact that both are border towns of two different states with a shared fate, they are also similar in other aspects. They have an identical total surface area. The aim of this article is to explore the similarities and differences of these cities in the field of entrepreneurship. There will be a focus on the industries in these cities. The monitoring period will be 2010 to 2022. Following these, four hypotheses were set to answer the scientific question "Do the cities of Karviná and Čadca have the same development trend?" Based on this analysis, it will be determined which city is attractive for which industries. The results will be compared to each other and it will be determined what direction the two cities have taken and if there is a correlation between the sectors of these cities. The trend of entrepreneurship in these towns will be identified as well. Research can also identify new unexploited entrepreneurial opportunities for entrepreneurs.
Keywords: *development trend; entrepreneurship; entrepreneurial opportunities; industry*
JEL Classification: L26, M21, R11

1. INTRODUCTION

For centuries, entrepreneurship has been identified as a key contributor of employment, innovation and sustained economic growth and development (Langevang and Gough, 2012; Aparicio *et al.*, 2016). Today, international organisations, governments and policy makers are paying increased attention to the function that entrepreneurship plays in generating economic development. Economic experts (Toma *et al.*, 2014) have abandoned their traditional approach to economic development based mainly on recruiting large companies with different financial and fiscal inducements. Today they are relying more on the small and medium enterprises (SMEs) and new ventures than in the past. Entrepreneurship is spreadingly recognized by government officials throughout the world not only as "a key mechanism for enhancing economic development, particularly in regions where entrepreneurial activity was once vibrant and is now lagging", but also as "a good solution because it provides a relatively non-controversial way to increase the proverbial pie, creating jobs and enhancing per capita income growth".

The rate of entrepreneurship (Woodside *et al.*, 2016) is commonly proxied using quantity-based metrics, such as small business activity, the self-employment rate, or the number of startups. In recent years (Parker and Robson, 2004), a significant amount of economics research has focused on entrepreneurship as the result of a maximization process in which individuals have to select between alternative employment options. Wagner (2003), for example, have suggested that entrepreneurs must be jacks-of-all-trades with the ability to perform many tasks without necessarily excelling at any of them. In contrast, Short *et al.* (2010) pointed out that without an opportunity to target with these characteristics, entrepreneurial activities cannot take place. Entrepreneurs also tend to amplifypotential positive opportunities and regard potential difficulties as challenges to be overcome rather than obstacles to success (Pech and Cameron, 2006). That may be the reason that they decide to stay small. One aspect is that opportunity costs of starting a firm are relatively low when working in a small firm. So, the payment in small firms is relatively low as well as the job security due to the higher risk of firm failure. Furthermore, opportunities for promotion are limited in small firms. These factors reduce the opportunity costs of starting a firm and work like a push factor into self-employment (Stuetzer *et al.*, 2016). Aghion and Bolton (1997) suggest that those most likely to enter into small-firm ownership have higher personal net worth and stronger human-capital credentials than non-entrants. Henrekson and Sanandaji (2014) warn that high taxes can encourage replicative entrepreneurship rather than innovative entrepreneurship. Self-employed owners face lower tax rates than the employed; however, this view is countered by the perspective that self-employed may pay high payroll taxes because they pay both employee and employer shares. They also face a lower chance of being audited. This situation encourages new businessowners to stay

small and encourages workers to sell their labour to small companies versus big companies. The same outcomes apply to heavy regulation where many regulations apply only to businesses over a specific number of employees. According to Lofstrom *et al.* (2014), the evidence instead suggests that wealthier people simply have a greater preference for entrepreneurship than the less wealthy. Gabszewicz and Lausell (2007) present a bilateral oligopoly model in which individuals endowed with a given amount of capital decide whether they want to act as entrepreneurs or as capital lenders and how much capital they would like to borrow or lend respectively. Under increasing returns to scale, they show the existence of multiple equilibria at which wealthier capital owners become entrepreneurs while the remaining individuals decide to become capital lenders. Indeed, a large literature has documented a positive relationship between initial wealth and subsequent business entry. On the other hand, Hurst and Lusardi (2004) have found that no relationship exists between household wealth and the probability of starting a business.

2. INDUSTRY AND CITIES

In a classic study, Bain (2013) distinguished between 2 types of entry barriers whose prevalence varies across industries. The first is what Bain termed structural: these barriers derive from complex, capital-intensive production processes (e.g., car manufacturing), which are intrinsic to a particular industry and not deliberately erected by firms. The second type of barrier is strategic, being deliberately erected by firms to protect their markets from competitors, for example via an advertising campaign which is too expensive for typical entrants to match. Structural entry barriers (Dixit, 1989; Caves, 1998) protect incumbent firms by making average production costs low for firms deploying large amounts of capital in large plants. Lacking sufficient capital, new entrants cannot increase output to reach an industry's "Minimum Efficient Scale", the smallest output associated with minimum long-run average costs. Being unable to reduce their costs to the levels of incumbents, constrained entrants are unable to match the low prices offered by incumbents and so are unlikely to make a profit in competitive markets. Forward-looking individuals anticipate this, and so refrain from entering at all. This decision not to enter is reinforced by the existence of "sunk costs". Strategic entry barriers (Lofstrom *et al.*, 2014) can also protect incumbent firms by reducing entrants' ability to compete with differentiated products and by giving incumbents absolute cost advantages, such as those associated with patents that afford protection against copying a valuable process innovation. Being unable to match the perceived quality or price of incumbents' goods, individuals are once again deterred from entry. Entry barriers can be effective in both competitive and imperfectly competitive markets.

The literature on the small firm effect (Sorenson and Audia, 2000; Shane, 2000; Shane and Venkataraman, 2000) suggests that there is a special type of

employees working in small firms. Apart from that, there are additional arguments regarding individuals working in large-scale industries that suggest a low potential for entrepreneurial spin-off activities from these sectors. In this respect, it should be pointed out that people do not start a firm in just any industry, but in sectors where they have gained work experience because this experience is crucial for detecting entrepreneurial opportunities and understanding industry-specific requirements for running a firm. Based on this argument, people working in a large-scale industry should be more likely to start a firm in the same industry conditioned on that they start a firm. Thus, given that industry characteristics of large-scale industries are associated with few possibilities for entry, people working in these industries should be even less likely to launch an entrepreneurial venture in other industries. Thus, entrepreneurship among workers of large-scale industries is a "rare event" in general. This also implies a low prevalence of peers with entrepreneurial experience in the workplace, which should again negatively affect entrepreneurial intentions (Nanda and Sørenson, 2010).

Entrepreneurial activity, as argued by Engle *et al.* (2011) or Simón-Moya *et al.* (2014), varies over time and across regions (a large literature on entrepreneurship examines the factors that shape new ventures and explains entrepreneurial differences across countries and periods). For example, entrepreneurial activity tends to be more widespread in countries with greater income inequality, and necessity-driven entrepreneurship is stronger than casual entrepreneurship in developing countries. In particular, entrepreneurial activity, as measured and reflected by new firm formation, also tends to be much more concentrated in certain locations than in others (Glaeser and Kerr, 2009; Klepper, 2010). Migration flows and the share of the population have increased substantially in recent decades. This trend is likely to continue in the face of demographic ageing and scarce labor in coupled with population growth and adverse conditions (Gathmann and Garbers, 2023).

The migration from rural to urban regions has resulted to higher energy demand and environmental degradation from economic activities, transportation, and residential consumption (Ji and Chen, 2017). Cities are essential components of economic development. As a key indicator to measure the motivation of regional or national entrepreneurial initiatives, entrepreneurial activity has received much attention from governments and experts over the years (Li *et al.*, 2023). In connection with this, the term "smart city" is used. The essence of Smart Cities (Li *et al.*, 2023) is to empower all stages of city construction, management, and development through emerging modern information technologies. Smart Cities construction can improve the quality and efficiency of social operations, economic development, and livelihood protection by deconstructing traditional cities' operational systems and services and reorganizing them with digital means such as big data and cloud computing. Thus, Smart Cities are conducive to promoting the economic, cultural, and institutional environment for new

businesses to enter the market. In contrast there is increasing interest in assessing whether big city growth has effects that differ from the effects of secondary town growth. There are several reasons for this interest, especially in terms of the impacts on poverty, with the rural poor argued to benefit more from development in towns than in cities (Gibson *et al.*, 2017). This unequal effect may be due to the cheaper cost of creating jobs in secondary towns than in big cities (Kanbur *et al.*, 2019) and to the greater feasibility for rural migrants to settle into and find work in secondary towns than in big cities (Ingelaere *et al.*, 2018). Hence, in at least some countries the growth of secondary towns appears to be more closely associated with poverty reduction than is the growth of big cities (Christiaensen *et al.*, 2013; Gibson *et al.*, 2017).

3. METHODOLOGY

The research is based on the processing of secondary data. All secondary data are obtained from several statistical databases in the Czech Republic and Slovakia. These are specifically data processed by national statistical offices. The methodological tool of research methods is data analysis. The main results were analysed using cluster analysis and statistical significance tests.

A PEST analysis is performed to compare both cities - Karviná (CZ) and Čadca (SK). Based on this knowledge, four hypotheses have been established to answer the scientific question *"Do the cities of Karviná and Čadca have the same development trend?"* As a result, it is possible to determine whether there is a relationship between each factor and the sector of these cities. To do this, the Kolmogorov-Smirnov test was used to determine the normality of the data distribution. This is done through the statistical program PSPP. Subsequently, correlation tests are performed. This software allows the execution of Kendall's Tau, Spearmann's correlation coefficient and Pearson's correlation test at the same time.

The European statistical classification of economic activities, the Nomenclature of Economic Activities (NACE), which groups organizations according to their business activities, was used to examine the industrial sector. Table 1 presents this distribution of economic activities.

Table 1. NACE Codes

Section	Description
A	Agriculture, Forestry and Fishing
B	Mining and Quarrying
C	Manufacturing
D	Electricity, Gas, Steam and Air Conditioning
E	Water Supply, Sewerage, Waste Management and Remediation Activities
F	Construction
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles

Section	Description
H	Transportation and Storage
I	Accommodation and Food Service Activities
J	Information and Communication
K	Financial and Insurance Activities
L	Real Estate Activities
M	Professional, Scientific and Technical Activities
N	Administrative and Supports Service Activities
O	Public Administration and Defence; Compulsory Social Security
P	Education
Q	Human Health and Social Work Activities
R	Arts, Entertainment and Recreation
S	Other Service Activities

Source: CONNECTS - Business Opportunities for Entrepreneurs

3.1. Reasons for selecting cities (Karviná – CZ and Čadca – SK)

The reason for choosing these cities is mostly their similarity. Apart from the fact that both are border towns of two different states with a shared fate, they are also similar in other aspects. Karviná is located in the north-east of the Czech Republic. From the historical point of view, Karviná is located on the territory of Silesia. Half of the city's border is also the border with Poland. In comparison, the city of Čadca is located in the north-western part of Slovakia, in the northern part of the Kysuce region and is the gateway to Slovakia from the Czech Republic and Poland. The town's advantageous location at the crossroads of international routes has ensured connections with the main industrial and commercial centres in Central Europe. The location of these cities has given them an advantage in their history from which they benefit to this day. Transport (Tuan *et al.*, 2022) is a determinant of urban mobility as it provides various benefits. As argued by Rodrigue (2020), strong transport of goods is typical for urban spaces, whose positions as centres of the economy are thus emphasized. The importance of cities as strong centres of both production and consumption gradually rises and enables the development of still stronger mutual relations between individual centres. Table 2 shows further information about these cities.

Table 2. Basic information about Karviná and Čadca

	Karviná	Čadca
Acreage	57.48 km^2	57 km^2
Population density	893 inhabitants/km^2	400.25 inhabitants/km^2
Average altitude	230 m n. m.	415 m n. m.
Nationality composition	Czech, Slovak and Polish nationalities predominate	Slovak, Czech and Polish nationalities predominate
The first written record	1268	1565

	Karviná	**Čadca**
9 districts of the city	Karviná-Fryštát, Karviná-Doly, Karviná-Lázně Darkov, Karviná-Ráj, Karviná-Staré Město, Karviná-Nové Město, Karviná-Mizerov, Karviná-Hranice, Karviná-Louky	Čadečka, Drahošanka, H orelica, Milošová, Podzá voz, Rieka, U Hluška, U Sihelníka, Vojty

Source: cities' websites

As you can see from the table these cities are very similar. In terms of cost of living, however, the city of Karviná comes out better. The distance between these cities is also not long (only 57 km), which takes an average of 55 minutes by car or public transport.

4.   RESULTS

First, an analysis of the towns of Karviná and Čadca was carried out. PEST analysis was used for this purpose.

4.1. Political analysis

Both cities held local elections for city council in 2022. In Karviná, 41 councillors were elected with a total turnout of 35.26%. In contrast, the town of Čadca elected its 25 representatives with a total turnout of 38.4% of the people in the elections. The results of the municipal elections can be found in Table 3 below, but now it is possible to find the same for these cities, even if it is only the turnout in the elections.

Table 3. Municipal election results in Karviná and Čadca

Results of the municipal elections in Karviná	
Political side	Number of won chairs
ČESKÁ STRANA SOCIÁLNĚ DEMOKRATICKÁ (ČSSD)	23
ANO 2011	10
SVOBODA A PŘÍMÁ DEMOKRACIE (SPD)	4
SPOLU (KDU + ODS + TOP 09)	2
KOMUNISTICKÁ STRANA ČECH A MORAVY (KSČM)	2

Results of the municipal elections in Čadca	
Political side	Number of won chairs
INDEPENDENT CANDIDATES (HAVE NO POLITICAL AFFILIATION TO A PARTICULAR POLITICAL SIDE)	16
REPUBLIKA, SMER - SD	4
ZA ĽUDÍ	2
HLAS - SOCIÁLNA DEMOKRACIA	1
SME RODINA	1
KRESŤANSKODEMOKRATICKÉ HNUTIE (KDH)	1

Source: Volby 2022 a Karviná - Výsledky Komunálních Voleb Online and Čadca - Výsledky komunálnych volieb 2022 - Voľby SME

H1: City council members do not influence business activity in Karviná and Čadca.

4.2. Economic analysis

The following analysis (Table 4) focuses on the budgets of the cities. As it can be seen, while in Karviná the actual budget income was higher than the approved budget, the actual expenditure in the city budget also increased. The city of Čadca, on the other hand, had a lower income than expected, but also lower than approved expenditures.

Table 4. Budgets of the cities for the period 2022

City	Karviná*			Čadca		
	Approved	Real	% change	Approved	Real	% change
Incomes	40 022 720	60 103 102	50.17	23 414 637	22 750 797	2.84 %
Expenses	49 834 138	58 592 147	17.57	25 938 249	24 054 529	7.26 %

*Values are converted to € at the exchange rate of 1 CZK = 0,04 EUR as of 01. 08. 2023.
Source: published cities reports

The following Table 5 indicates the various expenditures of the cities in each sector.

Table 5. Sectoral expenditure of cities in %

Sectoral expenditure	Karviná	Čadca
General services	22.78 %	12.30 %
Defense	0.00 %	0.00 %
Public order and security	4.73 %	3.50 %
Economic field	14.53 %	11.20 %

Sectoral expenditure	Karviná	Čadca
Protection of the environment	6.46 %	2.10 %
Housing and civic amenities	7.55 %	4.70 %
Healthcare	11.54 %	0.00 %
Recreation, culture and religion	19.35 %	3.90 %
Education	8.39 %	56.40 %
Social security	4.67 %	5.90 %

Source: published cities reports

While the city of Karviná invested in all sectors except defence, in the case of the city of Čadca, most of the spending went into education and it plans to continue this trend in the coming years. This can be beneficial to the city in terms of a skilled workforce for the area's businesses or even in the development of the business itself in the city. However, these expenditures are at the expense of other areas and therefore it is difficult to estimate at this time what the future consequences of this decision may be.

H2: Business entities of both Karviná and Čadca voluntarily contribute financially to the development of the cities.

4.3. Social analysis

Table 6 contains the demographic analysis. This analysis suggests that the city of Karviná contains more residents than the city of Čadca, but the city of Čadca has more economically active inhabitants.

Table 6. Demographical analysis for the period 2022

City	Total Number of Population	of which of pre-productive age (0-14 years) in %	of which of working age (15-64 years) in %	of which of post-working age (65+ years) in %
Karviná	242 779	14.61 %	64.53 %	20.86 %
Čadca	89 494	14.86 %	70.53 %	14.61 %

Source: national statistical offices

It was furthermore found from the national statistical offices that the largest number of employed persons in Karviná is in the secondary sector, while Čadca performs more the function of the tertiary sector than the secondary sector.

H3: Citizens of Karviná and Čadca prefer entrepreneurship to employment.

4.4. Technological analysis

Since cities focus on different fields and this analysis would be too extensive, only the business sector will be discussed in this part.

The City of Karviná

In the area of enterprise, the city of Karviná plans to create a strategy for the development of the "Karviná Special Economic Zone", including rules for its operation and support of economic activity. To support investors with innovative potential and higher value-added production in industry, services and creative industries on the basis of established support rules. Invest in the technological improvement of the existing industrial zone "Karviná-Nové Pole" (e.g. elements of blue-green infrastructure, smart solutions), support the construction of the new industrial zone "Smart Park Karviná" (Nad Barborou). Promote the development of entrepreneurship of the city's residents by continuing to support the "Business Gate" project and other projects "Business Innovation Hub" and "Hobby Workshop". Utilise brownfield sites with regard to location and type of use for investment and business opportunities and promote the development of social entrepreneurship (Šimerda, 2021).

The City of Čadca

In the area of enterprise, the city of Čadca plans to focus the economic development of individual districts in the region on increasing the number of job opportunities in accordance with the qualification structure of the population in order to reduce the high unemployment rate in most districts of the region and promote the building of industrial parks of regional importance. In the town of Čadca there is a tradition of mechanical engineering and textile industry. The company AVC a.s. Čadca, however, is in decline and its closure is being considered. Pratex, the main textile enterprise, has disappeared and its premises are now occupied by several smaller companies focusing on textile and electrical engineering production. Production has shifted to medium and small enterprises. Within the city area, most of the enterprises are located in the valley of the Kysuce and Čierňanka rivers in five production zones. The current state of the industrial zones is unsatisfactory, due to poor maintenance of buildings, roads, lack of greenery. The area for the establishment of the industrial park Čadca-Podzávoz is approved in the current town plan. The area for the construction of the industrial park is located on the border of the cadastres of the municipalities of Čadca and Svrčinovec. From the eastern side it is defined by the railway line, from the western side by the proposed route of the motorway and from the northern side by the edge of the land of two family houses in the cadastral area of Svrčinovec. The total area of the area under consideration is 32,50 ha. The free area of about 14 ha is reserved for the entry of a strong foreign investor (Pivarči, 2007).

4.5. Industry analysis

Although both towns are the same size in terms of acreage in the area of business, through the total number of inhabitants was reflected in the total number

of economic entities. This is shown in Table 7 - Total number of economic entities in the period 2010-2022.

Table 7. Total number of economic entities in the period 2010-2022

Year	Karviná	Čadca
2010	41 425	8 922
2011	41 243	9 327
2012	38 951	8 785
2013	39 234	8 976
2014	38 917	8 926
2015	38 851	8 548
2016	39 026	8 890
2017	39 179	8 998
2018	40 053	8 987
2019	39 158	9 637
2020	39 215	9 381
2021	39 766	10 834
2022	38 509	11 557

Source: national statistical offices

H4: Both Karviná and Čadca are dominated by A and B industries as in the past.

In terms of the structure of the industry (Table 8), it was found that Wholesale and retail trade; repair of motor vehicles and motorcycles with 25.57% is the largest industry in Karviná, followed by Professional, scientific and technical activities. In the city of Čadca, the Construction sector dominates with 32.2% followed by the total industry (NACE B to E). For both cities, there is no interest for business in the Public administration and defence; compulsory social security sector.

Table 8. Percentage structure of the industrial sector of the cities of Karviná and Čadca

	Karviná	Čadca
A	2.58 %	4.29 %
B – E	12.08 %	22.32 %
F	10.96 %	32.20 %
G	25.57 %	19.47 %
H	2.75 %	1.88 %
I	5.60 %	2.81 %
J	1.43 %	1.36 %
K	3.20 %	0.57 %
L	4.19 %	1.16 %

	Karviná	Čadca
M	14.03 %	5.78 %
N	2.00 %	3.60 %
O	0.17 %	0.00 %
P	1.81 %	0.61 %
Q	1.57 %	0.97 %
R	2.65 %	0.37 %
S	9.41 %	2.61 %

Source: national statistical offices

Table 9 below presents the annual percentage change in each industry sector of Karviná. All negative amendments are highlighted in the table for better readability.

Table 9. The annual percentage change in industry sector of Karviná

Year	A	B - E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
2011	11.2	1.6	0.5	4.6	1.8	1.9	7.0	18.8	1.5	0.3	1.8	11.8	2.2	0.5	1.6	3.5
2012	0.2	6.3	5.0	10.1	13.6	3.3	12.9	19.8	0.7	4.4	3.3	1.5	1.1	1.8	1.0	1.6
2013	2.2	1.2	2.0	8.8	2.9	3.1	11.6	169.4	1.6	4.8	1.6	1.5	1.6	4.6	1.1	1.4
2014	2.3	1.4	0.4	3.1	0.3	1.6	6.6	9.6	1.9	1.8	2.7	0.0	0.4	0.6	2.0	3.1
2015	19.2	1.1	0.7	2.9	0.5	1.9	6.9	4.9	2.8	1.3	2.8	1.5	0.2	0.2	1.6	2.9
2016	4.0	1.8	1.1	2.0	2.6	0.6	6.6	3.2	5.5	2.3	1.7	1.5	3.6	3.1	1.5	2.6
2017	6.2	2.4	2.3	2.3	2.8	3.4	2.0	50.6	5.3	12.0	16.1	0.0	2.9	1.4	4.4	3.0
2018	4.8	9.8	3.6	0.4	2.0	0.2	13.7	0.2	1.4	1.1	2.5	1.5	2.4	0.0	2.1	1.2
2019	2.2	1.9	3.0	5.6	4.8	2.1	3.2	76.9	2.9	0.9	11.5	3.0	7.7	0.7	2.1	0.9
2020	2.2	2.1	2.4	5.0	4.5	0.3	0.2	4.8	3.9	0.6	10.2	0.0	4.2	0.2	3.3	1.4
2021	1.9	3.3	2.0	1.9	8.4	1.3	5.7	0.4	4.1	0.9	7.8	3.1	4.0	0.8	2.1	1.9
2022	1.8	0.8	2.0	17.2	5.8	1.8	0.2	1.5	1.0	3.8	8.1	1.5	5.7	0.8	1.8	2.1

Source: national statistical office

As can be seen from Table 9, there was no increase in all sectors at the same time in any of the observed years. Only the Agriculture, forestry and fishing (A) industry was found to be the most stable sector with an annual increase. This sector has a positive trend in the growth of economic entities over the whole period. Another positive trend in the number of economic entities growth over the last 9 years is achieved by the Transportation and storage (H), Real estate activities (L), Administrative and support service activities (N), Arts, entertainment and recreation (R) and the last Other service activities (S) sector. In terms of the industry structure of Karviná, these industrial sectors therefore offer a perfect enterprising opportunity. By contrast, the Wholesale and retail trade; repair of motor vehicles and motorcycles (G) sector is on a negative trend throughout the whole period under review, with the exception of 2017. The Financial and insurance activities (K) sector achieved a massive BOOM in the number of new

business entities in 2013, but subsequently the interest in doing business in this field has been declining more and more since next year.

Similar to the analysis carried out for the city of Karviná, the city of Čadca follows (Table 10). Here again all negative amendments are highlighted for better clarity.

Table 10. The annual percentage change in industry sector of Čadca

Year	A	B - E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
2011	30.0	0.9	7.5	1.9	4.7	**1.0**	1.3	0.0	1.3	11.4	12.4	0.0	**6.7**	5.2	11.1	6.2
2012	11.9	**10.8**	**10.5**	**3.4**	3.9	**5.8**	0.0	19.1	23.4	13.6	3.9	0.0	**4.8**	1.2	6.7	0.0
2013	14.4	**3.4**	0.7	5.3	3.8	**0.7**	4.9	5.4	12.6	9.2	15.2	0.0	17.5	3.7	3.1	**1.1**
2014	13.8	**1.1**	**3.2**	**1.6**	**17.2**	**1.1**	9.4	1.7	2.8	2.7	21.1	0.0	6.4	15.3	0.0	6.5
2015	5.0	**6.1**	**1.3**	**15.0**	1.3	**9.6**	10.8	**3.3**	**0.9**	13.4	16.3	0.0	6.0	1.0	**6.1**	1.5
2016	3.3	2.9	3.6	3.5	3.7	**0.4**	7.8	**17.2**	4.6	8.3	10.3	0.0	5.7	**5.1**	16.1	18.0
2017	3.9	**0.8**	2.0	**4.2**	**1.2**	3.7	19.8	39.6	**3.5**	0.7	21.6	0.0	16.1	**3.2**	**5.6**	16.0
2018	6.1	0.9	3.3	**9.0**	3.6	**2.8**	9.8	**15.0**	0.0	**0.8**	4.5	0.0	**9.2**	3.3	3.0	3.3
2019	13.7	5.7	13.5	**1.9**	0.6	1.2	8.9	**14.0**	4.5	3.2	16.7	0.0	20.3	3.2	14.3	8.1
2020	**2.7**	**6.2**	**0.9**	**7.0**	5.2	1.2	6.3	**18.4**	7.8	**0.5**	8.3	0.0	**9.9**	1.0	**10.0**	**2.3**
2021	1.8	4.3	24.8	**2.2**	6.1	3.6	16.0	12.5	5.6	11.1	120.3	0.0	12.5	0.0	5.6	4.0
2022	6.0	3.3	6.7	**0.7**	5.2	1.9	11.7	22.2	6.9	5.4	29.5	0.0	4.2	**1.0**	29.0	5.8

Source: national statistical office

As was found in the case of the town of Karviná, this is also the case in the town of Čadca. Here, too, no growth was found in all sectors in one year over the period under review. In this case, the most stable sectors with annual growth in the number of economic entities are Information and communication (J), Administrative and support service activities (N), which recorded a huge growth in 2021, and Public administration and defence; compulsory social security (O). However, it should be pointed out that there is not a single company in the Public administration and defence; compulsory social security (O) sector for the overall period under examination. Other great business opportunities in conjunction with the industry structure in Čadca are the Agriculture, forestry and fishing (A), Transportation and storage (H), Real estate activities (L), Professional, scientific and technical activities (M) and the last Other service activities (S) sector. In the other hand, the Wholesale and retail trade; repair of motor vehicles (G) sector shows a negative trend. This trend was also true for the Accommodation and food service activities (I) sector, but interest in this industry has been growing in the city in recent years.

4.6. Data analysis

The following table (Table 11) represents the variables selected to determine the correlations and the decision to confirm or deny the hypotheses generated.

Table 11. Selected determinants of the PEST analysis

Factor	First variable	Second variable
Political	Number of members of the city council	Total number of economic entities
Economics	Municipal income	Total number of economic entities
Social	Total number of economically active population	Total number of economic entities

Source: own research

Given that each of the cities is directing its technology strategy towards different areas and business, it is not possible to perform a correlation analysis for this factor.

First, the normality of the data distribution was checked. Among the available tests, the Kolmogorov-Smirnov test was performed in the PSPP program. Based on it, it was found that for the city of Karviná, the political (1.000), economic (0.335) and social factors (0.993) reach levels higher than significance level 0.05 and thus are normally distributed. Pearson's correlation coefficient was then chosen from this finding. The results showed a strong positive linear dependence for the political factor $0.8 < |1.000| \leq 1$ with a coefficient of determination $R^2 = 100\%$ and a moderate positive dependence for the economic $0.3 < |0.58| \leq 0.8$ with a coefficient of determination $R^2 = 34\%$ and social factors $0.3 < |0.53| \leq 0.8$ with a coefficient of determination $R^2 = 28\%$.

The same was done for the city of Čadca. Here too, the Kolmogorov-Smirnov test confirmed the normal distribution of the data for political (1.000), economic (0.496) and social factors (0.680) reach levels higher than significance level 0.05. Therefore, Pearson's correlation coefficient was again used. The results showed a strong positive linear dependence for the political factor $0.8 < |1.000| \leq 1$ with a coefficient of determination $R^2 = 100\%$ and moderate positive dependence for the economic $0.3 < |0.77| \leq 0.8$ with a coefficient of determination $R^2 = 59\%$ and strong negative linear dependence for the social factors $- 0.8 < |-0.83| \leq -1$ with a coefficient of determination $R^2 = 69\%$.

From the data analysis, H1 was rejected and H2 was confirmed. H3 in the case of Karviná can be confirmed, but in the case of Čadca it is rejected, therefore H3 is rejected. H4 is also rejected.

In the case of verifying the normality of the data to industry and city, it was found through the Kolmogorov-Smirnov test that the data is not normally distributed, and the significance level reaches 0.000 in both instances. Therefore, in this application Spearmann's correlation coefficient was chosen in conjunction with Kendall's Tau. The results are presented in the following tables (Table 12 and Table 13).

Table 12. Results of correlations between industry and cities

		Value	Asymp. Std. Error	Approx. T
Ordinal by Ordinal	Kendall's tau-c	.00	.06	.00
	Spearman Correlation	.00	.05	.00
Interval by Interval	Pearson's R	NaN	NaN	NaN
N of Valid Cases		416		

Source: own research

In this instance, there was no addiction between these variables as confirmed by Spearmann's correlation coefficient and Kendall's Tau.

Table 13. Results of correlations between enterprises and cities

		Value	Asymp. Std. Error	Approx. T
Ordinal by Ordinal	Kendall's tau-c	-.67	.04	-16.37
	Spearman Correlation	-.58	.03	-14.48
Interval by Interval	Pearson's R	-.44	.03	-9.84
N of Valid Cases		416		

Source: own research

5. DISCUSSIONS

These analyses were carried out on the basis of the fact that most of the elected candidates also run a business in addition to their work in the prosecutor's office. This was confirmed in the cases of both cities. For both cities, a moderate dependence was also found in the case of income for the economic factor. The town of Čadca was found to be less entrepreneurial and its inhabitants prefer traditional employment rather than entrepreneurship. At the same time, no correlation was found between the sectors of these cities. It was also found that there is a negative relationship between enterprises and cities. In the case of the city of Čadca, this is due to the lower population density and new factories are being established in the available spaces, which employ the inhabitants, who then do not think about business opportunities. Another possible cause is the lack of housing options and the lack of city spending in other areas for residents. There are a number of other reasons for this finding, both regional and national.

Therefore, this finding remains open to the possibility of further research. This also includes the city of Karviná.

Although the two cities are very similar, the PEST analysis revealed differences and these were also found in the structure of the industrial sector. The analysis carried out found that a different industry dominates in each city. In the comparison of these cities the entrepreneurial potential of the city of Čadca was found to be greater. The city of Čadca offers a lower number of bureaucrats who make decisions about the city, a more economically active population, and the city's spending is primarily directed towards education, which may be an advantage for the city in the future if it succeeds in retaining its current residents. At the same time, the research question has been confirmed because as can be seen in the results section both cities are achieving development in the same sectors and at the same time both cities have experienced a long-term decline in businesses in the same sector. What is behind these declines in the sector, apart from the Covid-19 pandemic in recent years, also still remains unanswered.

6. CONCLUSIONS

The study focused on entrepreneurship in the Czech and Slovak Republics, which were represented by two similar cities - Karviná (CZ) and Čadca (SK). Although these cities are similar through the PEST analysis conducted on these cities, differences were identified in the direction these cities are heading. While the city of Karviná achieved higher revenues and expenditures than approved the city of Čadca achieved lower revenues and expenditures than the city projected. A difference was also found in the case of the expenditure analysis, with the expenditure of the City of Čadca going primarily to education, while the expenditure of the City of Karviná goes to all areas. In terms of the population structure, 6% more economically active inhabitants were found for the municipality of Čadca.

The analysis carried out found that a different industry dominates in each city. The town of Čadca was found to be less entrepreneurial and its inhabitants prefer traditional employment rather than entrepreneurship. Based on Spearmann's correlation coefficient and Kendall's Tau, no correlation between industry and cities was confirmed. But therefore, the research question has been confirmed. The city of Karviná and the city of Čadca have the same development trend. Both cities offer good entrepreneurship opportunities. At the same time both cities have experienced a long-term decline in businesses in the same sector. Through Spearmann's correlation coefficient and Kendall's Tau, a negative correlation between enterprises and cities was found. The reasons for this finding require more comprehensive investigation.

ACKNOWLEDGEMENTS

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A COMPARATIVE ANALYSIS OF INCLUSIVENESS AND ITS IMPLICATIONS FOR ECONOMIC DEVELOPMENT: HOW MOLDOVA, GEORGIA AND UKRAINE ALIGN WITH EU MEMBER STATES IN BENEFIT-SHARING AND PARTICIPATION

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Abstract

This paper presents a comparative analysis of inclusiveness among the new EU candidate countries—Moldova, Ukraine, and Georgia—alongside the EU-26 member states, focusing on benefit-sharing and participation as crucial elements of economic integration. Using data from 2006 to 2019, the research applies Principal Component Analysis (PCA) to construct an inclusiveness index that quantifies and compares economic and social outcomes (income inequality, poverty, and employment). Subsequent k-means clustering classifies the countries into groups based on levels of inclusiveness, revealing variations in adaptation to EU social and economic standards. Additionally, the Granger causality test demonstrates that the computed inclusiveness index Granger-causes GDP per capita at lags 3 and 4. The findings indicate differential progress among the new candidate countries, each showing unique trajectories in aligning with the EU's inclusive growth framework. This analysis provides insights into the efficacy of EU-associated reforms and their impact on socio-economic disparities. The research not only highlights the variations in inclusiveness across the 26 European Union member states and the three new candidate states but also provides certain implications for policy interventions to support the EU's enlargement agenda.

Keywords*: EU enlargement; Inclusiveness Index; Principal Component Analysis; k-means clustering; Granger causality.*

JEL Classification*: F55, O15, O52*

1. INTRODUCTION

In 2014, the post-Soviet republics, the Republic of Moldova, Ukraine, and Georgia signed Association Agreements with the European Union. These agreements came into effect in 2016 for Moldova and Georgia, and in 2017 for Ukraine. These agreements signaled a range of shared benefits for the three countries, including

enhanced trade opportunities, economic growth, and alignment with EU standards. However, the impact of these agreements varied among the countries, with differences in the extent of economic impact, sector-specific benefits, effects on consumer prices, and the nature of the reforms required.

In 2022, these countries took a significant step forward by applying for EU membership. This move was met with success for Moldova and Ukraine, which obtained EU candidate country status in the same year, followed by Georgia in 2023. The European Commission's enlargement reports of 2023 provided an in-depth assessment of the progress made by these aspiring member countries. Based on this assessment, the Commission recommended initiating accession negotiations with Ukraine and Moldova, a proposal that was supported by the Council. To gain EU membership, candidate countries must meet specific political and economic conditions set by the European Commission in 2023 (European Commission, 2023a). For a smooth EU integration, as part of the alignment process with the EU, these countries will have to observe the twenty principles of the European Pillar of Social Rights. These principles are designed to reinforce and sustain high social standards across the European Union, with a particular focus on employment, social protection, and inclusion.

Key among these principles is Active Support to Employment (Principle 4) that is fundamental in mitigating income inequality and poverty and in fostering employment. It enables a fair distribution of economic benefits by providing comprehensive education and workforce training, which are essential for securing higher-paying jobs and reducing poverty. Principle 4 of the EU Social Pillar emphasizes the importance of providing active support to employment for everyone capable of work. This involves policies and programs that aim to increase job creation, reduce unemployment, and ensure that workers have the skills required by the labor market. The principle of Equal Opportunities (Principle 3) ensures these benefits are accessible to all, promoting diversity in the workforce and helping to lessen income disparities. Furthermore, the principle of Access to Essential Services (Principle 20) bolsters these objectives by enabling broader participation in the economy, which in turn can increase employment rates and contribute to reducing poverty and income inequality (European Commission, 2023b).

Among diverse scholarly perspectives, there is a consensus that economic policies should not only foster growth but also consider their impact on inequality and poverty. This prevailing view underscores the importance of formulating policies that promote equitable growth (Dagdeviran *et al.*, 2000). In line with this perspective, policy institutions bear the critical responsibility of implementing monetary policies that support employment, tackle poverty, address growing inequality, and facilitate inclusive growth (Ahiadorme, 2022). This approach is fundamental because when economic growth benefits every societal layer, it represents a "truly inclusive growth process." Such growth, marked by its

equitable distribution, not only reduces poverty and increases income but also enhances overall societal wealth, thereby maintaining, if not improving, equitable distribution (Bibolov *et al*., 2022). Furthermore, according to Fourie (2014), for growth to be genuinely inclusive, it is crucial to consider participation in the growth process itself, thereby ensuring that the benefits of growth are widely shared and contribute to overall societal well-being. At the same time even though the European social model stands as a distinctive accomplishment, and its continued existence is unquestioned, the debate is intense over whether it can be sustained over the long term (European Economic and Social Committee, 2018). The anticipated new wave of enlargement could potentially add pressure to the EU social model especially in the context of the geopolitical situation.

2. IMPORTANCE OF POVERTY AND INEQUALITY REDUCTION AND EMPLOYMENT OPPORTUNITY INCREASE FOR EU

The importance of reducing poverty and inequality and increasing employment opportunities is central to fostering inclusive and sustainable growth within the European Union, for at least the following key reasons. It is crucial for the EU to strengthen its social cohesion. For example, research on wage disparity and Brexit indicates how economic divisions can lead to significant political decisions, such as the Brexit vote. Regions with lower median wages and higher levels of inequality felt marginalized, which likely influenced their choice to vote for leaving the EU. Reducing inequality and poverty can mitigate such societal fractures, fostering stronger social cohesion and political stability. The analysis also underscores the role of the labor market inequalities in 2016 in influencing the Brexit decision and delves into how Brexit may affect future wage disparities, emphasizing the need for careful observation and analysis of these changes (Bell and Machin, 2016). Also, an analysis of inclusive growth within the European Union (EU) against a global backdrop, highlights that while the EU hosts only 7% of the global population, it disburses nearly half of the world's welfare payments. Despite relatively low levels of inequality and poverty on a global scale, the EU faces social challenges, including high unemployment in certain member states and a growing divide between younger and older generations. Social mobility remains limited, particularly in the more unequal southern European economies, affecting opportunities for children from disadvantaged backgrounds. The importance of equitable economic development is emphasized to ensure societal stability and prevent disillusionment among citizens. In the same study the authors link higher inequality and poverty rates to the UK's vote for leaving the EU in the 2016 Brexit referendum, challenging the notion that inequality is an inevitable consequence of technological advancements. The article calls for European policymakers to focus on fostering inclusive growth through measures that include the reform of the welfare systems for better efficiency, reducing taxes on low incomes, designing fair fiscal policies, and tackling unemployment among

others. While these responsibilities primarily fall on national policymakers, EU institutions can facilitate by sharing best practices and exerting peer pressure, though caution is advised against overpromising without the means to deliver, to avoid EU backlash (Darvas and Wolff, 2016). At the same time the impact of rising income inequality on political participation and attitudes toward democracy, particularly in OECD countries and Western Europe has also been investigated and the results show that since the 1970s, income inequality first surged in Anglo-Saxon nations and has since been increasing in Western Europe. The research finds that higher income inequality correlates with an increase in unconventional forms of political participation, such as protests, which tend to favor wealthier individuals over traditional voting. This shift challenges the principle of political equality. Moreover, the study employs a multilevel regression analysis, incorporating survey data and country-level variables, to demonstrate that greater income inequality is associated with lower satisfaction with democracy and diminished trust in politicians and parliaments (Schäfer, 2012).

The need for enhancing the economic stability and inclusive growth which in turn might decrease the "Euroscepticism" is also demonstrated in research which reveals the impact of the 2007–2008 financial crisis and subsequent attitudes towards EU integration. It shows that economic disparities can lead to disillusionment with political and economic structures. By reducing inequality and poverty, the EU can enhance citizens' trust and satisfaction with democracy, which is essential for the stability of any economic system (Bachtler *et al.*, 2019).

Ultimately, reducing poverty and inequality and increasing employment opportunities improve the overall quality of life for EU citizens. This involves not only economic benefits but also enhanced access to quality education, healthcare, and other essential services, contributing to a higher standard of living and better societal outcomes. In a study that investigates the connections among economic growth, poverty, and inequality within European Union (EU) countries from 2005 to 2016, utilizing both descriptive statistics and econometric analyses the findings highlight a significant link between economic growth and poverty reduction in half of the EU nations, with poverty often showing responsiveness to economic growth. Notably, countries with higher economic prosperity tend to have a smaller proportion of their population living in poverty. The relationship between economic growth and income inequality, however, displays more variability across the EU. While some economically stronger nations experience high levels of income inequality, others with less economic strength show lower levels of income disparity. Frequently, trends in poverty and income inequality align, either rising or falling together (Dudzevičiūtė and Prakapienė, 2018).

Thus, in the context of current geopolitical, social and economic transformations and the ones that are anticipated in Eastern Europe and Western Asia once Moldova, Ukraine and Georgia have been granted the candidate status

for accession to the European Union, in this research the attempt is to look into the issue of inclusiveness from the benefit-sharing and participation perspective in terms of how well the new candidate countries align with the EU-26 member states (except Croatia due to lack of full data sample). Thus, the question that the research is attempting to answer is: how Moldova, Georgia and Ukraine align with the EU member states in benefit-sharing and participation from the pro-poor perspective. To this end, in this research the attempt is to continue exploring the benefit-sharing and participation dimension of inclusive growth for the period of 2006-2019 in line with the measurement proxies for benefit-sharing and participation proposed by Ramos *et al.* (2013); Fourie (2014) by computing an inclusiveness index using the Principle Component Analysis (PCA) for 29 countries (EU-26 member states and the three new EU candidate states). We hypothesize that there might be clear-cut differences among the candidate states as well as substantial differences between the EU candidate countries and the more developed member states among the EU 26 member states analyzed in terms of inclusiveness. At the same time based on the data for the aforementioned 29 countries, it is proposed to reveal whether changes in benefit-sharing and participation computed as an index might predict the future values of GDP per capita, which is another hypothesis put forward in this research.

3. LITERATURE REVIEW

In the literature that includes and/or refers to the analyzed new EU candidate countries, inclusiveness is analyzed very often as part or linked to growth. Several research can be mentioned in which the situation related to inclusive growth was analyzed, including with reference to the situation in Moldova, Ukraine and Georgia. Mantsurov and Khrapunova (2019) in their study focus on the concept of inclusive economic growth and development, emphasizing its significance in linking economic growth with equitable distribution among people and social groups. The main objective is to evaluate Ukraine's inclusive growth in terms of quantitative and qualitative aspects, assessing its alignment with international standards set by organizations like the OECD and WEF. The authors propose a methodological framework for measuring inclusive growth, enhancing the statistical indicators established by international bodies. To average the values of economic indicators, the WEF's methodology of using PCA was followed to summarize complex data sets with multiple variables into simpler principal components, facilitating a comprehensive analysis of inclusive growth characteristics. The article's analysis reveals that Ukraine's current economic model fails to meet modern challenges and international recommendations. The study by Dluhopolskyi and Zhukovska (2023) investigates the relationship between inclusive development and various indicators of inequality worldwide (including Ukraine and Moldova). Using bibliometric analysis through VOSviewer on Scopus data, the study visualizes information on inclusive

development. The research employs correlation and regression analyses to examine the connection between inclusive development levels and different measures of inequality and discrimination, using statistical data from the World Bank. Key findings include an inverse relationship between the Inclusive Development Index (IDI) and the Gini index in developed countries, indicating that higher inclusivity correlates with lower income inequality. Conversely, there is a direct correlation between the IDI and the Quality-of-Life Index (QLI), Human Poverty Index (HPI), and Human Development Index (HDI). The study also finds a significant relationship between societal inclusivity and gender neutrality, particularly pronounced in developed nations. The paper by Neagu and Teodoru (2018) examines the relationship between economic competitiveness and inclusive development in 101 economies, using data from the 2018 World Economic Forum reports. It employs rank correlation coefficients and cluster analysis to analyze the Competitiveness Index (CI) and Inclusive Development Index (IDI) values provided by the reports. The study finds a positive association between economic competitiveness and inclusive development across the sampled economies, with this correlation being stronger in emerging countries compared to advanced economies. In advanced economies, the average scores for both the CI and IDI are higher, indicating better coordination of economic and institutional factors that drive competitiveness and inclusiveness. However, countries within the same geographical region, continent, or economic group do not necessarily cluster together, highlighting regional, continental, or group-level disparities. Emerging economies show smaller disparities in competitiveness and inclusiveness compared to advanced economies, with their clusters being closer and more homogeneous. The paper suggests that higher competitiveness and economic performance can lead to socioeconomic inequality. It recommends implementing appropriate economic and social policies to achieve broader income distribution and social inclusiveness. IMF researchers, Vera-Martín *et al.* (2019), focus in one of their articles on strategies to foster inclusive economic growth in the Caucasus and Central Asia (CCA) region. The empirical analysis reveals that while the CCA countries have made progress in reducing poverty and inequality, challenges remain, especially following the 2008–2009 global financial crisis. To address some of the inclusiveness issues, the document recommends several taxation reforms for Georgia, including increasing the excise on petroleum products, simplifying corporate taxation, enhancing property taxation with a modern system focusing on the taxable asset, and revamping tax and customs administration to include risk-based compliance systems. Moldova and Ukraine are used as part of a comparative peer group to understand the broader economic context of the CCA region. Keller and Scheja, (2011) address the complexities of incorporating international migration into inclusive growth (IG) analysis. The research acknowledges that international migration can significantly influence both the rate and distribution of economic growth, though its effects are

multifaceted, often divergent, and can vary over time. The analysis of these impacts is frequently hindered by insufficient data. Additionally, the paper recognizes the private nature of migration decisions, made by households for their welfare, which complicates policy conclusions derived from inclusive growth analysis. The primary objective of the paper is to offer a framework for inclusive growth practitioners to better understand and assess the role of international migration. Regarding Moldova, the paper concludes that migration trends have significant implications for inclusiveness. While they present certain opportunities, such as potential wage increases in labor-short sectors, they also pose challenges, including increased sectoral disparities, dependency on remittances, and the need for inclusive growth strategies. Addressing these issues requires comprehensive policies aimed at creating a more equitable and inclusive economic environment.

It goes without saying and the analyzed literature confirms that the concept of inclusiveness is multilateral. Given the multidimensionality of inclusiveness, to better understand the concept and the correlation between phenomena, in our opinion, it is worth at some point disentangling concrete aspects and analyze them separately. This is why in this paper the focus is on the benefit-sharing and participation dimension even though it is clear that inclusiveness per se is a much broader concept. The intention is to address the gap in the research on how the new EU candidate states that have recently acquired this status fit into the overall EU inclusiveness framework on the benefit sharing and participation dimension and at the same time to analyze how the EU member states and the three new candidate cluster. Also, we propose that past values of inclusiveness measured as benefit-sharing and participation might predict future values of GDP per capita and this is what this paper is trying to prove empirically. The novelty resides in comparing the new candidate states with established EU members in terms of inclusiveness dimensions and to actually check whether the computed inclusiveness index's past values contain information that can help predict future values of the GDP per capita, which to the best of our knowledge has not been explored before using these data and approaches for the EU and new candidate state countries.

4. DATA AND METHODOLOGY

The data that is used for the analysis has been retrieved from the World Bank database for the whole sample of countries. An inclusiveness index is computed in Stata18 using the principal component analysis (PCA), following which a clustering analysis is carried out. When computing the PCA an interaction term is used (GINI * Poverty Headcount Ratio) given that this shows how the impact of income inequality on poverty levels may vary across different employment scenarios. Thus, stemming from the fact that in a country with low inequality, poverty tends to decline faster at any given growth rate compared to a country

with high inequality (Nelson, 1998), we assume that in economies with high employment rates, the effect of inequality on poverty might be different compared to economies with lower employment rates. Then, k-means clustering is used on the dataset based on the first three principal component scores. This step divides the observations into 3 clusters depending on the level of inclusiveness. The data has been retrieved for the period of 2006-2019 for 29 countries (26 EU member states and 3 EU candidate countries). The proxies for benefit-sharing are GINI and poverty headcount ratio ($6.85 per day has been chosen as more appropriate for the socio-economic development of the analyzed countries) whereas for participation the employment to population ratio has been used in line with Ramos *et al*. (2013) and Fourie (2014).

The proxies for benefit sharing should be understood as per the definition provided in the World Bank Databases as follows. The Poverty headcount ratio at $6.85 a day (2017 PPP) (% of population) "is the percentage of the population living on less than $6.85 a day at 2017 international prices" and the Gini index "measures the extent to which the distribution of income or consumption among individuals or households within an economy deviates from a perfectly equal distribution. A Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality". The indicator for participation is defined in the World Bank databases as the employment to population ratio, 15+, total (%) (national estimate) which is "the proportion of a country's population that is employed. Employment is defined as persons of working age who, during a short reference period, were engaged in any activity to produce goods or provide services for pay or profit, whether at work during the reference period (i.e. who worked in a job for at least one hour) or not at work due to temporary absence from a job, or to working-time arrangements. Ages 15 and older are generally considered the working-age population" (World Bank, 2024). The choice of poverty headcount ratio ($6.85 per day) instead of $2.15 stems from the need to consider the local economic context. The choice of a poverty headcount ratio of $6.85 per day for the EU and the new EU candidate countries—Moldova, Ukraine, and Georgia— instead of a lower threshold like $2.15 per day, which is often used for developing countries, can be justified by the higher cost of living in the EU and even in aspiring member countries. The basic expenses such as housing, food, transportation, and healthcare cost more, requiring a higher threshold to accurately capture the minimum income to avoid poverty. In addition, in the context of the EU, poverty is often measured in terms of relative poverty, which considers whether individuals' living conditions fall significantly below the standard of the society in which they live. This measure is usually set at 50% or 60% of the median income of the country (at 60% in the EU) (Lecerf, 2016). A higher poverty line like $6.85 may, in our opinion, better approximate the relative poverty measure within the EU context. A higher threshold can more accurately reflect the income needed to participate in society without serious deprivation in terms of

social and cultural activities, which is a relevant consideration in the EU's social policies. At the same time, even though in countries like Moldova, Ukraine, and Georgia, the average income might be lower than in more developed EU states, it is still typically higher than in most developing countries. Thus, using a higher poverty line allows for more meaningful comparisons across EU countries and candidate countries by taking into account the different economic contexts.

To sum it up, some adjustment in the methodology formerly proposed of building up the inclusiveness index has been applied, such as extracting the Principle Component Analysis (PCA) using Stata18 software to compute the index as well as using the interaction term to account for the impact of income inequality on poverty levels which is assumed that in economies with high employment rates, the effect of inequality on poverty might be different compared to economies with lower employment rates. After the inclusiveness index has been built up, k-means clustering is used on the dataset based on the first three principal component scores. This step divides the observations into 3 clusters depending on the level of inclusiveness. The data has been retrieved from the World Bank database for the period of 2006-2019 for 29 countries as mentioned above (26 EU member states (except Croatia given the lack of data for all the years for all the index components) and 3 EU candidate countries (Moldova, Ukraine and Georgia). The dataset is standardized (mean-centered and scaled to unit variance) to ensure comparability across different variables before conducting Principal Component Analysis (PCA) and the signs of GINI and Poverty Headcount ratio are inverted so that an increase in the inclusiveness index suggests a positive outcome. The primary purpose is to analyze the three new candidate countries and how they cluster with the other EU-26 member states, but also to have an insight into the situation in the EU-26 countries on the benefit-sharing and participation dimension. Moreover, in the context of working on the second hypothesis, i.e. that computed inclusiveness index's past values contain information that can help predict future values of the GDP per capita, the Granger causality test is applied which is based on the assumption that the past values of one variable (inclusiveness index) contain information that can help predict future values of another variable (GDP per capita).

5. RESULTS

5.1. Principle Component Analysis

1. First the variables are standardized, thus for each variable X (GINI, Poverty headcount at $6.85, Employment-to-population ratio):

$$X_{\text{std}} = \frac{X - \mu_X}{\sigma_X} \tag{1}$$

Where:
- μX is the mean of X;
- σX is the standard deviation of X.

2. After standardization the variables are invested so as to get latter a more intuitive inclusiveness index interpretation where the higher the index, the more inclusive the country

$$\text{GINI}_{\text{std inv}} = -1 \times \text{GINI}_{\text{std}} \tag{2}$$

$$\text{Poverty}_{\text{std inv}} = -1 \times \text{Poverty}_{\text{std}} \tag{3}$$

3. Then, based on the above reasons, the interaction term between inverted GINI and inverted Poverty is computed:

$$\text{Interaction} = \text{GINI}_{\text{std inv}} \times \text{Poverty}_{\text{std inv}} \tag{4}$$

4. The PCA involves creating principal components that maximize the variance explained by the linear combinations of the variables.

Thus, PCA finds components *Ci* that maximize the variance:

$$C_i = a_{i1}\text{GINI}_{\text{std inv}} + a_{i2}\text{Poverty}_{\text{std inv}} + a_{i3}\text{Employment}_{\text{std}} + a_{i4}\text{Interaction} \tag{5}$$

Where *aij* are the loadings of the ith component on the jth variable.
The scores of the coefficients are shown in Table 1.

Table 1. Scores of coefficients

Variable	Comp1	Comp2	Comp3
GINI (standardized and inverted)	0.4571	0.4699	0.7339
Poverty (standardized and inverted)	0.6302	-0.2680	-0.0445
Employment to population ratio (standardized)	0.1740	0.7847	-0.5860
GINI and Poverty interaction	-0.6031	0.3026	0.3406

Source: computed by the author in Stata18 using World Bank data

Thus, Comp1 is strongly influenced by Poverty (standardized and inverted) (0.6302) and negatively by GINI and Poverty interaction (-0.6031), suggesting this component represents a blend of poverty inversion and the interaction between GINI inversion and poverty inversion, highlighting overall inequality and poverty interaction. Comp2 is most influenced by Employment to population ratio (standardized) (0.7847), indicating this component primarily captures employment variations. And Comp3 is heavily influenced by GINI and Poverty interaction (0.7339) but negatively by Employment to population ratio

(standardized) (-0.5860), suggesting it contrasts the general inequality measures with employment factors.

The factor tests as well as the Bartlett's Test of Sphericity and the KMO results are presented in Table 2.

Table 2. Factor test results

Determinant of the correlation matrix	Det = 0.204
Bartlett test of sphericity	Chi-square = 640.377 Degrees of freedom = 6 p-value = 0.000 H0: variables are not intercorrelated
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	KMO = 0.506

Source: computed by the author in Stata18 using World Bank data

The factor analysis preliminary steps indicate on the suitability of the data for PCA and the relationships between the selected variables. The determinant of the correlation matrix equal to 0.204, being greater than 0 (but close to 0) suggests that there is some multicollinearity in the data, but not perfect multicollinearity, which shows that the variables are related, but are not perfectly correlated so as to be redundant. The Bartlett's Test of Sphericity shows the Chi-square equal to 640.377, the degrees of freedom equal to 6 and the p-value = 0.000, which allows to reject the null hypothesis, suggesting that there is a significant overall correlation among the variables. This result indicates that the data are likely suitable for PCA because there are relationships among variables that PCA can explore.

5. In the next step, the first three principal component scores are combined into a composite indicator.

$$\text{Composite} = \text{PCA1} + \text{PCA2} + \text{PCA3} \qquad (6)$$

To move on, it is worth looking at the basic descriptive statistics (mean, standard deviation, min, max) of the variables (Table 3).

Table 3. Descriptive statistics

Variable	Observations	Mean	Std. dev.	Min	Max
GINI	406	31.32808	3.947526	23.2	41.3
Poverty headcount ratio ($6.85 per day)	406	6.610345	13.0951	0	74.1
Employment to population ratio	406	53.83128	5.276659	37.72	68.964

Variable	Observations	Mean	Std. dev.	Min	Max
Inclusiveness index (composite indicator)	406	-2.74e-09	1.962349	-4.836123	3.71163
GINI/Poverty headcount ratio ($6.85 per day) interaction term	406	0.4123179	1.467608	-1.656913	10.1158
pca1	406	9.59e-10	1.447771	-8.064634	1.216469
pca2	406	3.75e-10	1.104585	-2.98239	2.743447
pca3	406	1.34e-10	0.7312071	-1.86326	1.736328

Source: computed by the author in Stata18 using World Bank data

The descriptive statistics in Table 3 gives a comprehensive overview of the socio-economic conditions and the results of dimensionality reduction in the dataset. The GINI Coefficient (GINI) with a mean of 31.33, indicates a moderate level of income inequality across the dataset whereas the standard deviation of 3.95, suggests some variation in inequality levels among countries. The 23.2 to 41.3 range, highlights that while some countries exhibit relatively low-income inequality, others face much higher levels. As for the poverty headcount ratio ($6.85 per day) (Povertyheadcount_685) with the mean of 6.61, suggests that on average, a relatively small proportion of the population lives below the poverty line of $6.85 a day. The standard deviation is 13.10 which indicates significant differences in poverty levels across different observations and the 0 to 74.1 range shows that the poverty rates vary dramatically, from non-existent in some regions to extremely high in others. As for the employment to population ratio (Employment_to_pop_ratio) the mean of 53.83% suggests that over half of the population is employed on average. The standard deviation that reaches 5.28, indicates moderate variability in employment rates across the dataset and the 37.72% to 68.96% range suggests differences in employment opportunities and labor market conditions among countries or regions. At the same time the composite indicator (composite_indicator_final_int) data has the mean of approximately 0, which is expected as PCA scores typically center around zero. The standard deviation of 1.96, shows how the scores are spread out and indicates the diversity in socio-economic conditions. The -4.84 to 3.71 range reflects the broad spectrum of conditions measured by the composite indicator. Meanwhile if we were to delve deeper and look into the principal component scores (pca1, pca2, pca3), it can be observed that they have means close to 0, which is standard for PCA analysis. Pca1 captures the most variance (Std. dev.: 1.45), followed by pca2 (Std. dev.: 1.10), and pca3 (Std. dev.: 0.73), indicating the descending order of variance captured by each principal component. The ranges of these components reflect the extent of socio-economic and possibly other variances captured by the

PCA, with pca1 showing the broadest scope, emphasizing its role in capturing the most significant variance within the dataset. Also, it is interesting to analyze the gini-poverty interaction (GINI_Poverty_mean) data description which shows a mean of 0.412, reflecting the average combined effect of inequality and poverty on the composite indicator. The standard deviation is 1.468, indicating variability in how these factors interact across different regions. The -1.657 to 10.116 shows a wide spectrum of interaction effects, from potentially mitigating to exacerbating socio-economic conditions.

5.2. Cluster analysis

Following the computation of the PCA, a cluster analysis is carried out for which the main goal is to see how the new EU candidate states cluster with the EU-26 member states in terms of inclusivity that represents benefit-sharing and participation. As mentioned above, the k-means clustering is run on the dataset based on the first three principal component scores (inclusiveness index). The K-means clustering is conducted which involves assigning each observation to the nearest cluster, based on the composite indicator. This process repeatedly adjusts the cluster centers until convergence.

$$\sum_{i=1}^{n} \sum_{k=1}^{K} \|x_i - \mu_k\|^2 \tag{7}$$

Where:
- n is the total number of observations.
- K is the number of clusters
- xi represents the composite indicator for observation i.
- μk represents the centroid of cluster k.

The goal of the k-means algorithm is to partition the n observations into K clusters in which each observation belongs to the cluster with the nearest mean, serving as a prototype of the cluster.

This step divides the observations into 3 clusters depending on the level of inclusiveness. Table 4 presents the tabulation of the cluster assignment.

Table 4. Tabulation of cluster assignment

Cluster assignment	Freq.	Percent	Cum.	Min.	Max.
1	125	30.79	30.79	-4.836123	-1.196012
2	148	36.45	67.24	-1.162047	1.108191
3	133	32.76	100.00	1.138132	3.71163
Total	406	100.00		-4.836123	3.71163

Source: computed by the author in Stata18 using World Bank data

5.3. Granger causality test

Granger causality tests focus on the ability of past values of one variable to improve predictions of another variable's future values. While these tests identify a predictive relationship, they don't confirm direct causality in the traditional sense but indicate that one variable's historical data enhances the predictability of another (Kirchgässner *et al.,* 2013).

Granger causality tests assume that the data is stationary. Thus, in order to prepare for the Granger-causality test an understanding of whether each of the series is stationary is crucial because non-stationary variables can lead to misleading results in time series analysis. Therefore, the Levin-Lin-Chu (LLC) Unit Root Test is first run, which in the case of GDP per capita (log) shows that this series appears to be stationary, meaning that its statistical properties (mean, variance, etc.) do not change over time. The results of the LLC test are different: in the case of the inclusiveness index, it shows that the series is non-stationary and requires transformation to make it stationary. Thus, the differencing is run for the inclusiveness index after which the LLC test shows it's stationary too. Then, the data are collapsed to summarize and identify broader trends and reduce the complexity. The resulting dataset now each has unique year with an average value for each variable of interest and makes it easier to analyze the trends and patterns over time. To select the appropriate lag length for the Vector Autoregression (VAR) model, the varsoc command is run, which calculates the Akaike Information Criterion (AIC), Hannan-Quinn Information Criterion (HQIC), Schwarz Bayesian Information Criterion (SBIC), and the Final Prediction Error (FPE). The results are shown in Table 5.

Table 5. Optimal lag selection

Lag-order selection criteria								
Sample 2011 through 2019							Number of obs. = 9	
Lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	17.7153				.000105*	-3.49228	-3.58686	-3.44845
1	19.2328	3.0351	4	0.552	.000191	-2.94063	-3.22437	-2.80914
2			4		.000198	-3.13268	-3.60558	-2.91354
3			4		.00015	-4.17783	-4.83989	-3.87104
4			4		.	-107.702*	-108.553*	-107.307*
* optimal lag								
Endogenous: GDPpercapitacurrentUS_log; diff_composite								
Exogenous: cons								

Source: computed by the author in Stata18 using World Bank data

The results of the Vector autoregression and Granger causality Wald tests are shown in Table 6.

Table 6. Vector autoregression and Granger causality Wald tests

Vector autoregression					
Sample 2011 through 2019			Number of obs. = 9		
Log likelihood =27.95737			AIC= -3. 990526		
FPE= .0000841			HQIC= -4. 463426		
Det(Sigma_ml)=6.87e-06			SBIC= -3.771388		
Equation	Parms	RMSE	R-sq	chi2	P>chi2
GDPpercapitacurrentUS_log	5	.038074	0.8597	55.13339	0.0000
diff_composite	5	.158975	0.2398	2.83911	0.5851
	Coefficient	Std. err.	z	P> |z|	[95% conf. interval]
GDPpercapitacurrentUS_log					
GDPpercapitacurrentUS_log					
L3.	-.4047459	.1611791	-2.51	0.012	-.7206511	-.0888407
L4.	-.4543479	.1543388	-2.94	0.003	-.7568464	-.1518494
diff_composite					
L3.	.31355101	.0754399	4.16	0.000	.1656507	.4613696
L4.	.2170331	.0813762	2.67	0.008	.0575386	.3765276
_cons	18.61933	2.393135	7.78	0.000	13.92887	23.30979
diff_composite					
GDPpercapitacurrentUS_log					
L3.	.5443343	.6729857	0.81	0.419	-.7746935	1.863362
L4.	-.0902798	.6444249	-0.14	0.889	-1.353329	1.17277
diff_composite					
L3.	.3244135	.314991	1.03	0.303	-2929574	.9417844
L4.	-.1687116	.3397775	-0.50	0.620	-.8346634	.4972401
_cons	-4.484437	9.992273	-0.45	0.654	-24.06893	15.10006
Granger causality Wald tests					
Equation	Excluded		chi2	df	P > chi2
GDPpercapitacurrentUS_log	diff_composite		30.369	2	0.000
GDPpercapitacurrentUS_log	ALL		30.369	2	0.000
diff_composite	GDPpercapitacurrentUS_log		.72423	2	0.696
diff_composite	ALL		.72423	2	0.696

Source: computed by the author in Stata18 using World Bank data

Further on several diagnostic tests have been carried out.

Table 7. Diagnostic tests

Test	Statistic	Details	Interpretation
Autocorrelation Tests			
Lag 1 - Autocorrelation (AC)	-0.4087	Q-statistic: 2.0672, p-value: 0.1505	No significant autocorrelation since p > 0.05
Lag 1 - Partial Autocorrelation (PAC)	-0.4810		
Lag 2 - Autocorrelation (AC)	-0.0547	Q-statistic: 2.1094, p-value: 0.3483	

Test	Statistic	Details	Interpretation
Lag 2 - Partial Autocorrelation (PAC)	-0.3159		No significant autocorrelation since p > 0.05
Regression Analysis of Residuals			
Residuals of GDP per Capita		Coefficient of GDPpercapitacurrentUS_log: 0.1335 (p = 0.380)	Weak predictive power; $R^2 = 0.1639$
		Coefficient of diff_composite: 0.0323 (p = 0.695)	
Residuals of Composite Indicator (inclusiveness index)		Coefficient of diff_composite: 0.0323 (p = 0.695)	Weak predictive power; $R^2 = 0.1639$
		Coefficient of GDPpercapitacurrentUS_log: 0.1335 (p = 0.380)	
Breusch-Pagan/Cook-Weisberg Test	Chi-square statistic: 1.93	p-value: 0.1649 (both residuals)	Residuals have constant variance; p > 0.05
White's Test (General Heteroskedasticity Test)	Chi-square statistic: 6.49	p-value: 0.2612	No significant heteroskedasticity detected
Cameron and Trivedi's Decomposition			
Heteroskedasticity		p-value: 0.2612	No significant heteroskedasticity
Skewness		p-value: 0.4957	Normal distribution
Kurtosis		p-value: 0.5182	Normal distribution

Source: computed by the author in Stata18 using World Bank data

To check for robustness, Granger causality tests have been run separately by replacing the inclusiveness index with each variable that forms the composite indicator (i.e. GINI, Poverty headcount ratio and the Employment-to-population ratio).

Table 8. Granger causality test run for GINI, Poverty headcount ratio and the Employment-to-population ratio (robustness checks)

Variable Combination	Equation	Excluded Variables	Chi2	df	Prob > Chi2
GINI	GDP per capita (log)	diff_GINI	31.456	2	0.000
		ALL	31.456	2	0.000
	diff_GINI	GDP per capita (log)	1.1539	2	0.562
		ALL	1.1539	2	0.562
Poverty Headcount Ratio	GDP per capita (log)	Poverty Headcount_685	16.64	2	0.000
		ALL	16.64	2	0.000
	Poverty Headcount_685	GDP per capita (log)	0.46953	2	0.791

Variable Combination	Equation	Excluded Variables	Chi2	df	Prob > Chi2
		ALL	0.46953	2	0.791
Employment to Population Ratio	GDP per capita (log)	Employment_to_pop_ratio	2.6543	2	0.265
		ALL	2.6543	2	0.265
	Employment_to_pop_ratio	GDP per capita (log)	15.956	2	0.000
		ALL	15.956	2	0.000
Inclusiveness Index (Composite Indicator)	GDP per capita (log)	diff_composite	30.369	2	0.000
		ALL	30.369	2	0.000
	diff_composite	GDP per capita (log)	0.72423	2	0.696
		ALL	0.72423	2	0.696

Source: computed by the author in Stata18 using World Bank data

6. DISCUSSIONS

The Principal Component Analysis (PCA) results reveal that Comp1 is strongly influenced by Poverty (standardized and inverted) (0.6302) and negatively by GINI and Poverty interaction (-0.6031), suggesting this component represents a blend of poverty inversion and the interaction between GINI inversion and poverty inversion, highlighting overall inequality and poverty interaction. Comp2 is most influenced by Employment to population ratio (standardized) (0.7847), indicating this component primarily captures employment variations. Comp3 is heavily influenced by GINI and Poverty interaction (0.7339) but negatively by Employment to population ratio (standardized) (-0.5860), suggesting it contrasts the general inequality measures with employment factors.

The factor analysis preliminary steps indicate the suitability of the data for PCA and the relationships between the selected variables. The determinant of the correlation matrix equal to 0.204, being greater than 0 (but close to 0), suggests that there is some multicollinearity in the data, but not perfect multicollinearity, indicating that the variables are related but not perfectly correlated so as to be redundant. The Bartlett's Test of Sphericity shows a Chi-square value of 640.377 with degrees of freedom equal to 6 and a p-value of 0.000, allowing the rejection of the null hypothesis and suggesting that there is a significant overall correlation among the variables. This result indicates that the data are suitable for PCA because there are relationships among variables that PCA can explore. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO = 0.506), though considered mediocre given the sample size, yet allows proceeding with the PCA but with careful interpretation of the results (Shrestha, 2021). The moderate KMO might be driven by the varied socio-economic levels of the included countries, thus it is still worth moving forward acknowledging this as a limitation.

The descriptive statistics in Table 3 provide a comprehensive overview of the socio-economic conditions and the results of dimensionality reduction in the dataset. The GINI Coefficient (GINI) with a mean of 31.33 indicates a moderate level of income inequality across the dataset, whereas the standard deviation of 3.95 suggests some variation in inequality levels among countries. The 23.2 to 41.3 range highlights that while some countries exhibit relatively low-income inequality, others face much higher levels. The poverty headcount ratio ($6.85 per day) (Poverty headcount 685) with a mean of 6.61 suggests that on average, a relatively small proportion of the population lives below the poverty line of $6.85 a day. The standard deviation of 13.10 indicates significant differences in poverty levels across different observations, and the 0 to 74.1 range shows that the poverty rates vary dramatically from non-existent in some regions to extremely high in others. The employment-to-population ratio (Employment to pop ratio) has a mean of 53.83%, suggesting that over half of the population is employed on average. The standard deviation of 5.28 indicates moderate variability in employment rates across the dataset, and the 37.72% to 68.96% range suggests differences in employment opportunities and labor market conditions among countries or regions. The composite indicator (composite indicator final int) data have a mean of approximately 0, which is expected as PCA scores typically center around zero. The standard deviation of 1.96 shows how the scores are spread out and indicates the diversity in socio-economic conditions. The -4.84 to 3.71 range reflects the broad spectrum of conditions measured by the composite indicator. The principal component scores (pca1, pca2, pca3) have means close to 0, which is standard for PCA analysis. Pca1 captures the most variance (Std. dev.: 1.45), followed by pca2 (Std. dev.: 1.10), and pca3 (Std. dev.: 0.73), indicating the descending order of variance captured by each principal component. The ranges of these components reflect the extent of socio-economic and possibly other variances captured by the PCA, with pca1 showing the broadest scope, emphasizing its role in capturing the most significant variance within the dataset. The GINI-Poverty interaction (GINI Poverty mean) data description shows a mean of 0.412, reflecting the average combined effect of inequality and poverty on the composite indicator. The standard deviation of 1.468 indicates variability in how these factors interact across different regions. The -1.657 to 10.116 range shows a wide spectrum of interaction effects, from potentially mitigating to exacerbating socio-economic conditions.

From 2006 to 2019, income inequality in Western Europe remained generally stable or slightly decreased (Figure 1). Southern European countries experienced a reduction in income inequality in recent years, following peaks in the early 2010s. In Eastern Europe and the Baltic states, trends were mixed, with some countries achieving significant reductions in inequality. The Nordic countries saw a slight increase in income inequality but maintained overall stability. Moldova,

Ukraine, and Georgia witnessed substantial decreases in income inequality, with Moldova and Ukraine seeing more significant reductions compared to Georgia.

Source: computed by the author in Stata18 using World Bank data

Figure 1. Gini trend by country (26-EU member states and the Republic of Moldova, Georgia and Ukraine) for 2006-2019

From 2006 to 2019, poverty headcount ratios in Western Europe remained very low, with Sweden, Slovakia, Slovenia as well as Belgium, Germany, France, Luxembourg, and the Netherlands consistently recording minimal values (Figure 2). Southern European countries like Greece, Spain, Italy, and Portugal experienced higher poverty rates, particularly during the financial crisis years, with Greece peaking in 2013 and gradually decreasing afterward. In Eastern Europe and the Baltic states, countries like Bulgaria, Romania, and Latvia saw significant reductions in poverty, with Bulgaria dropping considerably over the period, and Romania also showing substantial improvement. The Nordic countries maintained very low poverty rates, generally below 1. Moldova, Ukraine, and Georgia had distinct trajectories; Moldova's poverty rate decreased significantly over the years, Ukraine saw a notable reduction, while Georgia experienced a more gradual decline, indicating substantial but slower progress compared to Moldova and Ukraine.
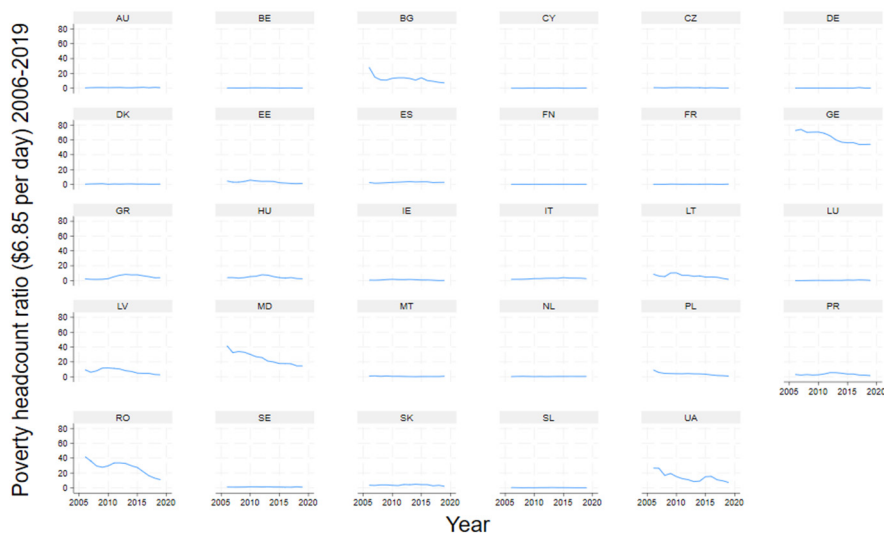
Source: computed by the author in Stata18 using World Bank data

Figure 2. Poverty headcount ratio ($6.85 per day) (26-EU member states and the Republic of Moldova, Georgia and Ukraine) for 2006-2019

From 2006 to 2019, the employment-to-population ratio in Western Europe displayed stability with a slight upward trend in some countries (Figure 3). Belgium, Germany, and Luxembourg saw modest increases, while Southern European countries experienced more fluctuations due to economic crises. Greece and Spain saw initial declines followed by gradual recoveries, while Italy showed more consistent trends. In Eastern Europe and the Baltic states, most countries demonstrated significant improvements, with notable increases reflecting economic growth and labor market improvements. The Nordic countries generally maintained high employment levels with minor fluctuations, showing overall stability. Moldova, Ukraine, and Georgia had distinct trajectories, with Moldova showing a steady increase, Ukraine experiencing fluctuations but ending with a lower employment level, and Georgia having gradual increases followed by slight decreases, indicating mixed progress in employment rates.

The computed inclusiveness index provides a multifaceted view of each country's progress toward social and economic inclusivity. Positive changes in the composite indicator suggest improvements in income distribution, reductions in poverty, and/or higher employment levels, pointing toward greater inclusiveness. Negative changes indicate areas where a country may have faced challenges in achieving inclusivity (Figure 4).
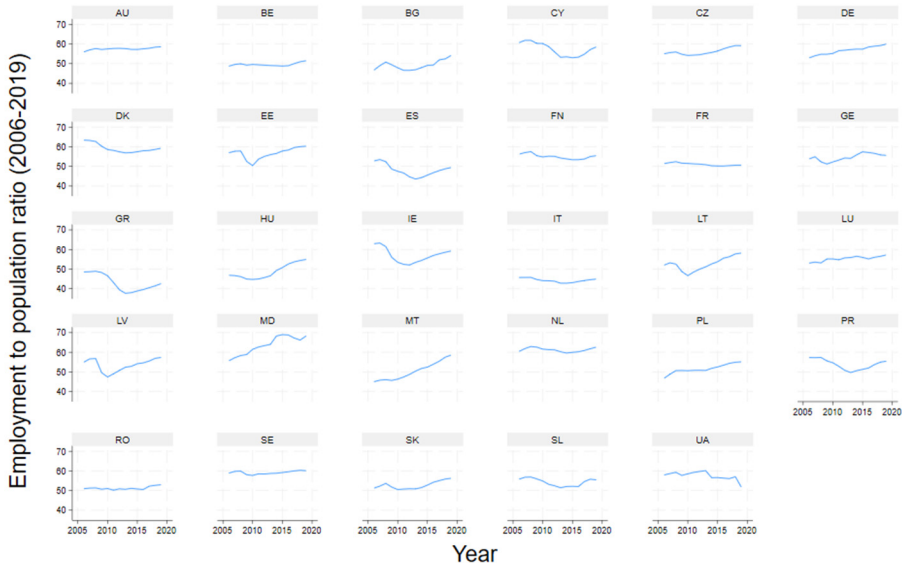
Source: computed by the author in Stata18 using World Bank data

Figure 3. Employment to population ratio by country (26-EU member states and the Republic of Moldova, Georgia and Ukraine) for 2006-2019

Source: computed by the author in Stata18 using World Bank data

Figure 4. Inclusiveness index (benefit-sharing and participation) (26-EU member states and the Republic of Moldova, Georgia and Ukraine) for 2006-2019

In Table 4 of the cluster analysis section, a distribution of how the 406 observations are classified into three distinct clusters is provided. The distribution of cases across the clusters is relatively even. The largest cluster is cluster 2 with 36.45% of cases, and the smallest is cluster 1 with 30.79%. The cumulative percentages help understand the proportion of the data that falls into one cluster or another. In addition, the minimum and maximum values of the inclusiveness index per cluster is provided.

The skater plot in Figure 5 represents the inclusiveness index across various countries from 2006 to 2019, categorizing them into three clusters based on GINI, Poverty headcount ratio ($6.85 a day), and Employment to population ratio metrics related to inclusiveness. Cluster 1 includes countries with negative inclusiveness index values, indicating low levels of inclusiveness and significant issues related to income inequality, poverty, or employment opportunities. Cluster 2 includes countries with inclusiveness index values ranging from slightly negative to moderately positive, indicating moderate inclusiveness levels. Cluster 3 includes countries with positive inclusiveness index values, indicating high levels of inclusiveness.

Figures 6 and 7 compare the inclusiveness index of EU countries and new candidate countries at the beginning (2006) and end (2019) of the analyzed period. Most countries either improved or remained within their initial clusters, with variations in their inclusiveness scores.
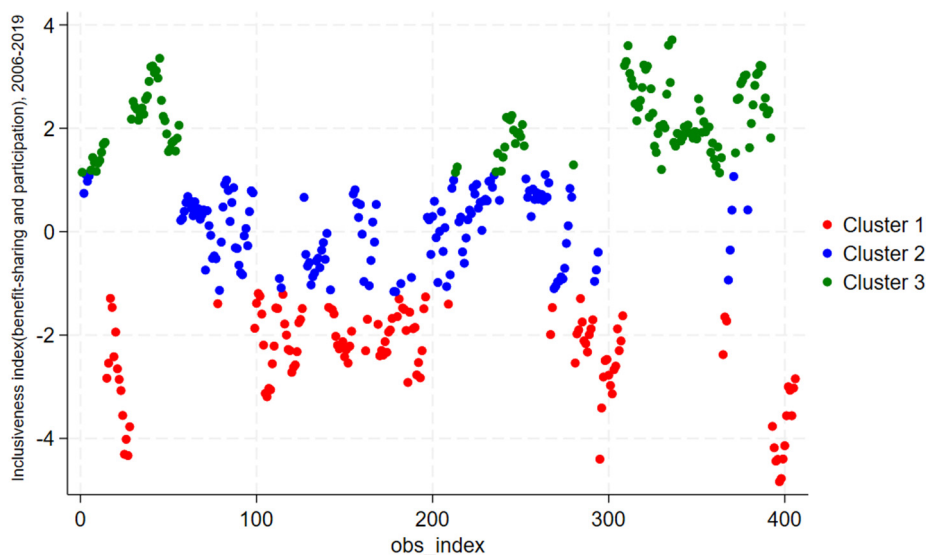
Source: computed by the author in Stata18 using World Bank data

Figure 5. Distribution of 26-EU countries and the Republic of Moldova, Georgia and Ukraine according to the inclusiveness index per year per three clusters, 2006-2019
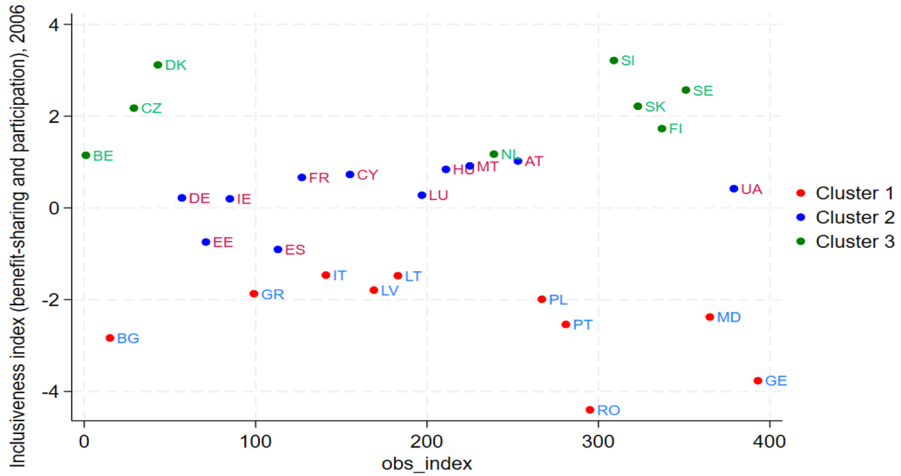
Source: computed by the author in Stata18 using World Bank data

Figure 6. Distribution of 26-EU countries and the Republic of Moldova, Georgia and Ukraine according to the inclusiveness index per clusters in 2006 (beginning of analyzed period)
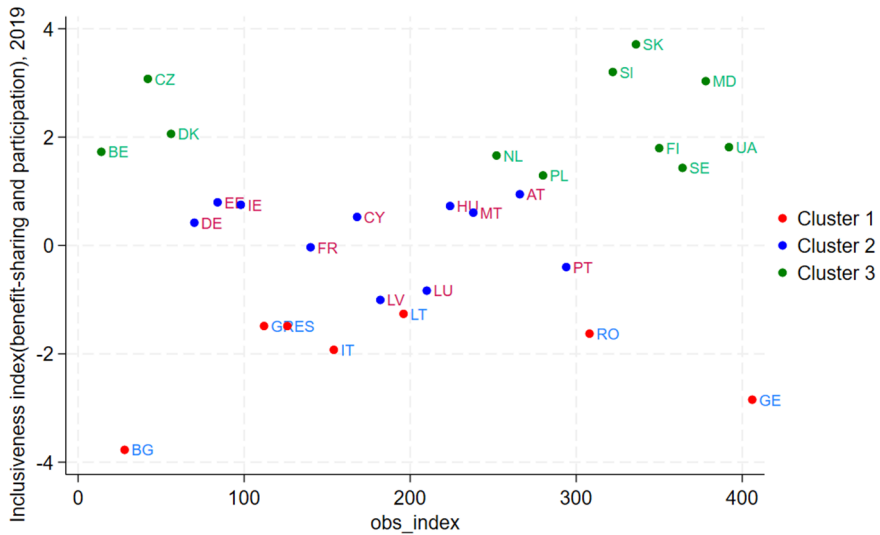
Source: computed by the author in Stata18 using World Bank data

Figure 7. Distribution of 26-EU countries and the Republic of Moldova, Georgia and Ukraine according to the inclusiveness index per clusters in 2019 (end of analyzed period)

The clusters represent groupings based on similarities in the data. Thus, cluster 1 includes the countries which have negative inclusiveness index values that suggest a low level of inclusiveness. The countries in cluster 2 have both negative and positive and the positive values are generally lower than those in cluster 3. And the countries in cluster 3 have high inclusiveness index values. The countries in cluster 1 indicate challenges in achieving high inclusiveness levels. The countries in this cluster may face significant issues related to income inequality, poverty, or employment opportunities, affecting their overall inclusiveness scores. The countries in cluster 2 have inclusiveness index values that range from slightly negative to moderately positive. This indicates a moderate level of inclusiveness, with some countries potentially about to move into higher inclusiveness based on the fluctuations in their index values. These countries might experience fluctuations in inclusiveness due to various socio-economic factors but generally maintain a moderate stance compared to the extremes seen in clusters 1 and 3. Finally, cluster 3 includes countries with positive inclusiveness index values, indicating a high level of inclusiveness. Countries in this cluster are likely to have more equitable income distribution, lower levels of poverty, and higher employment opportunities, contributing to their overall higher inclusiveness scores. These countries demonstrate the effectiveness of their policies and practices in promoting inclusiveness, as reflected by their placement in the highest inclusiveness cluster.

Analyzing the situation in terms of benefit-sharing and participation inclusiveness in 2006 and how it changed in 2019, it can be noted that some countries showed significant improvement either by increasing their inclusiveness index to a less negative number or moving to a higher cluster. Examples are Poland (PL) that moved from cluster 1 with an index of -1.98997 in 2006 to cluster 3 with an index of 1.292099 in 2019. This is a significant improvement and a shift to a higher inclusiveness cluster; Romania (RO), which improved -4.401088 in 2006 to -1.628105 in 2019, although it remained in cluster 1 and maintained its negative value, the improvement in its composite index is notable; Moldova (MD), which had a remarkable positive shift from Cluster 1 in 2006 (-2.37848) to Cluster 3 (3.03267) by 2019, indicating substantial improvements in inclusiveness and Ukraine (UA), that Improved from cluster 2 in 2006 (0.4196498) to Cluster 3 in 2019 (1.814534), indicating an increase in inclusiveness. There are also countries that showed a decline either by decreasing their inclusiveness index to a more negative number or moving to a lower cluster. Among them Cyprus (CY) can be spotted. Although it stayed within cluster 2, the shift from a positive index to a more negative one in certain years indicates fluctuations, but overall, it showed a slight positive change by 2019. Notably, most countries either improved or remained within their initial clusters with variations in their inclusiveness scores, rather than showing a clear deterioration. Also, there are countries that stayed within their initial cluster or showed minor changes in their inclusiveness

index. For instance, Georgia (GE) stayed in Cluster 1, with various degrees of negative inclusiveness indices but showing some improvement or slight fluctuations over time.

Thus, the results of the above inclusiveness index are very much in line with the findings of other research on different constitutive elements of the computed index. For instance, other studies find that overall, Western European countries maintain stable GINI coefficients due to robust social safety nets and progressive taxation systems. Caminada *et al.* (2019) demonstrated that significant portions of GDP dedicated to social transfers significantly reduce income inequality. Southern European countries, such as Greece, Italy, and Spain, have experienced increased income inequality due to financial crises and austerity measures. Serapioni and Hespanha (2019) note that economic downturns and austerity measures disproportionately affected lower-income households, increasing inequality. Eastern European and Baltic states show mixed trends. Research indicates that while some Eastern European and Baltic states experienced substantial increases in income inequality, others maintained more stable GINI coefficients. Despite economic growth, Baltic states have high GINI coefficients due to lower social protection spending compared to other EU countries (Aidukaite, 2009). Social benefits in these states modestly reduce income inequality, with high poverty rates linked to childhood, unemployment, and old age (Skučienė and Lazutka, 2019). Nolan *et al.* (2019) attributes the relatively low levels of income inequality in Nordic countries to robust welfare states, high public spending on education and social protection, and strong labor market institutions. The large-scale migration of Moldovans and resultant remittances have led to a more even distribution of income by providing a critical source of income for many households, including poverty reduction, driving household consumption, and economic growth, particularly in rural areas (Walewski *et al.,* 2009; Le Héron and Yol, 2019). Remittances play a significant role in reducing poverty by smoothing consumption and enhancing investments in education and health (Chea, 2023). However, their impact on income inequality is mixed, as they often benefit younger, more educated households, potentially increasing inequality (Walewski *et al.,* 2009). Additionally, remittance flows are sensitive to economic conditions in destination countries, leading to potential volatility (Le Héron and Yol, 2019). Ukraine displays a slight increase in income inequality, while Georgia shows positive trends due to efforts toward economic stabilization and reforms. In Ukraine, personal income tax reforms have reduced inequality by shifting the tax burden from the poor to the rich (Markina, 2022; Sokolovska and Rainova, 2023). These reforms have improved income distribution despite political instability. Georgia has implemented comprehensive economic reforms, reducing the tax burden and enhancing economic freedom (Bedianashvili, *et al.,* 2019). However, challenges such as regional disparities and limited social safety

nets persist, explaining why Georgia remains less inclusive compared to Moldova and Ukraine (Lavrelashvili, 2018).

With regard to the prediction relationship between growth and inclusiveness, the Granger causality test indicates that past values of the composite inclusiveness index significantly predict future GDP per capita values, suggesting a unidirectional predictive relationship. Diagnostic tests confirm the model's viability, showing no significant autocorrelation or heteroskedasticity in residuals. Robustness checks reveal that the GINI and Poverty Headcount Ratio components significantly contribute to the Granger causality effect of the composite index on GDP per capita, whereas the Employment-to-Population Ratio does not, though it still adds value to the overall inclusiveness measure.

This unidirectional predictive relationship aligns with studies by Sotiropoulou *et al.* (2022) whose results indicate a one-way causality running from income inequality to economic growth. In addition, the results align with Staníčková (2017) findings that highlight the impact of labor market and income disparities on poverty, emphasizing that social inequality hampers sustainable economic growth. Moreover, the results are in line with Michálek and Výbošťok (2019) who show that economic growth is associated with a decrease in poverty, but that increasing income inequality can raise poverty levels. This study supports the significance of reducing disparities in promoting economic growth.

The study has limitations, that includes a short span of data range, i.e. the data range from 2006 to 2019, which may not capture recent socio-economic changes, such as those due to the COVID-19 pandemic. The PCA method used to construct the inclusiveness index might oversimplify complex socio-economic realities. Additionally, the focus on only three new EU candidate countries and the 26 EU countries may limit the generalizability of the findings. Lastly, the Granger causality test does not imply causation and might be influenced by unobserved variables. Further research should incorporate more recent data, additional countries, and alternative methodologies to validate and extend the findings.

7. CONCLUSIONS

The undertaken analysis provides a statistical foundation for further exploration of the benefit sharing and participation dimension of inclusive growth and a need to delve into the characteristics that distinguish each cluster, potentially suggesting targeted socio-economic policies or interventions. It serves as a primary step in analyzing how the inclusiveness index, reflecting benefit-sharing and participation, impacts growth in the EU countries and the new candidate states. The comparative analysis of inclusiveness indices among the new EU candidate countries—Moldova, Ukraine, and Georgia—together with the established EU-26 member states provides certain insights into their respective trajectories and alignments with EU socio-economic standards.

The data-driven approach using Principal Component Analysis and k-means clustering highlights both disparities and progress among the candidate countries, each demonstrating unique patterns of adaptation and progress. Moldova, Ukraine, and Georgia have shown considerable efforts towards improving their inclusiveness metrics, which are critical for their aspirations of EU membership. The variation in their progress underscores the necessity of tailored policy interventions focusing on enhancing employment opportunities, reducing poverty and income inequality, and promoting social inclusion.

The Granger causality test indicates that past values of the composite inclusiveness index significantly predict future values of GDP per capita, but not vice versa. This unidirectional predictive relationship might imply that the inclusiveness index serves as a non-negligible indicator for forecasting GDP per capita.

The preliminary results strengthen the need for policies that prioritize inclusiveness on the benefit-sharing and participation dimension, since inclusiveness (as measured by the composite indicator) predicts GDP per capita. Thus, policies should prioritize reducing inequality and increasing employment. Policymakers can focus on reducing poverty, promoting fair wages, and improving social mobility to positively impact GDP growth.

It is also worthwhile monitoring changes in the composite inclusiveness index which could serve as an early warning system for potential changes in GDP per capita. Governments can use shifts in inclusiveness indicators to anticipate economic growth or downturns, adjusting fiscal and monetary policies accordingly.

Among the main takeaways the following could be listed:

1. The candidate countries have shown differing levels of advancement towards inclusiveness and therefore a customized approach in policymaking is needed that addresses specific national contexts and challenges.
2. The EU's active support through its social pillar principles remains crucial. These frameworks must be robustly implemented to ensure that the benefits of economic growth are equitably shared.
3. Continuous monitoring and analysis will be essential as Moldova, Ukraine, and Georgia progress through the stages of EU integration. Further research should explore the long-term impacts of these changes on broader European socio-economic structures and potential adjustments needed within the EU's policy frameworks.
4. The findings highlight the need for sustained and strategic interventions focused on reducing inequality and poverty and increasing participation (employment). These strategies will advance the candidate countries' EU accession aspirations while strengthening the EU's social cohesion and economic stability.

In summary, this analysis emphasizes the importance of inclusive policies (on the benefit-sharing and participation dimension) for boosting economic development, highlighting the predictive power of inclusiveness on GDP per capita. By prioritizing tailored socio-economic interventions, policymakers, researchers, and stakeholders can help foster a more inclusive and equitable European Union.

ACKNOWLEDGEMENT

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CHALLENGES AND DYNAMICS OF THE AI ECONOMY IN THE EU ADMINISTRATIVE AREA

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Abstract
The AI economy is a dynamic component of the digital ecosystem, contributing to social advancement while varying across different regions. We aim to discover the challenges and dynamics of the AI economy models within the EU, comparing them to the other global regions, along with the current state of the theoretical debates and regulations, to deepen and transfer knowledge and policies among the parties.

Exploring a mixed-methods approach, the research combines a quantitative systematic review with content analysis of academic publications. We analyzed 12 papers from the Scopus database, published between 2019 and 2024, using the keywords "AI economy."

Our findings indicate that in the EU, ethical considerations and regulatory frameworks take precedence over rapid technological innovation. The EU prioritizes sustainable business models over short-term productivity gains, in contrast to the market-driven approach. Strong social policies to support labor force displacement are preferred over a market-driven approach.

The study emphasizes that proactive ethical guidelines and reskilling initiatives are critical to mitigating the adverse effects of automation to balance innovation, business productivity, and societal well-being, addressing both job displacement and the long-term social capabilities of the AI economy.

Keywords: *AI economy; European Union; AI business model; AI labor market; automation*
JEL Classification: H83, O11, O31, O33, O35, O43, O57

1. INTRODUCTION

Artificial Intelligence (AI) is emerging as a critical driver of economic growth and innovation globally. Its integration into various sectors has transformed how businesses operate, how consumers interact with technology, and how economies grow and sustain themselves. The AI economy, which encompasses all economic activities associated with the development and application of AI technologies, is becoming increasingly influential, particularly within the European Union (EU) administrative area. The EU has focused on fostering ethical AI development while promoting sustainability, transparency, and fairness through strict regulatory frameworks (European Commission, 2021a).

The objective of this paper is to examine the key features of AI economy models in the EU administrative area and compare them with models in regions like the United States and China. The study will focus on the challenges of balancing technological innovation with ethical governance and sustainability in the EU, as well as the characteristics of AI's impact on both consumer and business sectors. Additionally, it will highlight theoretical debates on AI governance and economic impact, emphasizing knowledge transfer and policy cohesion across EU member states (Floridi *et al.*, 2018).

To guide this study, the central research question is: "*What are the main challenges and dynamics of the AI economy within the EU administrative area compared to other global regions?*"

The study will include the following sections: Literature Review, summarizing research on AI's economic impact and governance; Methodology, detailing the systematic literature review and policy analysis frameworks; Results, presenting findings on regulatory challenges and comparative analysis of AI models; Discussion, analyzing the implications for growth, innovation, and sustainability; and Conclusion, offering a summary of findings and recommendations for future policy and research.

2. LITERATURE REVIEW

The academic literature on the AI economy has rapidly expanded in recent years, reflecting growing awareness of AI's transformative potential across industries and its implications for global and regional economies.

The role of AI as a driver of economic growth has been a central focus in much of the literature. According to Brynjolfsson and McAfee (2017), AI has the potential to increase productivity by automating routine tasks, thereby freeing up human capital for more complex and creative work. This shift has already been observed in sectors such as manufacturing, healthcare, and logistics, where AI has optimized supply chains, improved patient outcomes, and increased operational efficiency.

Furthermore, Acemoglu and Restrepo (2020) argue that AI can lead to significant economic gains through the development of new products and services, which in turn create new markets and opportunities for innovation.

Within the EU, van Roy *et al.* (2021) examine how AI has contributed to economic growth through the European digital single market, emphasizing AI's role in creating cross-border digital services and enhancing the efficiency of small and medium enterprises (SMEs). However, the authors also caution that the EU's strict regulatory frameworks, though essential for protecting privacy and human rights, could potentially stifle innovation if not carefully managed. This tension between regulation and innovation is a recurring theme in the literature on the AI economy in Europe.

AI is increasingly recognized for its ability to drive technological and business innovation. AI-driven technologies, such as machine learning, natural language processing, and robotics, have accelerated the pace of research and development (R&D), enabling companies to innovate more rapidly than before. In particular, the fourth industrial revolution—characterized by the fusion of AI with other digital technologies—has enabled companies to adopt new business models that leverage AI for automation, personalization, and data-driven decision making (Schwab, 2017).

In the EU, Svetlova and Lindh (2022) explore how AI is reshaping industries such as financial services and automotive manufacturing, allowing for the development of smart factories and autonomous vehicles. These innovations have the potential to transform traditional business processes, increase efficiency, and reduce operational costs. However, the authors also note that the pace of AI adoption varies across different EU member states, with some countries, such as Germany and France, leading the way in AI innovation, while others lag behind due to a lack of investment and infrastructure.

The potential of AI to contribute to sustainability has also been widely discussed in the literature and official reports. McKinsey Global Institute (2018) identified AI as a key enabler of sustainable development, particularly in areas such as energy management, waste reduction, and climate change mitigation. AI can optimize resource use by enabling smarter decision-making processes, such as in smart grids, which use AI to balance energy supply and demand more efficiently. In the context of the EU, Sartor and Paunov (2022) emphasize that AI is playing a critical role in the EU's efforts to achieve its Green Deal goals, particularly in reducing carbon emissions and improving energy efficiency across sectors.

Moreover, AI's contribution to circular economy models has been examined by Bocken *et al.* (2021), who argue that AI can help to create more sustainable production processes by reducing waste and enhancing recycling systems.

This approach aligns with the EU's focus on sustainability, as AI technologies are being used to optimize supply chains, improve resource allocation, and reduce environmental impact.

The literature comparing AI economic models across global regions consistently points to significant differences in how AI is deployed and regulated. Huang and Rust (2021) compare the US and China, noting that both countries have embraced AI as a key driver of economic and geopolitical power, but they differ in their approach to AI integration.

In the US, AI development is primarily driven by the private sector, with major investments coming from technology companies such as Google, Microsoft, and Amazon. This market-driven approach has led to rapid innovation, but has raised concerns about data privacy and algorithmic bias. In contrast, China's AI economy is characterized by strong state intervention, with the government playing a key role in steering AI development to achieve national goals, such as becoming the global leader in AI by 2030.

In comparison, the EU has taken a more cautious approach to AI adoption, focusing on ethical AI and sustainability. As McKinsey Global Institute (2018) argues, the EU's emphasis on trustworthy AI and regulatory oversight positions it as a leader in responsible AI development, but this comes with trade-offs in terms of the speed of AI adoption. The challenge for the EU is to strike a balance between ensuring public trust in AI systems and fostering an environment that supports rapid technological innovation.

Finally, the literature underscores the importance of knowledge transfer and policy harmonization in the AI economy. Gereffi *et al.* (2020) highlight the need for cross-border collaboration and the sharing of best practices to ensure that AI technologies are implemented in a way that maximizes their economic benefits while minimizing potential risks. This is particularly relevant in the context of the EU, where fragmented AI policies across member states can hinder the development of a cohesive AI economy. Zhang and Dafoe (2021) suggest that the EU should focus on creating a unified AI strategy that encourages knowledge sharing among member states and promotes the transfer of best practices from regions that are further ahead in AI innovation.

3. METHODOLOGY

This study combines a Systematic Literature Review (SLR) and Policy Analysis Frameworks (PAF) to evaluate the dynamics of the AI economy in the EU. The SLR follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, and the Policy Analysis Frameworks include Comparative Policy Analysis (CPA) and Regulatory Impact Analysis (RIA), allowing for a comparative assessment of AI regulations in the EU, the US, and China.

Only 1 result for the "AI economy" and "European Union" Scopus research is a book chapter from June 2024, which does not fulfill the criteria applicable to our SLR (de Bruin, 2024).

This is the reason we applied a systematic literature review involved searching the Scopus database for peer-reviewed articles and conference papers, in final stage of publication in journals and conference papers, open-access onluy, published in English between 2019 and 2024 with the keyword "AI economy" (Table 1).

Table 1. PRISMA Flow of Literature Review

Stage	Number of Papers
Initial Search (2020-2024)	22
Post Document Type Filtering (articles and conference papers, final publication in journals and conference proceedings)	18
Post Language and Access Filtering (English papers and open access only)	13
Post Manual Checking for Relevance	12

Source: Page *et al.* (2021)

The final sample of 12 papers (listed in Table 2) was analyzed using bibliometric techniques to identify key themes such as regulatory challenges, sustainability, and public trust in AI technologies and presented in Section 4 – Results.

As complementary qualitative methodologies we used Policy Analysis Frameworks (PAF), such as Comparative Policy Analysis (CPA), developed by Heidenheimer, Heclo, and Adams (1990), that was used to compare the AI governance frameworks in the EU, the US, and China. The Regulatory Impact Analysis (RIA) framework (OECD, 2008) assessed the economic impact of AI regulations in the EU, focusing on compliance costs, innovation impact, and stakeholder consultation. The results are presented in Section 4 – Results, too.

4. RESULTS

As we mentioned aboce, we applied two qualitative-centric methodologies in order to find the chellenges, dynamics and opportunities of the AI economy in the EU administrative area, compared with other global powers in this field.

4.1. Systematic literature review (SLR)

The first search on Scopus based on the "AI economy and "European Union" resulted in only one result, meaning the chapter "Co-regulation and AI-Innovation" by Roeland W. de Bruin (2024).

This paper focuses on the role of co-regulation in AI governance, particularly within the context of the proposed EU AI Act. The chapter discusses how co-regulation—collaborative efforts between public authorities and private stakeholders—can be used to promote both innovation and ethical AI development. It emphasizes the need for a sustainable regulatory framework that fosters trust and broad acceptance of AI technologies across various sectors, balancing innovation with safety and ethical considerations. The EU's legislative efforts aim to support AI-driven growth while ensuring that AI systems comply with strict regulatory standards to protect fundamental rights.

So, because our results are not enough for our comparative analysis we applied the Scopus search only on the "AI economy" keywords, without mentioning regions, countries or geopolitical powers. The final 12 articles resulted such were analyzed for common themes in AI governance, economic impact, and sustainability (Table 2).

Table 2. Selected Papers from the Systematic Review

No.	Title	Region	Main Theme
1	A humanistic model of corporate social responsibility in e-commerce with high-tech support in the artificial intelligence economy (Zavyalova *et al.*, 2023)	Global	CSR and ethics in AI e-commerce
2	Artificial Intelligence and Entrepreneurship: Implications for Venture Creation (Chalmers *et al.*, 2021)	Global	AI's role in innovation and entrepreneurship
3	City brains and smart urbanization: Regulating 'sharing economy' innovation in China (Noesselt, 2020)	China	AI in smart cities and urbanization
4	Ecological behaviour in the AI economy and its impact on biodiversity: Lessons from the COVID-19 pandemic and a post-COVID perspective (Popkova *et al.*, 2022)	Global	AI's role in sustainability and biodiversity
5	ESG investing in the AI era: Features of developed and developing countries (Khoruzhy *et al.*, 2022)	Global	AI's contribution to sustainable investing
6	Improvement of Product Quality in the AI Economy: Human Knowledge vs. Digital Technologies (Sozinova *et al.*, 2023)	Global	AI and product quality

No.	Title	Region	Main Theme
7	Smart outsourcing in support of the humanization of entrepreneurship in the artificial intelligence economy (Matytsin *et al.*, 2023)	Global	AI in business models and entrepreneurship
8	The development of Kondratieff's theory of long waves: The place of the AI economy humanization in the 'competencies-innovations-markets' model (Tyulin *et al.*, 2023)	Global	Economic theory and AI's role in growth cycles
9	The Environmental AI Economy and Its Contribution to Decarbonization and Waste Reduction (Ragulina *et al.*, 2022)	Global	AI's role in decarbonization and sustainability
10	Theoretical and practical research on mathematical modeling of economy and finance based on artificial intelligence (Sun, 2024)	China	AI in finance and economic modeling
11	The role of education and social policy in the development of responsible production and consumption in the AI economy (Atabekova *et al.*, 2022)	Global	AI and its role in social policy
12	Artificial intelligence and China's authoritarian governance (Zeng, 2020)	China	AI's role in governance and surveillance

Source: own processing

As resulted from the these papers, the AI economy is extensively discussed as a main theme, primarily from a global perspective. Several key themes emerge, including AI's potential to drive industrial transformation, entrepreneurship, sustainability, and social policy. However, despite this global focus, there are notable gaps and potential in the EU's AI economy, which is briefly addressed or implied in a few papers.

The majority of the articles, such as *Artificial Intelligence and Entrepreneurship: Implications for Venture Creation* (Chalmers *et al.*, 2021) and *The Development of Kondratieff's Theory of Long Waves* (Tyulin *et al.*, 2023), focus on the global implications of AI on various sectors, such as entrepreneurship and economic cycles. These papers explore how AI is transforming industries and economies across the world (Matytsin *et al.*, 2023), often without singling out specific regions like the EU.

For example, Chalmers *et al.* (2021) emphasize the AI in global entrepreneurship, as the role of AI in driving entrepreneurial activities across the world, but there is little attention to how the EU specifically supports AI-driven startups compared to global leaders like the US or China. Tyulin *et al.* (2023)

analyze AI and economic theory, mainly the AI's role in long-wave economic theory but focus on global economic patterns rather than regional analyses.

Some articles address AI's role in environmental sustainability, particularly in the context of the global climate crisis. For example, Ragulina *et al.* (2022) provides insights into how AI can contribute to decarbonization and environmental sustainability. Although there is a global focus, the relevance to EU decarbonization strategies is clear, especially given the EU's Green Deal ambitions. However, there is no explicit discussion about the EU's leadership or potential shortcomings in this area compared to other global regions.

Similarly, Popkova *et al.* (2022) touches on global biodiversity and environmental management, with indirect implications for the EU, which has strong biodiversity policies. Still, there is no direct analysis of the EU's AI contributions to these global efforts.

A notable contrast arises in the articles focusing on China's AI economy, particularly the papers *Artificial Intelligence and China's Authoritarian Governance* (Zeng, 2020) and *City Brains and Smart Urbanization* (Noesselt, 2020). These papers highlight how China has aggressively incorporated AI into its governance and urbanization strategies, showcasing a strong state-driven AI economy.

Compared to this, the EU's AI economy appears less prominent in the reviewed papers, suggesting that while the EU has significant regulatory frameworks, such as the AI Act, it may lack the same aggressive AI-driven initiatives found in China. The absence of focused analysis on the EU's role highlights a potential gap: the EU is not as visible as a major player in the AI economy on a global scale as the US or China.

Most papers do not offer detailed EU regional analyses, with only a few exceptions. For example, the paper "*ESG investing in the AI era: Features of developed and developing countries*" (Khoruzhy *et al.*, 2022) includes a global comparison of developed and developing countries, touching upon the features of ESG investing in AI. While the EU is mentioned, there is no extensive focus on its ESG investment strategies in comparison to other regions. The paper "*The role of education and social policy in the development of responsible production and consumption in the AI economy*" (Atabekova *et al.*, 2022) indirectly mentions EU countries such as the UK and Ireland (that are not part anymore of the EU) in the context of education and AI, but the focus remains on broader global trends.

Despite the global focus of most articles, the potential for the EU to take a leading role in the AI economy is implied, especially in areas such as ethical AI and sustainability. The EU's strong regulatory framework (e.g., the AI Act and GDPR) provides a foundation for trustworthy and human-centric AI development (Zavyalova et al, 2023; Sozinova *et al.*, 2023; Sun, 2024). However, the lack of regional focus in these papers may reflect a broader challenge: while the EU has

ambitious AI regulations and sustainability goals, it may still lag behind in AI-driven innovation compared to global competitors like the US and China.

4.2. Comparative Policy Analysis (CPA) and Regulatory Impact Analysis (RIA)

The regulatory bodies and normative acts for AI governance vary significantly across regions, with each region adopting unique approaches to regulate AI technologies. Below are the regulatory frameworks for each region.

The US approach is decentralized, with multiple regulatory bodies overseeing AI governance, such as:

• National Institute of Standards and Technology (NIST): Sets AI standards and fosters innovation (National Institute of Standards and Technology [NIST], 2023b; Keystone Research Center Future of Work Project, 2019). These reports provide comprehensive insight into how AI is shaping economies and the steps being taken to align AI development with economic goals and workforce needs. The document "Artificial Intelligence Risk Management Framework (AI RMF 1.0)" of National Institute of Standards and Technology [NIST] (2023a) outlines a framework for managing risks associated with artificial intelligence, providing guidelines for developing trustworthy AI systems.

• Federal Trade Commission (FTC): Ensures compliance with data protection and privacy laws (Federal Trade Commission, 2023). This report provides key insights into how AI is affecting creative fields, summarizing discussions from a panel of experts on the impact of AI in industries like art, music, and literature.

• Department of Defense (DoD): Focuses on AI applications for defense and security.

The AI Bill of Rights (2022) outlines principles and guidelines aimed at protecting civil rights and freedoms in the age of AI, emphasizing the need for transparency, privacy, and fairness in AI technologies.

The conclusion is that the US lacks a comprehensive federal AI law, leading to variations in AI governance across states.

China adopts a centralized approach to AI governance:

• Ministry of Industry and Information Technology (MIIT): Leads AI policy development (MIIT, 2022). This document of the State Council of the People's Republic of China (2024) outlines China's updated AI development strategy, focusing on advancements in AI technologies and their applications in various sectors, with an emphasis on regulation, innovation, and global collaboration.

• Cyberspace Administration of China (CAC): Oversees data privacy and security in AI applications (Reuters, 2020). This article discusses China's efforts to regulate its internet giants, with the direct implication of CAC, focusing on the draft rules aimed at strengthening oversight over the digital economy, particularly concerning data privacy and monopoly practices.

Creemers (2020) provides a detailed analysis of the role and influence of China's Cyberspace Administration, discussing its regulatory power and its impact on the development of China's internet governance and cybersecurity policies.

China's New Generation AI Development Plan (State Council of the People's Republic of China, 2017) aims to make China a global AI leader by 2030, with AI regulations closely tied to state-driven innovation strategies. Creemers *et al.* (2017) provide a detailed overview of China's strategic goals to become a global leader in AI by 2030, outlining development priorities, milestones, and key sectors for AI implementation.

The main normative body in the EU administration area is the European Commission. The Commission is behind significant legislative proposals like the AI Act and initiatives related to digital strategy, data governance, and digital innovation.

The European Parliament, along with the Council of the European Union, participates in the legislative process. It plays a crucial role in debating and amending AI-related proposals, ensuring alignment with ethical and societal concerns.

The European Council provides political direction to the EU's AI strategy. It has emphasized the need for AI regulation that ensures both innovation and adherence to European values, such as privacy and human rights.

The European Data Protection Board (EDPB) oversees data protection and privacy laws across the EU. Given that AI systems often rely on vast amounts of data, the EDPB plays a key role in ensuring AI systems comply with the General Data Protection Regulation (GDPR).

European AI Alliance is a multi-stakeholder forum set up by the European Commission to discuss and collaborate on AI policy. It includes experts from academia, industry, civil society, and government, providing advice on ethical, legal, and technical aspects of AI.

The Commission focuses on regulating AI to ensure ethical and trustworthy development while promoting innovation across the EU. It views the AI economy as part of its broader digital economy, where AI drives innovation, improves productivity, and contributes to social and environmental sustainability (European Commission, 2021a). Key elements of the AI economy include AI as a driver for green growth, industrial transformation, and the digital single market.

The EU's AI governance is shaped by mandatory regulations that apply to all member states, such as the General Data Protection Regulation (GDPR) (European Parliament and Council of the European Union, 2016), which is mandatory across all EU member states, regulating data protection and privacy (European Commission, 2021). A proposed regulation, entitled "AI act" will classify AI systems based on risk and set mandatory compliance standards across the EU by 2025 (European Parliament, 2023).

Table 3 summarizes the key normative acts implemented in the EU member states, without being complete.

Table 3. Regulatory Acts in the EU and Their Implementation (own source)

Act	Status	Implementation in Member States	Scope
GDPR	Mandatory	Fully implemented in all EU states	Data protection and privacy
AI Act	Proposed (mandatory)	To be implemented by 2025	AI governance and risk management
Digital Markets Act (DMA) (European Union, 2022a)	Mandatory	Implemented in all member states	Regulation of digital platforms
Digital Services Act (DSA) (European Union, 2022b)	Mandatory	Implemented in all member states	Content moderation and platform transparency

Source: own processing

The Digital Markets Act (DMA), Regulation (EU) 2022/1925, aims to ensure fair competition in the digital market by regulating large digital platforms acting as gatekeepers. It introduces obligations to promote open and competitive digital markets. On the orher hand, the Digital Services Act (DSA), Regulation (EU) 2022/2065, introduces new rules for online platforms, promoting transparency, accountability, and safety in the digital market. It aims to protect users' rights and ensure a fairer digital environment across the EU. The DSA promotes innovation while safeguarding digital users' rights within the EU's digital market.

These are not the only normative acts within the EU administration area. So, there are more to mention. Some are mandatory acts, such as Data Governance Act (DGA), a regulation that is binding across the EU and AI Liability Directive (Proposed Directive), a proposed directive focusing on accountability and liability. Other are optional, still in the AI area within the EU administration area, such as: Ethics Guidelines for Trustworthy AI, published by the High-Level Expert Group on AI, adopted in Germany, France and Spain; Coordinated Plan on AI, an optional plan adopted by the European Commission in collaboration with member states, adopted in Finland, Netherlands and Italy and High-Level Expert Group on AI Reports, non binding guideleas that provide guidance on AI governance, ethics, and socio-economic impacts, and adopted in Estonia and Luxemburg.

To sum up, the implementation of these acts varies, with some member states leading in compliance, while others require additional support and policy alignment to fully implement the regulations.

After all this presentationn we can offer a pertinent answer to our research question "What are the challenges and dynamics of the AI economy in the EU's administrative area?", as follows:

The challenges and dynamics of the AI economy in the EU administrative area include the difficulty of balancing innovation with ethical governance and regulatory compliance. While the EU has strong regulatory frameworks like the GDPR and the proposed AI Act, which focus on ethical and trustworthy AI development, the region lags behind the US and China in aggressive AI-driven initiatives. The EU's AI economy shows potential in sustainability and ethical AI but lacks global prominence compared to these competitors. Challenges include harmonizing AI innovation across member states and closing the innovation gap with global leaders.

In the same time, the AI economy in the EU faces significant challenges such as stringent regulatory frameworks, investment gaps, and labor market disruptions. However, it is also driven by rapid market growth, technological advancements, and sustainability initiatives. Balancing innovation with ethical considerations is crucial for maintaining competitiveness.

5. DISCUSSION

The study reveals that the AI economy in the EU is shaped by a unique regulatory environment that prioritizes ethical governance. The GDPR and the upcoming AI Act set high standards for data protection and AI ethics, ensuring that AI technologies are deployed responsibly. However, this regulatory approach can also stifle innovation, particularly for small and medium-sized enterprises (SMEs) that struggle with the high costs of compliance.

In contrast, the United States and China adopt more flexible approaches, allowing for faster AI innovation but with fewer ethical safeguards. The Comparative Policy Analysis (CPA) reveals that the EU's emphasis on ethical AI is beneficial for building public trust, but it may hinder its competitiveness in the global AI market.

The Regulatory Impact Analysis (RIA) also highlights the economic implications of these regulations, particularly the high compliance costs for businesses operating in high-risk AI sectors. While the AI economy continues to grow, these costs could slow the adoption of AI technologies, limiting the EU's ability to compete with regions like the US and China.

As a result, we can provide the definition of AI economy as depicted in the EU administrative area and in the two main and leading countries, as the US and China (Table 4).

Table 4. The definitions of AI economy

Region	Definition of AI Economy
European Union	AI is a **general-purpose technology** driving **sustainability** and **ethical growth**, with a focus on privacy, fairness, and collaboration. AI supports the EU's broader **digital single market** and **green goals.**
United States	AI drives **innovation-led growth**, **global competitiveness**, and **national security**. It is **private sector-led**, with the government playing a supporting role through research, regulation, and infrastructure investments.
China	AI is a state-driven strategy for **economic modernization** and **global leadership**, integrating AI into **industrial** and **social management** systems. The AI economy is focused on **national development** and **global competitiveness.**

Source: own processing

If we briefly analyze the dynamics of the EU budget in the AI investments we find that in 2019, the EU invested between EUR 7.9 and EUR 9 billion in AI (40–45% of the annual investment target of EUR 20 billion set by the European Commission), meaning once more that the EU is not the leading AI region in the world (Ricart *et al.*, 2022).

By 2025, AI investments in the EU are projected to reach EUR 22.4 billion, surpassing the EUR 20 billion target by over 10%, in order to maintain Europe's competitive edge in AI while adhering to ethical and human-centric principles.

European Commission (2024) estimates the financial budget for EU since June 2025. So, from the total EU 2025 Budget (EUR 199.7 billion), two major clusters, meaning Single Market, Innovation, and Digital (EUR 21.4 billion, meaning 10,7% from the total) and Research and Innovation (EUR 13.5 billion) include investments and expenses for the AI sector. Such, Single Market, Innovation, and Digital cluster is a separate slice for AI investments, as part of the overall allocation for innovation and digital technologies, include Artificial Intelligence expenditure of *175,536 million as part of the Digital Europe Programme*. AI investments are included also in the Research and Innovation, as AI-related segments as part of Horizon Europe and innovation activities. These amounts show once more that the EU is not a leading region in the AI sector in the world.

The next figure (Figure 1) is a new example of the scale of the AI sector in the EU administration area, compared with the US and China, from the private sector, meaning the new start ups that arise from 2019 to 2023, meaning about 23% of the worlwide ones.

Source: Data on Stage, by Statista (Statista, 2024)

Figure 1. Share of AI startup deals from 2019 to 2023

The discussion concludes that strong ethical regulations like the GDPR and the AI Act, which prioritize responsible AI deployment, shape the AI economy in the EU. However, these regulations may stifle innovation, particularly for SMEs, due to high compliance costs. In contrast, the US and China focus on faster innovation with fewer ethical constraints. The EU invests heavily in AI but still lags behind these global competitors. We expect the EU's AI investments to surpass targets by 2025, prioritizing ethical growth over rapid innovation.

6. CONCLUSION

The AI economy in the EU is shaped by its unique regulatory framework, which prioritizes ethical governance, privacy, and transparency. Key regulations, such as the General Data Protection Regulation (GDPR) and the proposed AI Act, ensure that AI technologies in the EU are developed responsibly, safeguarding individual rights and societal values. However, these stringent regulations also pose significant challenges. High compliance costs, particularly for small and medium-sized enterprises (SMEs), can slow down innovation and make it difficult for EU businesses to compete globally. Additionally, the EU faces other structural challenges such as investment gaps in AI development and labor market disruptions, which need to be addressed for sustainable growth.

Despite these hurdles, the EU's AI economy is driven by rapid market growth, technological advancements, and a strong commitment to sustainability initiatives. The EU's focus on using AI to achieve environmental goals, such as those outlined in the European Green Deal, positions it as a leader in promoting AI-driven sustainability.

However, balancing the region's ethical considerations with the need for accelerated innovation is crucial if the EU is to maintain its global competitiveness, especially in comparison to regions like the United States and China.

Both the United States and China have adopted more flexible AI governance models that prioritize rapid innovation. The US has a private sector-led AI economy with fewer regulatory constraints, allowing for faster technological development. China, in contrast, operates a state-driven model that integrates AI deeply into industrial and governance systems, aiming for global leadership in AI innovation. These regions emphasize AI's economic potential, often at the expense of stringent ethical oversight, which sets them apart from the EU's more cautious approach.

To address these challenges and strengthen the EU's position in the global AI economy, several strategic actions are recommended, that we consider our own contribution and suggestions to the study. First, policy harmonization across the 27 member states is essential. Streamlining regulations will reduce compliance costs, making it easier for businesses to innovate while adhering to ethical standards. Harmonized regulations will create a more cohesive environment for AI development, allowing businesses across the EU to operate more efficiently.

Second, investment in skills is critical. As AI technologies continue to evolve, the workforce must be equipped with the necessary digital skills to adapt. Expanding education and reskilling programs will ensure that workers are prepared for the disruptions caused by AI transformations. This will not only benefit the AI sector but also help mitigate the broader economic impact of AI on employment.

Third, fostering public-private partnerships will be essential for driving AI innovation and investment. By encouraging collaboration between government, academia, and private industry, the EU can bridge the gap between regulatory requirements and technological development. These partnerships can help promote AI solutions that align with the EU's ethical and sustainability goals while driving economic growth.

Moreover, the EU should continue promoting sustainable AI practices. AI has the potential to support the EU's environmental goals by optimizing resource use, reducing waste, and contributing to decarbonization efforts. Aligning AI development with the Green Deal will not only help the EU achieve its sustainability objectives but also position it as a global leader in eco-friendly AI applications.

Finally, international cooperation is crucial for the EU to remain competitive in the global AI economy. By sharing best practices and collaborating on the development of global AI standards, the EU can strengthen its leadership in ethical AI governance while enhancing its global competitiveness. Working with other regions will ensure that the EU remains a key player in shaping the future of AI.

To sum up, while the EU faces challenges such as stringent regulatory frameworks, investment gaps, and labor market disruptions, its AI economy is also propelled by rapid growth, technological innovation, and a strong focus on sustainability. By implementing these strategic measures, the EU can balance its ethical governance with the need for innovation, ensuring that it remains competitive in the rapidly evolving global AI landscape.

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THE PUBLIC DEBT`S IMPACT ON ECONOMIC GROWTH. EUROPEAN UNION COUNTRIES CASE STUDY

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Abstract
The events dynamics of the recent decades have confirmed an open relationship between economic growth and public debt. If the first represents the central pillar of sustainable development, the debt constitutes, depending on its approach, a destabilizing factor or a motivational one for achieving the objectives. This study aims to capture the significant indicators` influence on the economic growth dynamics, by using a multivariate regression. The data are collected from the official websites of financial institutions (Eurostat, OECD, respectively IMF) and refer to European Union countries. The analyzed period is between 2000 and 2022 (official data), with an annual frequency. The regression results provide real growth prospects that must be taken into account in developing future strategies. Along with prudence and taking responsibility, increased attention to the flexibility concept is required. In particular, these findings emphasize the need to implement both public policies connected to economic reality and financial-monetary instruments that support economic growth. In this sense, the public debt level does not represent an obstacle, but an asset that supports economic growth, sustainable development at the European Union level.
Keywords: *economic growth; public debt; multivariate regression*
JEL Classification: C33, E44, E60

1. INTRODUCTION

The economic activity complexity was analyzed more from perspective of those indicators that are sensitive to the socio-political changes of the last decades. They were characterized by a common denominator, "unpredictability" which was not infrequently treated too liberally by the responsible factors. Therefore, in order to define economic growth and respond to the new requirements at the European and even global level, it is necessary to deepen two directions. These refer, first of all, to the ability of the government (since its role is decisive) to mobilize available resources, through an optimal allocation that supports the business, investment

environment and at the same time maintains a high level of confidence, regarding the strategies and implemented policies. Secondly, far too little publicized, especially in recent years (when one can speak of an overlap of crises) another concept refers to the improvement of the estimate accuracy improvement, or forecast, prepare and manage the phenomena that generate crises (economic-financial, social and what not, political), which will not hesitate to affect economic stability (National Recovery and Resilience Plan, (2022). Next Generation EU). In other words, the events that have characterized the last decades (the financial crisis, the COVID19 pandemic and not least the war on the Eastern border of Europe), are necessary, as experience and examples in order not to repeat the same approaches, more or less conjunctural which determined, among other things, an easy increase in the public debt level recorded in European Union countries. It is also worth noting that sustained efforts are being made by the states to reduce the need to resort to expensive loans. But, even so, it is too little and in this sense measures are analyzed, fully connected to the phenomena evolution, which would further support the strategic sectors of the economy, such as that of research, innovation, development etc. In other words, the study aims, as a major objective, to deepen the economic growth issue, in the current geopolitical context, as the central pillar of a sustainable development in relation to the public debt, which becomes not only an indicator to be analyzed, but a major objective. So, with the help of multivariate regression, this study aims to highlight the most volatile indicators with a pronounced impact on economic growth and development, and whose results can be classified as surprising and at the same time, "to keep in mind", from a realistic perspective on the economy. It is also worth mentioning the following aspect, in support of our approach, namely that the public debt, in its complexity, becomes a binder, between "what is wanted and what is achieved", really. Consequently, the analysis has a significant contribution in deepening and updating the specialized literature, enjoying a high level of complexity, fueled by a dynamic of events difficult to forecast.

2. SCIENTIFIC CONTEXT

It is known that the sustainable development of a country, of a community made up of 27 states, at the European level, has economic growth as its central pillar. The last decades, sprinkled with events with a particular charge, showed a not so responsible administration, at the administration level, and at the same time a lack of cohesion regarding the adopted decisions. On the other hand, another interesting question arises: To what extent does public debt influence economic growth and what are the consequences? Related to this current issue, it is necessary to "verify" the parameters of the indicators that influence economic growth, but at the same time it is required to evaluate and forecast the evolution of the public debt. They are elements of real interest analyzed in the specialized literature, but which do not always manage to highlight even the most sensitive oscillations. Moreover, every event produced had implications, both at the public

and especially at the business environment level. Fluctuating indicators have been a real problem for most governments looking for viable, long-term solutions.

In this sense, the study: "The impact of the public debt of a country on the sustainable development of entrepreneurship" (Zhuravlov *et al.,* 2021) puts a special emphasis on the optimal management of the public debt, considering the experiences of the countries of the European Union, especially the new member states. In other words, the use of debt sustainability mechanisms and instruments allowed countries such as Hungary, Poland, Bulgaria, Latvia to significantly improve key indicators. It is known that the main area for improving public debt management is represented by a systematic approach to risk management. Practically, with the help of loans, additional financial resources are obtained, which can be used for the implementation of public investment programs, the financing of research-innovation projects, etc. On the other hand, the use of state guarantees for loans to economic entities makes it possible to ensure the implementation of economic projects, which have an important impact on the economy. The results of the analysis reveal the fact that the main direction, in the sense of improving the management of the public debt, belongs to the systematic approach regarding the management of decisions. Ultimately, this approach should include continuous monitoring of the entire range of trade transactions, with particular attention to spending, which in recent years has been experiencing some of the most unexpected fluctuations with an adverse impact on economic growth. It should also be remembered that state guarantees represent an asset, worthy of note, but they must not be used in such a way as to endanger economic stability in the region and at the level of the European community. This detail comes and argues, once again, the need to draw up a realistic government budget of revenues and expenses, which is, after all, the starting point for the measures to improve the efficiency of the proposed management.

From another perspective, analyzing the existing geopolitical context and taking into account the dynamics of events, economic growth has been affected by an increasing volume of financial resources to support, among other things, the increase in spending. Thus, study: "*The heterogeneous public debt - growth relationship: The role of the expenditure multiplier*" (Butkus *et al.,* 2021) highlights the impact of spending or more precisely the spending multiplier on public debt with a direct impact on economic growth and development. The research is based on panel data analysis in groups of countries with an expenditure multiplier. In the same context, it is mentioned that the debt/GDP ratio represents an important landmark in the evaluation of the own economic potential of a given economy, at the European level. The research results show that a statistically significant negative marginal effect of debt on economic growth that begins to manifest itself at a lower debt-to-GDP ratio. That said, the same results indicate the positive dependence of the debt threshold on the spending multiplier. Along

with these, the unpredictability of the mentioned phenomena determined a significant fluctuation of the macroeconomic indicators.

As expected, inflation stands out as the first indicator, which in a context of overlapping crises presented values that are truly worrying. So, the study: "Public debt and inflation: A review of international literature" (Akingbade *et al.,* 2020) mentions that more and more countries are resorting to additional public debt to raise additional financial resources to meet their financing needs. In other words, the expenses "increase" faster than the incomes, and this aspect would not be singular, because the latter do not manage, at least in recent years, to cover the level of necessary expenses. Borrowing can be detrimental to inflation in the process of macroeconomic stabilization, and this trend raises concerns among policymakers. The results emphasize the existence of both a positive and negative relationship between inflation and public debt, depending on the strategies considered, on the economies of the analyzed countries. For example: if you want to increase purchasing power, and economic development is based more on consumption. Related to this aspect, it should be mentioned that this approach cannot truly represent a successful long-term strategy, as it requires continuous adaptation, "encouraged" by other public policies to support the investment environment. Therefore, the association between public debt and inflation is of overwhelming importance in the inflationary process, which aims to support economic growth.

Looking at things from another angle, crises are the result of measures and then not so reasoned decisions, connected to economic reality. At the same time, they can be amplified not only due to the nature of the event itself, but also by faulty communication or distorted information, understood and presented not so objectively. For example: the COVID-19 pandemic involved human resources, financial funds far beyond those predicted, but at the same time (for a short period of time) any effort seemed unable to stop the ill effects of the SARS COV-2 virus. This phenomenon, of a medical nature, but with strong implications for sustainable development, is analyzed in the study: "Determinants of the public debt in the eurozone and its sustainability amid the COVID-19 pandemic" (Briceño and Perote, 2020). Undoubtedly, this determined, at least, a slowdown of the real growth prospects, moreover, surprising developments, but with a negative impact, were recorded. Along with a decrease in the economy, also reflected by high unemployment rates, at the level of European countries, a lack of confidence was also found, especially on the part of the population regarding the strategies in mind. As the first method to eradicate the harmful effects of the pandemic, the implementation of certain substantial reforms regarding the insurance system at the European level (unemployment, pensions, etc.) is mentioned, which represent, among other things, important steps to ensure the sustainability of the public debt. In other words, it is very important to reform the entire system, in accordance with the continuous increase in life expectancy at birth (not for all European Union

countries) and market mechanisms. Moreover, it is found that the relationship between this indicator and the public debt is positive, clear and significant, in the analyzed model. At the same time, it is mentioned that it is very important to rethink the new parameters, both quantitative and qualitative of public finances, in a risk management that does not condemn future generations to efforts far beyond what is necessary with a direct effect on the real prospects of economic development. It is worth noting the following aspect, which argues the idea that the implementation of an efficient management of the public debt and at the same time guaranteed by the state represents a major objective in the field of public finance.

From another, different perspective, but with implications on the sustainability of the economy in relation to the public debt, special attention is required to the supply of basic necessities, both for the population and for the competitive environment. The evolution of events and implicitly the crises in the current geopolitical context also has implications on the fulfillment of this desire. Ukraine, a country with real agricultural potential and more, was seriously affected by the military operation launched by Russia, and in this sense, various alternatives are being considered at the European level. Thus, this and fiscal spending to reduce imbalances and poverty have earned a well-defined place of overwhelming importance. In this context, the study: "*The dynamic impact of agricultural fiscal expenditures and gross agricultural output on poverty reduction: A V.A.R. model analysis*" (Guanglu *et al.,* 2021), presents as a way of eradicating poverty, allocating funds to rural areas and developing agricultural sectors. The data refer to a period of 30 years, between the years 1990 and 2019, respectively, and based on the V.A.R. model it is stated that the mentioned expenses play a significant role in reducing poverty. The research points out that China was the first country to achieve the poverty eradication goal of the 2030 Agenda for Sustainable Development Goals, even years ahead of schedule. In other words, this country is not only recognized for the products that invaded Europe and not only at the end of the 90s, but also for the seriousness with which it deals and at the same time succeeds in achieving its goals. In this sense, it, for the year 2021, reported a PIB over that of the United States of America, a fact that certifies the rigorous way of approaching and solving problems, and for the following years, 2024-2027, as an evolution of economic growth, it is located in the first 4 countries, according to data from financial institutions. According to the same study, as a future projection, the establishment of a rural revitalization fund is considered, as a vector of investments in the agricultural industry and for its development, with allocations of funds and supported investments that aim to preserve and protect the environment, water, improvement of agricultural land, logistics in the field, e-commerce, etc. It is desired to establish, create an information network for such products, with the aim of alleviating poverty and solving food-related problems. As a first conclusion, this Asian country has demonstrated that it is possible, when one really wants, to overcome certain

barriers not only of a political nature. Above all, from this point of view, it represents a model to follow, not only for the countries of the European Union but also for all other states.

The dynamics of the events required the decision-makers to take measures to limit and at the same time remove the negative effects, with implications on economic development, which, however, did not always take into account the level of accumulated public debt. In the same context, it is necessary to "clarify" the impact of public debt on economic growth, at least from the point of view of specialized literature. In this sense, the study: "The influence of public debt on economic growth: A review of literature" (Yamin *et al.,* 2023) aims to highlight the link between public debt and economic growth. They are analyzed based on hypotheses, more or less subjective (example: Ricardian equivalence hypothesis - R.E.H.) which claims that there is no relationship between public debt and economic growth. On another note, most studies have found that there is a negative relationship between public debt and economic growth. On the other hand, there are forecasts that also show the fact that the relationship can be positive. Surprisingly or not, there are also studies, within the aforementioned analysis, that support a certain neutrality between economic growth and public debt. Practically, during the last decades, due to the evolution of events and the stationarity of the data, all possible options are considered. Therefore, there is no unanimity regarding the link between the two variables, which can be positive, negative or neutral. As a basic conclusion, the mentioned study claims that the effect of public debt on economic growth is not constant, but rather ambiguous. It varies depending on a number of heterogeneous factors, such as the research methodology used, the countries development level included in the analysis, the relative size of the public sector, the institutional quality, the composition and structure of the public debt and the control variables subject to the working methodology.

As can be seen, public debt, as an effect on economic growth, is understood and interpreted differently, depending on factors with direct/indirect action, of an internal/external nature, but also on the fluctuation of the studied indicators. On the other hand, it was also found that the role of the government, regardless of the country, region, is decisive, and the continuation of the reforms at a "scale" worth mentioning or at a level of "survival" depends on the decisions of the responsible factors. There are data, analyses, which are required to be completed, given the nature and unpredictability of the events of the last decades. In this sense, based on the multivariate regression methodology, this research analyzes a set of indicators that have proven to be sensitive and at the same time have an impact on growth and sustainable development, at the European Union countries level.

3.   METHODOLOGY AND DATA USED

In order to capture, in detail, the economic dynamics of the mentioned countries, based on the multivariate regression model, on a panel data sample, with an annual frequency, over a period of 23 years (official data) (Strachinaru,

2023) covering the interval: 2000-2022, I analyzed the impact of the macroeconomic indicators fluctuation on economic development.

Thus, in Table 1 the analyzed indicators are presented.

Table 1. Description of variables

Variables	Specifications	Data source
The dependent variable		
REAL_GDP	Real GDP growth, annual %	International Monetary Fund https://imf.org
The independent variables		
CAB	Current account balance (% of GDP)	Eurostat https://ec.europa.eu
INFC	Inflation consumer prices (annual %)	The World Bank https://worldbank.org
INFC	Inflation GDP deflator (annual %)	The World Bank https://worldbank.org
GCF	Gross capital formation (% of GDP)	The World Bank https://worldbank.org
GRE	Government revenue, expenditure (% of GDP)	Eurostat https://ec.europa.eu
UNE	Unemployment, total (% of total labor force)	The World Bank https://worldbank.org
TRA	Trade (% of GDP)	The World Bank https://worldbank.org
INC	Industry (including construction) (% of GDP)	The World Bank https://worldbank.org
FDI_I	Foreign direct investment, net inflows (% GDP)	The World Bank https://worldbank.org
FDI_O	Foreign direct investment, net outflows (% of GDP)	The World Bank https://worldbank.org
POP	Population 15-64 age (% of population)	The World Bank https://worldbank.org
HDDS	Household debt, loans and debt securities (% GDP)	International Monetary Fund https://imf.org
LFPR	Labor force participation rate (% 15-64 age population)	O.E.C.D. http://oecd.org/
CHE	Current health expenditure (% of GDP)	The World Bank[i] https://worldbank.org
ME	Military expenditure (% of GDP)	The World Bank https://worldbank.org

Variables	Specifications	Data source
MC_PS	Monetary sector credit to private sector (% of GDP)	The World Bank https://worldbank.org
DCPB	Domestic credit to private sector by banks (% of GDP)	The World Bank https://worldbank.org
EB	External balance (% of GDP)	The World Bank https://worldbank.org
EXP	Expense (% of GDP)	The World Bank https://worldbank.org
T_REV	Tax revenues (% of GDP)	The World Bank https://worldbank.org
PDLS	Private debt, loans and debt securities (% of GDP)	International Monetary Fund https://imf.org

Note: (i) for the year 2022, regarding the analyzed indicator, the data are estimated.

Source: author's own processing

Thus, I started from a number of 22 indicators (21 independent variables, respectively the dependent variable), presented in Table 1. Following a preliminary analysis, I eliminated redundant indicators from a statistical and economic point of view, respectively: *INFC, FDI_O, PDLS, EB, EXP, DCPB*:

INFC	Inflation GDP deflator (annual %)
FDI_O	Foreign direct investment, net outflows (% of GDP)
PDLS	Private debt, loans and debt securities (% of GDP)
EB	External balance (% of GDP)
EXP	Expense (% of GDP)
DCPB	Domestic credit to private sector by banks (% of GDP).

Thus, I arrived at a correlation matrix, which respects the imposed restrictions, i.e. not to exceed the threshold of 0.50 (confidence interval). This representation is presented in Table 2.

Table 2. The correlation matrix

	CAB	CHE	FDI_I	GCF	GRE	HDDS	ICP	INC	LFPR	ME	POP	T_REV	TRA	UNE
CAB	**1.00**	0.41	-0.08	-0.50	0.26	0.32	-0.31	-0.16	0.23	-0.40	-0.34	-0.03	0.21	-0.18
CHE	0.41	**1.00**	-0.04	-0.24	0.67	0.53	-0.29	-0.24	0.17	-0.13	-0.53	-0.07	-0.22	-0.10
FDI_I	-0.08	-0.04	**1.00**	-0.02	-0.10	0.14	-0.05	-0.14	-0.14	-0.10	0.20	0.05	0.17	-0.02
GCF	-0.50	-0.24	-0.02	**1.00**	-0.32	-0.29	0.29	0.48	0.07	-0.05	0.12	-0.05	-0.01	-0.31
GRE	0.26	0.67	-0.10	-0.32	**1.00**	0.31	-0.21	-0.27	-0.01	0.15	-0.38	0.12	-0.34	0.11
HDDS	0.32	0.53	0.14	-0.29	0.31	**1.00**	-0.29	-0.49	0.29	-0.18	-0.17	-0.03	0.03	-0.11
ICP	-0.31	-0.29	-0.05	0.29	-0.21	-0.29	**1.00**	0.22	-0.05	0.23	0.09	-0.05	-0.03	-0.13
INC	-0.16	-0.24	-0.14	0.48	-0.27	-0.49	0.22	**1.00**	-0.03	-0.07	0.20	-0.16	-0.25	-0.10
LFPR	0.23	0.17	-0.14	0.07	-0.01	0.29	-0.05	-0.03	**1.00**	-0.11	-0.28	-0.38	-0.01	-0.17
ME	-0.40	-0.13	-0.10	-0.05	0.15	-0.18	0.23	-0.07	-0.11	**1.00**	-0.09	0.13	-0.57	0.29
POP	-0.34	-0.53	0.20	0.12	-0.38	-0.17	0.09	0.20	-0.28	-0.09	**1.00**	-0.08	0.23	0.09
T_REV	-0.03	-0.07	0.05	-0.05	0.12	-0.03	-0.05	-0.16	-0.38	0.13	-0.08	**1.00**	-0.04	0.11
TRA	0.21	-0.22	0.17	-0.01	-0.34	0.03	-0.03	-0.25	-0.01	-0.57	0.23	-0.04	**1.00**	-0.31
UNE	-0.18	-0.10	-0.02	-0.31	0.11	-0.11	-0.13	-0.10	-0.17	0.29	0.09	0.11	-0.31	**1.00**

Source: author's calculations, using the Eviews software

It can be stated with certainty that the data series are stationary, they being expressed as a percentage. At the same time, to estimate and test the significance of the analyzed parameters, a set of data and methodologies starting from the Hausman Test are used.

4. ESTIMATING AND TESTING THE SIGNIFICANCE OF THE ANALYZED PARAMETERS

From the point of view of the methodology used, I applied the Hausman Test, based on the indicators and it is obtained (Table 3).

Table 3. Hausman Test

The estimation results of the indicators based on the multivariate regression model:
Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	**Prob**.
Cross-section random	105.763681	14	**0.0000**

Source: author's calculations, using the Eviews software

The probability associated with the test (Hausman): $p < 0.05 = >$fixed effects. So, fixed effects are applied and obtained (Table 4).

Table 4. Fixed effects

Dependent Variable: *REAL_GDP*
Method: Panel Least Squares
Sample: 2000 - 2022
Cross-sections included: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAB	-0.026078	0.055986	-0.465797	0.6415
CHE	-0.384231	0.234264	-1.640166	0.1015
FDI_I	0.002392	0.003363	0.711329	0.4772
GCF	0.235043	0.066421	3.538659	0.0004
GRE	-0.396256	0.051605	-7.678638	0.0000
HDDS	-0.066364	0.015450	-4.295315	0.0000
ICP	0.004397	0.041069	0.107058	0.9148
INC	-0.261642	0.085679	-3.053754	0.0024
LFPR	-0.041446	0.031661	-1.309067	0.1910
ME	0.601473	0.561994	1.070248	0.2850
POP	-0.152406	0.123736	-1.231702	0.2186
T_REV	0.063787	0.040170	1.587947	0.1128
TRA	0.032512	0.008074	4.026876	0.0001
UNE	0.118260	0.051043	2.316856	0.0209
C	0.332698	0.110427	3.012842	0.0027

Effects Specification

Cross-section fixed (dummy variables)

R-squared	*0.419014*	Mean dependent var	0.024918
Adjusted R-squared	0.378946	S.D. dependent var	0.038303
S.E. of regression	0.030186	Akaike info criterion	-4.099158
Sum squared resid	0.528481	Schwarz criterion	-3.806591
Log likelihood	1313.789	Hannan-Quinn criterion	-3.985443
F-statistic	10.45757	Durbin-Watson stat	1.945889
Prob(F-statistic)	0.000000		

Source: author's calculations, using the Eviews software

I eliminated statistically insignificant indicators, which have a probability >0.5 and 0.10 respectively. Thus, the final regression is obtained - with fixed effects (Table 5).

Table 5. The final regression (equation)

Dependent Variable: ***REAL_GDP***
Method: Panel Least Squares
Sample: 2000 - 2022
Cross-sections included: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CHE	-0.314699	0.212722	-1.479390	0.1396
GCF	0.254549	0.041574	6.122773	0.0000
GRE	-0.374568	0.048730	-7.686640	0.0000
HDDS	-0.074017	0.013143	-5.631765	0.0000
INC	-0.305614	0.081089	-3.768875	0.0002
LFPR	-0.043444	0.029126	-1.491587	0.1363
T_REV	0.086839	0.037058	2.343344	0.0194
TRA	0.033931	0.007343	4.620786	0.0000
UNE	0.087791	0.046879	1.872701	0.0616
C	0.230605	0.048513	4.753467	0.0000

Effects Specification				

Cross-section fixed (dummy variables)

R-squared	*0.415390*	Mean dependent var	0.024918
Adjusted R-squared	*0.380414*	S.D. dependent var	0.038303
S.E. of regression	0.030150	Akaike info criterion	-4.109044
Sum squared resid	0.531776	Schwarz criterion	-3.852155
Log likelihood	1311.858	Hannan-Quinn criterion	-4.009197
F-statistic	11.87623	*Durbin-Watson stat*	*1.952119*
Prob(F-statistic)	*0.000000*		

Source: author's calculations, using the Eviews software

$$\textbf{REAL\_GDP} = -0.314699*\textbf{CHE} + 0.254549*\textbf{GCF} - 0.3745675*\textbf{GRE} - 0.0740168*\textbf{HDDS} \quad (1)$$

$$-0.3056136*\textbf{INC} - 0.0434444*\textbf{LFPR} + 0.086839*\textbf{T\_REV} + 0.0339307*\textbf{TRA} + 0.08779078*\textbf{UNE} + 0.230605376906 + \textbf{C} \quad (2)$$

Analyzing the above relationship, a positive influence of the following indicators can be observed: GCF (gross capital formation, % of GDP), T_REV (tax revenues, % of GDP), TRA (trade, % of GDP), respectively UNE (unemployment, total, % of total labor force). At the same time, there is also a negative influence fueled by the impact of the indicators: CHE (current health expenditure, % of GDP), GRE (government revenue, expenditure, % of GDP),

HDDS (household debt, loans and debt securities, % GDP), INC (industry including construction, % of GDP), LFPR (labor force participation rate, % 15-64 age population). In other words, at a 1 pp (percentage point) increase in GCF ("gross capital formation") there is a change in the same direction (increase) in the dependent variable (real GDP) with approx. 25.45%. The latest events are fueling fears about future, real, development prospects. Thus, it becomes indispensable to pay increased attention to the indicators fluctuation that "present" the state of health of the economy, which aims, even if linearly, to support a harmonious economic growth analyzed from the perspective of the real GDP indicator. A scourge affecting the achievement of this objective is represented by inflation and how it can be annihilated or whose impact can be minimized. Due to the significant fluctuation, at least during major events: financial crisis, pandemic, war, this (in terms of data accuracy) presents irregularities that place Romania's economy in first place (45.67%, 2000), and at the opposite pole is the economy Ireland with -4.48% (2009).

As for indicators with a pronounced impact on the dependent variable (real GDP), the (fiscal) revenues to the state budget ("T_REV"), and on the other hand trade ("TRA"), stand out. Thus, as an impact on economic growth, in the analyzed period, the Croatian economy stands out with approx. 167% (2000), and at the opposite pole is, surprisingly, Germany with approx. 10% (2004). Regarding trade, in first place with a percentage of approx. 393% (2021) is Luxembourg, and the last place is held by Italy with approx. 46% (2003), followed by Greece with 47% (2009). The indicators subject to analysis (Table 1) have shown, in the last decades, very large, significant oscillations, negatively affecting the development of the countries of the European Union. Thus, expenses represented and continue to represent a real problem for the budget of any country. The COVID 19 pandemic, the volume of medical and emergency expenses and, more recently, the war in Eastern Europe, with multiple costs, including of a social nature, fueled certain imbalances, causing most states to resort to loans. Concretely, at a 1 pp (percentage point) increase in CHE ("current health expenditures"), a change in the opposite direction (decrease) in G.D.P. is observed. real with approx. 31.47%. This is the second indicator, with the most pronounced impact on economic growth and development (among all the analyzed indicators), not necessarily in recent years, but throughout the analyzed period (2000-2022), which places Austria in first place with approx. 12.17% (2021), and the country with the lowest level is Romania with approx. 4.21% (2000), followed by Estonia with approx. 4.70% (2002).

In other words, at an increase of 1 percentage point of GRE ("government revenues, expenditures"), a change in the opposite direction (decrease) of the dependent variable is observed by 37.45 pp. It has, as an impact, the first place among the indicators under study. At the level of the member countries, the range in which that indicator falls is as follows: the highest level is given by the Irish

economy of 64.9% (2010), and the lowest level is held by the same economy, recorded in a year of "overlap of crises" (2022) of 21.20%.

To confirm the validity of the method used, the statistical F-Test is used, which confirms the validity of the model through its statistical significance, argued by the results obtained. For the F-statistic, Prob = 0.00000 < 0.05 it can be stated, with a probability of 95%, that the model is valid. In other words, the independent variables analyzed and included in the model explain the variation of the dependent variable REAL_GDP, for the period analyzed, namely 2000-2022.

Testing the hypothesis of autocorrelation - The Durbin-Watson test

The value of the analyzed test statistic is included in the interval [0,4]. In this sense, if this (statistically) is lower than "2", it indicates a positive autocorrelation, and if its value is higher than "2", it indicates a negative autocorrelation. In the situation where the errors are not correlated, then the test value will be around "2". It is found that the estimated value of the mentioned test is equal to 1.952, and this only confirms, once again, the validity of the model.

Verifying the residual normality - Jarque - Bera test

It takes into account both the flattening coefficient and the skewness coefficient and determines to what extent the empirical distribution can be expressed as a normal distribution.

The created Residuals series includes all the errors of the estimated variable, which are presented in Figure 1. At the same time, the same data confirms a certified probability (prob: 0.0000).
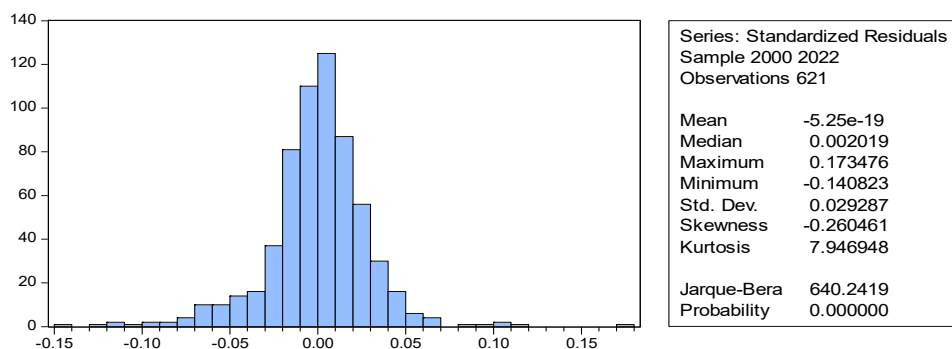
Source: author's calculations, using the Eviews software

Figure 1. Jarque - Bera test results

The analysis of the data and implicitly the results can be summarized as follows: there is no major event, social, political or of any other nature, that does not determine an economic instability analyzed from the perspective of the volatility of the indicators, even the most sensitive ones. In other words, it is necessary to create a realistic picture of the countermeasures of a disruptive

phenomenon, together with a flexibility of policies and plans to limit and remove the negative effects. And, last but not least, the creation of a solid database to support the implementation of strategies, carefully elaborated, regarding the recovery, growth and development of the economy at the level of the European Union. At the same time, an increasingly significant emphasis is placed on prevention, because "it is easier to prevent than to manage" with additional forces and funds, an event of the nature of those produced in recent decades (financial crisis, Covid19 pandemic).

5.   RESULTS AND DISCUSSION
However, the results of the study present certain "observations" that show, among other things, that tax revenues, along with unemployment, positively influence economic growth (Strachinaru *et al.*, 2023).

How can this result be "translated"? One thing is certain, additional revenues to the budget create real prospects for growth and additional allocations to key areas, investment projects, but on the other hand, the same (additional) revenues can cause certain dysfunctions, both for the business environment under increased pressure, and the population whose incomes cannot always support this approach. In other words, it becomes decisive the way, but also the period (Daianu, 2021), not during crises: financial, pandemic, etc. in which the governments of the European Union countries choose to appeal to additional funds, to the budget, from the population or small and medium-sized enterprises (they hold approx. 90-95% of the economic activity, at the level of the European community). In another line of thought, with more short-term validity, a low inflation rate can cause an increase in the unemployment rate. In other words, this detail can encourage investors to give more confidence to the state's policies to support large-scale investment projects. Of course, there are interpretations, depending on the fluctuation of the indicators fueled by an increased unpredictability of socio-economic, but also military phenomena of the last period, with an impact on the level of public debt. This, no matter from which perspective it is analyzed, by the specialized literature, represents the totality of the financial obligations resulting from the contracted loans. This in relation to the other macroeconomic indicators, with a pronounced impact (inflation, deficit, unemployment rate - exchange rate volatility, etc.) is in a direct relationship, whose impact on the economy is continuously evaluated and monitored (Olamide, 2022). How each country will manage to monitor its resources reflects its ability to absorb, manage and the most unpredictable situations. Even though the Maastricht Treaty establishes an optimal threshold of the public debt level of 60% of GDP. the studies carried out showed that there is a high flexibility at the level of savings to honor their financial obligations. From another perspective on things, it is essential that the allocation of funds is done, in the current economic and geopolitical context, only after a realistic analysis of needs and according to the forecasted amortization period.

6. CONCLUSIONS

The economic growth analyzed at the level of the European Union countries is approached differently, depending on the availabilities available in terms of resources and their management, the degree of indebtedness, the analyzes and forecasts carried out, for the next period and not least the strategies of growth considered. These in turn require responsible decisions, characterized by increased flexibility and assumed by all responsible factors. Public finances are a sensitive topic, debated more and more intensively in the meetings that take place at the European level. In what context and why? Practically, the way a given event (of any nature) is approached reflects the government's ability to manage the country's resources, and this detail reflects the economic "power", which at the level of the European community knows (in the context of the latest events) important fluctuations. On the other hand, not always the existing resources are able to provide the support that industry, research-innovation activity and education, with priority, need.

Another conclusion that emerges from the analysis carried out brings to the fore, in addition to prudence and taking responsibility for decisions, the development of the concept of flexibility. This, in the current geopolitical configuration, is viewed differently by the governments of the member countries, but the new development perspectives must provide the economy with the stability necessary to continue the reforms, to implement growth strategies. Or, this cannot be achieved, analyzing the latest events (the COVID 19 pandemic, the war in Eastern Europe), without increased adaptability as implemented monetary measures and policies. Along with these, the financial instruments supported, guaranteed by the state represent real growth levers, which, depending on how they will be managed, "used", by both companies and the population, will create solid premises for growth and sustainable development in the medium and long term. In the same mentioned context, it is stated that external support (from financial institutions, worldwide) was received with wide openness by the governments of the European Union countries. But even the latter, in order to be accessed, requires certain obligations to be respected, which for some countries, seems a difficult obstacle to reach. Even in these uncertain conditions of the market economy, there is availability, flexibility that must be respected and exploited, so that the economy can "breathe" and contribute, as a basic pillar towards a harmonious development at the European level.

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REMOTE WORKING AND WELL-BEING – THE PURSUIT OF A FAIR BALANCE IN EUROPE

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Abstract
There are many lessons to be learned from the COVID-19 pandemic concerning working environment and the challenges on various aspects of private life. The need for companies to adapt and continue their activities during unprecedented circumstances created new solutions that impacted on flexibility and resilience both of the business sector and of the persons working therein. The main aim of this paper is not to analyse specific national legislation on remote working before and after the pandemic, but rather to address the question of a fair balance between work efficiency and wellbeing of the employees. The lack of a comprehensive definition of wellbeing and digital wellbeing gives rise to a continuous tension between employers and employees and in the post pandemic reality the focus is no longer only on high productivity but on specific rights of employees which were not the principal object of employers` concern.
Well-being is closely linked to a person's state of health, it is a very complex notion which needs to be addressed and clarified. In the constant evolution of technology and digital environment, it will constitute an important factor in the work relationships. Present and future developments in this concern will be explored by the paper.
Keywords: *health; employees; human rights*
JEL Classification: K33, K 37, K 38

1. INTRODUCTION

The COVID-19 pandemic has drastically transformed the traditional workplace, propelling remote working from a niche arrangement to a widespread necessity. As businesses across the European Union (EU) were forced to adapt rapidly to lockdowns and social distancing measures, remote work emerged as a vital solution to ensure business continuity. This unprecedented shift has highlighted both the potential benefits and the significant challenges associated with remote working, particularly concerning employee well-being and legislative adequacy.

The transition to remote work has brought to the forefront the importance of flexible working conditions, enabling employees to balance their professional and personal lives more effectively. However, it has also exposed gaps in existing legislation and the need for robust frameworks to support the health and safety of remote workers. The interplay between remote work and well-being is complex, encompassing physical health, mental health, and work-life balance. These dimensions have underscored the necessity for comprehensive legislative measures to protect and promote the well-being of remote workers.

The domestic legislation of States and the EU legislation were not prepared for a high scale use of remote working or for analysing tits impact on the well-being of employers. Such an exercise implies identifying the concept of well-being generally, its connections with the state of health of persons, meaning physical health and mental health, their private life and family life, the balance between work and private life, the positive and negative effects of working remotely for long periods of time.

The legislative landscape is completed by notions such as the right to disconnect, which is essential in the context of working from home and keeping a balance between work time and private life.

The discussions during COVID-19 pandemic and soon afterward, concerning the ability of employees to shift to working remotely were focusing mainly on the resilience of the business sector and only in the background on the well-being and private life of persons. For the purposes of this paper, and considering that the future of work will focus on employee well-being, clarifying the meaning of well-being is relevant.

2. THE PARADIGM SHIFT CAUSED BY THE COVID-19 PANDEMIC

Covid-19 pandemic has had a disruptive effect on all areas of human activity, including on work relationships and remote working became the solution adopted on a large scale in Europe and worldwide. Even before the outbreak of the pandemic, some European States already regulated remote working in the form of tele-working or working from home. Romania is such an example, as it since 2018 adopted legislation in this field (Law no. 81/2018). At the level of the European Union, there was no common approach on this, in the sense of legislation applicable to all Member States and this situation still persists (EU-OSHA, 2021). The purpose of this short paper is not to highlight the need for such a common instrument, but to point on challenges created by remote working concerning the respect of private life and the state of good health and well-being in general, all of these being excluded from the initial concerns of States and legislators.

Since Covid -19 pandemic, telework was facilitated by digitalisation and presented many advantages. At the same time, there were negative effects specially concerning the employees. Prolonged exposure to telework can result in an increased workload, extended work availability and longer working hours,

difficulties 'switching off' and disconnecting, and in some cases, increased worker monitoring and surveillance. Another relevant issue is represented by the need to reorganise the workspaces, including the personal space from home, which is detrimental to workers' safety and health, and may lead to isolation. This can also undermine on-site work activities, impose forced telework for some team members and impact team cohesion and collaboration (European Commission, Joint Research Centre, Vazquez, Curtarelli, Anyfantis, Brun, and Starren, 2024).

After the pandemic ended, there was a tendency to keep remote working as an acceptable practice in work relationships, despite the resistance of companies insisting on resuming activities under the traditional coordinates.

The experience of the pandemic was an incentive towards adopting new legislation in the field of labour. Thus, in 2022, a directive on platform working was proposed - EU Directive on Platform Work - and its final form was adopted in 2024, after a process that took only two years. One preliminary observation is that the European Union regulates platform working and not remote working. The Directive is focused on enhanced occupational safety and health provisions concerning platform workers' employment status, algorithmic management, transparency, enforcement, and collective bargaining.

Although the adoption of the Directive constitutes an important step, there are still challenges and uncertainties on how different Member States will implement the directive, especially with regard to employment status, subcontracting, algorithmic transparency, automated decision-making, collective representation, and enforcement.

Despite the fact that European Union legislation regulates working time (by the Framework Directive on Occupational Safety and Health - Directive 89/391/EEC) and safety for employees (the Working Time Directive (Directive 2003/88/EC, the Work–Life Balance Directive - Directive (EU) 2019/1158-, the Directive on Transparent and Predictable Working Conditions- Directive (EU) 2019/1152), when using information and communication technology for work outside the headquarters of the company, the tendency is to work longer hours, and for the employee to be always available for the employer, even if the employer does not explicitly ask for that; this tendency is known under the name of flexibility paradox (Chung, 2022). This sets an evident disproportion between rights and obligations derived from a labour relationship.

Surveys within European States show that in some cases, the cause is not the attitude of the employer, but the behaviour of the employee, who has difficulties in disconnecting (Eurofund, 2023). This subjective element appears to be of a high relevance for the labour market and the impact of the pandemic regarding out-of-hours connection and working additional hours.

Teleworking and flexibility of hours are linked to an increase in working hours, which has negative implications for the health and well-being of employees. According to European Working Conditions Telephone Survey

(EWCTS) data, in 2021, 35% of individuals working from home full-time worked more than 41 hours per week (with almost 15% working over 48 hours per week), compared to 27% of those working at their employer's premises (Eurofund, 2023). Certain physical and mental health issues were reported by a larger share of teleworkers, with 60% experiencing eye strain and headaches, and 36% suffering from anxiety (compared to 42% and 27%, respectively, among non-teleworkers) (Eurofund, 2023).

3. THE EMERGENCE OF WELL-BEING AS AN ELEMENT OF SUATAINABILITY AND SUSTAINABLE DEVELOPMENT

From a legal perspective, defining well-being may prove to be difficult, since it is a multidimensional concept encompassing various aspects of an individual's life, including physical health, mental health, social connections, and economic stability (Votruba and Thornicroft, 2016).

Even if apparently, this is a new term, well-being is mentioned in many international legal instruments, starting with the Universal Declaration of Human Rights, which states in its article 25 para 1:

"Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control." (Universal Declaration of Human Rights, 1948). The Universal Declaration does not provide any definition of health or well-being.

The World Health Organisation defines only the state of health in the Preamble of its Constitution, which refers to physical and mental health, in the following wording:

"Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (Constitution of World Health Organization, 1946).

Hence, well-being is not only associated to health, but in its social dimension is one element of the state of health or good health. The definition provided by the Constitution of the World Health Organisation is considered by many scholars as utopic and unattainable, and it is necessary to change it (Rauch, 2024; Schramme, 2024), but it remains the only legal text having this purpose. Its ambiguous character is evident and needs clarifications which may come from a systemic analysis of the legal acts providing elements of well-being and health.

The right to health as a fundamental right is also enshrined in the 1966 International Covenant on Economic, Social and Cultural Rights in a more detailed form, in its article 12:

"1. The States Parties to the present Covenant recognize the right of everyone to the enjoyment of the highest attainable standard of physical and mental health.

2. The steps to be taken by the States Parties to the present Covenant to achieve the full realization of this right shall include those necessary for:

(a) The provision for the reduction of the stillbirth-rate and of infant mortality and for the healthy development of the child;

(b) The improvement of all aspects of environmental and industrial hygiene;

(c) The prevention, treatment and control of epidemic, endemic, occupational and other diseases;

(d) The creation of conditions which would assure to all medical service and medical attention in the event of sickness." (ICESCR, 1966)

These are the core international human rights legal instruments recognizing the right to health as a whole or to some elements of it; the landscape is completed by other specialised acts or soft law acts addressing different aspects of well-being and health, but providing an exhaustive list of them is not the purpose of this paper.

Identifying the core legal instruments which establish the legal framework for the protection of the right to health and well-being is relevant first of all for the analysis of the content of different provisions and the evolution in describing the notions involved but also and clarifying their content. Second of all, it is relevant for the discussion on State obligations in this respect, since States have ratified at least one of the treaties recognizing the right to health, which means that they are parties to the treaties and must comply with their provisions.

From the perspective of international human rights law, States have the obligation to respect, to protect and to fulfil the right to health and take adequate measures, accordingly (Kinney, 2001; UN CESCR, 2000). The same types of obligations are applicable to companies in the business activity, as part of the corporate responsibility, according to the UN Guiding Principles on Business and Human Rights, adopted in 2011 (UN OHCHR, 2011).

Moreover, States have committed themselves to protecting this right through subsequent international declarations, domestic legislation and policies, and at international conferences.

Well-being as a topic slowly moved from a peripheral towards a central place in debates, public space and public policies, and became an important feature of the larger concept of sustainability, especially by its inclusion in the United Nations 2030 Agenda on Sustainable Development Goals, adopted in 2015 (UN, 2015). All seventeen sustainable development goals have a complex architecture, they concern very different aspects of the economic, social and environmental development within states (De Neve and Sachs, 2020) and very ambitious targets to be reached by 2030.

More precisely, Goal no. 3 is called "Ensure healthy lives and promote well-being for all at all ages." It is a people-centred approach of a sustainable development goal, focusing in achieving a general state which allows them to enjoy a high quality of life, and it is also called human well-being (O'Mahony, 2022).

The UN 2030 Agenda is acknowledged and assumed by the European Union and sustainable development is an important part of its policies (European Commission, 2022). Well-being as such was not a topic used on a large scale in Europe before de Covid-19 pandemic, but at the moment, it is widely used and invoked in various and different contexts, one of which the labour field is very important.

There are many correlations to be made between Goal no. 3 and other goals form the UN Agenda and they lead to the conclusion that many of them are determinants of well-being (De Neve and Sachs, 2020) or are supporting well-being, which is actually a pervasive aim of the entire developing agenda.

Well-being has moved from the periphery of the research in law to the centre, recently and especially after the pandemic, it gained public attention and has become a major global policy priority that encompasses various fields such as economics, psychology, sociology, and law.

In analysing well being in the context of remote work, a variety of elements may prove relevant in order to capture different dimensions of well-being, subjective or objective in nature. In order for the assessment to be effective and improve the state of well being of employees, all these factors should be used. They include different dimensions that are interconnected: physical, mental, social, economic and work-life balance.

The work- life balance implies the analysis of working hours, and the need to avoid overworking, assessing employees' ability to manage their work schedules flexibly to accommodate personal and family needs, evaluating how well employees can separate work and personal life, often through surveys asking about work interruptions during personal time and vice versa. Reports showed that despite the fact that employees were generally opened to the idea of teleworking, prolonged hours and use of technologies, together with an unclear line between work and private life, has had negative effects on their health and well-being (European Commission, Joint Research Centre, Vazquez, Curtarelli, Anyfantis, Brun, and Starren, 2024).

4. CONCLUSIONS

Remote working describes the evolving nature of work and its challenges. Companies should use mechanisms in order to assess the impact of remote work on employees and not only their efficiency and productivity. At the same time, implementing supportive measures may be useful for creating a healthier, and more productive environment that promotes overall well-being. Identifying potential issues are necessary not only from a proactive perspective, but also for the purpose of keeping remote work sustainable and functioning on fair basis for all the parties involved. At the moment, there is no clear sufficient clear standard applicable to the process of evaluating the impact of remote work on employee well-being.

Some limits on the functioning of remote work are already established and accepted, one example is the right to disconnect which is an important part of the balance between working tasks and the private sphere. The line between the two when working remotely is often too thin and needs to be very clear. Understanding the elements of well-being is crucial in identifying the needs of employees and finding future organizational practices to enhance this experience, in the sense that it is sustainable and equitable.

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THE EVOLUTION OF THE ROMANIAN POLICE FROM THE MILITIA DURING THE COMMUNIST PERIOD

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Abstract
During the last decade Romania has undergone major political transformation from communist regimes to democratic forms of government. Despite changes--introducing police ranks, changing uniforms, prohibiting party affiliation, police find it more difficult to persuade citizens that they have really changed. The article details the modifications that came about in tandem with the evolution of the Romanian Police following Romania's 1990 political upheaval. The relationship between socioeconomic shifts and the corresponding modifications to law enforcement agencies has received special attention. These modifications range from renaming the Militia to the Police to altering its personnel, organizational structure, and legal framework. The Romanian Police is a professional organization that serves the public and is commemorating its 202th anniversary in 2024.
Keywords*: Police; Militia; international structures*
JEL Classification*: O15*

1. INTRODUCTION

Throughout the 50 or so years of communism, the 'militia', as the police used to be called, was employed as a powerful instrument to crush any individual or collective protest against the powers that be. For many years, Romanians associated the police with the secret services (the 'Securitate') and feared both equally.

After December 1989, the names of the two institutions were changed (the militia became the police and the Securitate became the Romanian Intelligence Service), each having their own duties established by law.

However, both are still militarized, as are other special services, including the Foreign Intelligence Service, the Guarding and Protection Service, and the other secret services.

This means, among other things, that their internal rules and regulations are classified as secrets, that they benefit from numerous material privileges, and that only military prosecutors can investigate potential abuses; if indicted, the perpetrators can be tried only in military courts.

2. SUMMARY OF THE ROMANIAN POLICE HISTORY

Records confirm the presence of the Mare Vornic, who is currently the minister of interior, since the Middle Ages. (Maria Stefan, 2022). The Mare Vornic was chosen by the Voievod, or monarch, and was in charge of maintaining law and order, resolving conflicts, and operating guard services. Under the Mare Vornic's leadership was the Master Hunter (vătaf de vânatori), the forerunner of the Police Chief, whose duties included monitoring marauders and the homeless, suppressing poachers, and maintaining control over travellers staying in the local inns, particularly foreigners.

The Agia, the Romanian Police Service, received a seal and flag bearing the Annunciation emblem on March 25, 1834. The Annunciation is a significant Christian feast in Romania and serves as the police force's spiritual guardian. The National Guard was later given extensive civilian, political, and military powers by the ruling prince Alexandru Ioan Cuza on February 7, 1864, as part of the law on the organization of armed power in Romania. The National Guard's goals were to safeguard law enforcement and institutions, maintain national order and independence, and watch over and protect the entire country.

The Law on the Organization of Central Administrative Service, of 19 April 1892, which provided for the establishment of the Directorate for the General Administration of Personnel and of the Security Police, as well as the Bureau for General Security, played a significant role in defining the position of the Ministry of Interior within the Romanian state administration.

Considered the founding father of the modern Romanian Police, Vasile Lascăr, was the interior minister who started a significant reform process of the police institution at the beginning of the 20th century. (Școala de Agenți de Poliție Vasile Lascăr Câmpina).

In 1923, the Constitution was adopted and the reorganization of law enforcement institutions began implementing the separation of the powers of the state.

Consequently, the Law on the Organization of the General State Police was passed on July 21, 1929, designating the General Directorate of the Police as the principal state body responsible for directing, coordinating, and preserving public safety and internal order throughout the entire country.

The Law of the Ministries, which was adopted on August 2, 1929, and particularly the Regulation on the Organization of the Ministry of Interior, which was published on January 25, 1930, gave the police institution more power than it had previously had over managing local government in addition to preserving public safety and order.

At the start of Communist control in 1949, the Ministry of Internal Affairs underwent a reorganization at both the central and territorial levels, marking a significant turning point in the ministry's history. The central apparatus was divided into twelve regional directorates, the Directorate for the Security of the Capital City, the General Directorate of the Militia, the General Directorate of Penitentiaries, the General Directorate of the People's Security, the General Political Directorate, and the Command of the Troops of the Ministry of Internal Affairs. (Ministry of Internal Affairs).

After the communist system was overthrown in December 1989, the Romanian Police's operations were reorganized along new principles. One of the initial step was the institution's complete de-politicization, which served as the catalyst for a process that reshaped the institution's constituent parts as well as the legal framework that oversaw them.

Prior to 1989, law enforcement officers were known as "militiamen". The militia, the organization of which they were a part, was established by the Ministry of the Interior in January 1949 and was established with the stated purpose of "maintaining order on the territory of the Romanian People's Republic, defending the rights and freedoms of citizens and their personal security" (article 1). From the beginning, the organization was directly under the control of the Communist Party. They all held military ranks as employees of the Ministry of the Interior.

Prior to the order, the majority of police officers held college degrees, to enter the militia, college degrees were not required. As per the Sighet Memorial, of the 35,000 workers who initially made up the Militia, only 161 held college degrees, 9,600 had completed four classes or less, and 7,800 – six-seven classes.

Since 1948, the staff had been subjected to several waves of purges. In July, the State Security Directorate issued an order aimed at identifying and sanctioning "all police officers and agents who actually worked in Security work until March 6, 1945", except for those who "are currently valuable informants, who have files created by informants and who have proven that they conscientiously fulfill their entrusted mission". In the same month, over a thousand employees excluded from the police were arrested and imprisoned. The former policemen remained imprisoned without trial until 1955, when they were sentenced to 8 years in prison based on article (193/1) of the Criminal Code, with retroactive character, defining "activity against the working class and the revolutionary movement.

To become militiamen, social origin and attachment to the party were more important than education. Professionalization was done on the fly, at first only by graduating from schools lasting a few months.

The Militia Apparatus began transit surveillance and residence control, meaning that by the end of 1952 no urban resident should be allowed to change

his residence without the permission of a Militia office. One of the Militia's initial responsibilities was to issue residence permits and later, identity cards.

Over time, the Militia's power has increased. The institution's mission was reformulated in November 1969, with the new objective being to "contribute to the defense of the revolutionary conquests of the people, their peaceful work of socialist construction, public and personal wealth, life, freedom and dignity of individuals, the rule of law settled in Romania." The privileges granted by this legislation gave rise to numerous abuses, and the Militia was required by law to defend "socialist property against actions taken by criminals or other persons who harm the public property".

3.   ORGANIZATION OF THE ROMANIA MILITIA

The militia is subordinate to the Ministry of the interior. The headquarters was located in the former police headquarters on "Calea Victoriei".

The principal functions of the militia were to conduct investigations and to keep check on foreigners in the country.

Investigations were made by a group of seven to eight militiamen, some of whom were in uniform and some in civilian clothes. Investigations were usually carried out by the entire group of militiamen who use the tactics of rapid questioning which did not permit a complete answer to any question. The individual under investigation was subjected to an inhuman harangue, after which a statement was drawn up by one of the militiamen and the accused was forced to sign the statement regardless of the validity of its contents. (Freedom of Information Act Electronic Reading Room, 2016).

Since July-August 1954, visas for leaving the country were issued by the Foreigners Control Section, located in Room 223 on the second floor of the militia headquarters. Individuals requesting visas for departure from Romania must check through an Information Office at the entrance to militia headquarters where a pass was necessary to enter the building, and to receives the application papers to be filled out in the waiting room. When handing in the papers, applicants were questioned as to their reasons for wanting to leave the country and were discouraged from, such action by the militia employees who describe life outside of Romania being extremely difficult.

There were militia headquarters for each district of the city which contains the following sections:

Office of the Commanding Officer - The Commanding Officer is usually a captain or a major who is selected from the ranks of the Communist Party. Most of the time they wear civilian clothes.

Economic Militia Section - The Commanding Officer of this section was usually a first lieutenant, assisted by one to two second lieutenants, and a few sergeants. They were concerned only with activities in the commercial field

where they conduct investigations and cite to court those accused of irregularities against the communist law.

Control of Foreigners Section - This section is responsible for keeping records on all foreigners, issues extension visas, and grants permission to change the place of residence. The Commanding Officer of this section was a second lieutenant, assisted by two to three militiamen. The section also issues travel permits, but usually to only those who travel in line of duty. When applying for such a permit, the applicant must present a letter of justification from his employer. The permit was valid for no longer than three days. For longer periods, the applicant must have gone to the main militia headquarters, a procedure which takes about 30 days.

Evidence of Population Section - In each militia district there is a section which kept a census of the population within its jurisdiction. This section issues travel permits to Romanians who need to travel to frontier areas. For this, the applicant must attach two pictures to his request. The Commanding Officer of the section is a second lieutenant, assisted by two to three militiamen or women. This section was also responsible for the issuance of building cards (Cartea de Imobil) as well as permits for change of residence. The building card, which is considered to be secret was valid only for the person whose name was inscribed thereon. When an individual is hospitalized, the card is picked up by the militia and held until his return home.

Investigations Section - The Commanding Officer was the first or second lieutenant, assisted by several militiamen. Investigations are carried out in the districts in the same inhuman manner as was the main militia headquarters office.

Information Office - This office was located at the entrance to the militia district office. Its responsibility was to issue passes into the building.

Sector Runners - Sector runners are militiamen who are in charge of one to three streets. They collaborate with''block responsibles" in order to get information concerning the inhabitants of each building. They conducted house checks to determine the movements of the inhabitants and to discover unauthorized over-night guests.

Each city is divided into sectors and each sector has a non-commissioned officer known as the sectorist, who travels in civilian clothes. Under his direction he has several agents from among the young workers, who help him control the movements of personnel living within the sector. (Comisia Prezidenţială Pentru Analiza Dictaturii Comuniste Din România, 2006).

The sectorist and his agents are on the lookout for breaches of economic and political laws and decisions. They also control the papers of any person in the sector, whether a resident or not.

The behavior of sector runners toward the population was very bad and they were disliked intensely.

The uniform of militia officers was gray-blue, with leather shoes or boots.

The uniforms of militiamen are of the same color as the officers' uniforms, but are of a cheap coarse material.

There were many women in the militia who were dressed as militia officers.

Ranks are denoted by stars:

One star- second lieutenant

Two stars- first lieutenant

Three stars - major lieutenant

Four stars - captain

One stars between two red stripes - major

Two stars between two red stripes - lieutenant colonel

The Director General of the militia was responsible to the Ministry of the Interior (MAI), The militia had the following three branches: Territorial Militia, Railroad Militia and Prison Militia. (Comisia Prezidenţială Pentru Analiza Dictaturii Comuniste Din România, 2006)

The Territorial Militia was organized by regions, in accordance with the 28 administrative regions in the country. Under the regions there are districts, with a militia assigned to each district. In addition, there are militia personnel assigned to various bureaus, as will be explained below. The regional militia was commanded by a field grade officer; the district militia was commanded by a company grade officer.

The chiefs and secretaries in the different bureaus are officers and non-commissioned officers, regardless of whether they are male or female. The different bureaus are as follows:

(1) Secretarial bureau - receives and registers various requests, handles correspondence, etc.

(2) Bureau of Cadres - verifies cadre personnel, keeps dossiers, recommends promotions, mutations, etc. for officers and non-commissioned officers of the militia. This bureau collaborates with the cadre services of the Communist Party.

(3) Political bureau - handles the political education of the district militia by public sessions or personal instruction.

(4) Population bureau - issues and controls documents of "Buletin de Identitate", controls movement of citizens from one locality to another, keeps personal dossiers of individuals up to date.

(5) Judiciary bureau - handles investigations and subsequent charges against individuals for misdemeanors and crimes, publishes court decisions, and collaborates with the State Attorney.

(6) Circulation bureau - issues registry documents for vehicles and automobile operator licenses, and was responsible for traffic militiamen.

(7) Requisition bureau - collaborates with militia authorities in requisitioning property, keeps records of all means of transportation including horse drawn and motor transportation.

(8) Economic Control bureau - controls prices, forces the payment of salaries, investigates and prefers charges in the event of economic sabotage, as well as enforcing economic laws.

(9) Public Morals bureau - enforces the prevention of prostitution, etc.

(10) Safety bureau - handles the guarding and security of state factories and institutions and was responsible for alerting exercises.

(11) Instruction bureau - handles the instruction of district militia, including target practice, training of individuals and personnel spot checks.

(12) Administrative bureau - was responsible for feeding, equipping, and paying the militia.

Each district has a group of 6 to 10 mountain militiamen who patrol the public roads. In addition to their horses, they usually have other means of transportation consisting of an automobile, a Praga truck, a motorcycle with side car, and sometimes horse-drawn wagons.

They request additional transportation when the need arises.

Each village has a militia post; each frontier village has a post of four to six people. In mountain villages the militia is especially equipped for climbing, skiing, etc. The uniform is grey with a dark blue patch. (Freedom of Information Act Electronic Reading Room, 2013)

The Railroad Militia wears the same uniform but the epaulets and caps are red.

The headquarters is in Bucharest and field stations are organized by regions.

The Railroad Militia has guard units in communications centers, railroad stations, terminal points of frontier zones, as well as patrol teams of 2, and 4; inside trains travelling in frontier zones.

They control the "Buletin de Identitate", travel orders, and the permit to travel in the frontier zones. This Militia also guards materiel in railroad warehouses and on trains, and prefers charges against saboteurs, sending these charges directly to a special railroad court for judgment. (Gabriel Andreescu, Mihnea Berindei, 2009).

The Prison Militia wears the same uniform but with light blue epaulets. Their main duty was to guard prison and concentration camps. The headquarters was in Bucharest, with field stations organized by city.

Spot checks were conducted on the fringes of crowds attending national celebrations or in zones where maneuvers might be conducted.

These spot checks may consist of blocking off and surrounding a group of people, instead of checking an entire exposition hall, theater, restaurant, or park. Such checks were also conducted in the villages.

The two principal documents which were controlled were the "Buletin de Identitate" and the new military certificate.

In frontier railroad stations a check is made by the local militia, which requests the address of destination as well as the two principal documents

mentioned above. In many cases, the destination address is forwarded to that point so that a second check may be made when the passenger arrives.

All travellers must register immediately with the militia of the locality visited but this formality is often avoided.

The militia collaborates with security forces and helps security troops to make arrests and deportations and to block off mountain passes, forests, etc.

They also make periodic checks of isolated houses and cabins. (Freedom of Information Act Electronic Reading Room, 2013).

4.   POLICE REFORMS FOLLOWING 1989

Romania was forced to undertake significant reforms in all of its institutions, including the police system, as a result of the fundamental decision made in December 1989 to uphold a system of values based upon democracy, the respect of citizens' rights and freedoms, the protection of juveniles, dialogue, and tolerance. It was necessary to change the police into a public-serving organization.

It was necessary to create adaptable and functional structures that could effectively guarantee the performance of specified tasks and improve the police's capacity to react to the nation's shifting circumstances of crime and public order. (M. Caparini, O. Marenin, 2004).

On December 8, 1991, the newly adopted Constitution of Romania came into effect. In addition to incorporating and expressing a new, clear, and reforming vision for democracy and human rights, social justice, and justice and humanity that aims to overcome the oppressive and inhumane measures that history has shown to be ineffective and disruptive of the balance between civil society and the state, it also declared the Romanian State to be democratic and governed by the rule of law.

A first step toward reform was the passing of Law No. 40/1990 On the Organization and Operation of the Ministry of Interior. The Ministry of Interior assumed the role of the main executive branch, with the authority to implement laws pertaining to public order, the defense of fundamental freedoms and rights, public and private property, the prevention and investigation of criminal activity, and the preservation of Romania's independence, sovereignty, and territorial integrity.

There was a change after 1996, with the police and civil society putting more pressure on the government to carry out changes. However, at that time, the costs of reform outweighed the potential for change, thus the government took a cautious and cautious stance.

The Romanian police system currently consists of three forces: the 52,000-personnel in the Romanian Police, 18,000-person in the Romanian Gendarmerie, and 20,000-person Public Guards, who are community police and work under

local government. All three forces are responsible for maintaining public order. (M. Caparini, O. Marenin, 2004).

The reform strategy's primary goals were to improve communication, depoliticize, demilitarize, decentralize, be transparent, partner with the community and encourage it to help achieve its own security, establish an effective and democratic accountability system, uphold professional ethics and human rights, and achieve interoperability with comparable organizations from other European states and beyond. (Călin Hinţea, Sorin Dan Şandor, Veronica Junjan, 2002).

The new Law on the Organization and Functioning of the Romanian Police was enacted in 1994. The 1994 Law (no.26/1994) harmonized the powers,authority and limitations on the police with the provisions of the 1991 Constitution.

The 1994 Law on the De-politicization of the Police System included a constitutional clause that forbade police officers from belonging to political parties or organizations. Despite this, the Constitution still protects the freedom to vote. This was another significant step. This notion obviously necessitated the creation of safeguards to guarantee the system's immunity and resistance to any demands from outside political players. (Amnesty International, 1998).

After the adoption of the Law of 1994, the Romanian Police thereafter started a major reform program. In order to prepare for Romania's entry into the European Union and other Euro-Atlantic structures, the main strategic directions included turning the Romanian Police into a civilian institution, improving its operational response capability, altering the organizational culture, maximizing resource utilization, and concentrating international efforts on police reforms.

In order to ensure effective logistical support, manage human resources and protect personnel, decentralize decision-making and resource allocation for increased efficiency, modernize working methods to meet the requirements of a democratic society, cooperate with public authorities from various sectors, introduce new efficient instruments for police work management, and increase interoperability with similar bodies of the European Union for regional stability, these strategic activities aimed to achieve these goals.

The European Code of Police Ethics was incorporated into Romanian law in 2002 with the Law on the Organization and Functioning of the Romanian Police. (LAW no. 218 from 23rd of April, 2002). It placed an emphasis on providing services to the public and broadened the police's conventional responsibilities to include stopping and opposing acts of terrorism, illegal immigration, and the trafficking of radioactive materials. Law No. 218/2002 reduced the police's dependence on coercion by transforming their function into a public service mechanism. (LAW no. 218 from 23rd of April, 2002). The first piece of legislation governing the police officer profession and its relationships with other professional communities was the Law on the Status of the Police Officer.

5. DEMILITARISATION OF THE ROMANIAN POLICE

An unprecedented endeavor in Southeast Europe - is changing the role the police will play in Romanian society, i.e., the role of becoming a public service without sacrificing the police's judicial function. It was predicated on the idea that civic values are most likely to be upheld by a police force that competently responds to demands from the general public. Furthermore, there are significant differences between the legal responsibilities placed on police in a democratic society to protect an individual's civil and political rights and those placed on military troops.

Legislative actions aimed to rebuild the Romanian Police by continuing the reorganisation and restructuring process, eliminating parallelisms and intermediary links among police structures, reducing bloated agencies, and increasing interoperability with similar EU agencies. The goal was also to align the new organisational charts with similar structures of advanced democratic states, as per European bodies' recommendations, and increase operational efficiency through rational personnel redistribution. (Țuțu Pișleag, 2020).

The Romanian Police was reorganised into three components: Judiciary Police, Public Order Police, and Administrative Police. New structures were established, including the Institute for Crime Research and Prevention, the Division for Human Rights, specialised Brigades for Countering Organised Crime, and cross-border crime units. The Road Police Brigade was established to control roads and traffic, and some functions were transferred to other bodies. The national EUROPOL office was established for the Romanian Police to participate in European Community activities for countering organised crime. A National Body of Police Officers will be established as a legal, autonomous, apolitical, and non-profit institution to organise police officers by professionalism criteria and to promote and defend their rights.

The Territorial Authority for Public Order was a new organization created under the Law on the Organization and Functioning of the Romanian Police to include the community in developing its own security framework. The civil society may help with activity plans, goals and performance indicators, protecting community interests, suggesting ways to improve police operations, setting up meetings for consultation, and producing an annual report on police unit effectiveness for the general public.

The significance of appropriate human resource management is also emphasized by the law. It seeks to replace the outdated image of the police officer as a military, equipped with all tools of coercion and repression and expected to obey commands without question, with that of the police officer as a citizen, who is approachable and possesses human traits.

Over half of the Romanian police officers who had served during the communist era left the country after 1989. The majority of them retired ahead of schedule and received compensation, while the remaining portion sought to leave the system in order to pursue other employment opportunities, based on their

foundational training from public or private institutions. The only people in the Romanian police who could demonstrate they had nothing to do with the atrocities committed by the Communist Regime were still there. (M. Caparini, O. Marenin, 2004).

The Ministry of Interior's educational system in Romania underwent a significant reconstruction, transforming the School for Active Officers into a university-level institution, the Alexandru Ioan Cuza Police Academy. The academy offers four-year courses for training police officers, gendarmes, fire fighters, and archivists, with graduates receiving a BA-equivalent degree. It also offers two-year post-university courses and a six-year Ph.D. degree in police specialities.

The new Law on the Organisation and Functioning of the Romanian Police emphasized the protective role of the police and established new directions for police work and personnel training, focusing on crime prevention, countering organised crime, humanitarian law, and human rights. (Academia de Politie "Alexandru Ioan Cuza").

Efforts were made to balance leadership and line positions, redistribute personnel according to specific problems, decrease personnel's average age, increase their quality and compatibility with tasks and missions, hire minority nationals, and increase the rate of women in the police forces. As a result, the number of Romanian police personnel increased by 68 percent compared to 1989, and relations between police officers and citizens were aligned with European Union standards.

6. POLICE AND THE ROMANIAN SOCIETY

One of the primary role models in society is the police officer, who acts to protect and serve the interests of the populace. Although this line of work is unique, it is a complicated one that touches on many topics, including society. Given that the police are the state's governing authority and the face of law and order, they must maintain constant touch with the public and maintain an outstanding reputation.

The crucial role of the police in a community, is that their effectiveness is derived from societal acceptance and support. The need for a high degree of trust and confidentiality to foster cooperative relations between society and the police, is a challenging goal to attain.

Society pays close attention to the actions of police officers and takes strong offense at any divergence in behavior, no matter how slight. When a citizen attempts to create an opinion about him or the organization he represents, his actions are scrutinized and will carry significant weight.

These days, a growing number of police officers have completed law school and are better educated. They interact with judges, prosecutors, and attorneys on an equal footing, understanding the law and the facts of the case. Furthermore, there are more people who are feared because they would never breach the law

and will track down those who do, no matter what, and they will hold offenders responsible for their actions.

The public image of the Romanian Police varies among individuals due to personal opinions. With Romania's democratization, trust in the police has gradually increased, improving the institution's image. Several factors influence this perception, and research has been conducted to identify elements that could sway it positively or negatively. Minorities often do not significantly influence the public image of state institutions due to their lack of power. However, studies have shown that minorities can impact societal perceptions, often negatively, as they frequently encounter legal issues or feel disenfranchised, leading to a decrease in trust in the police.

Numerous elements contribute to the perception of the Romanian Police, and the public must consider not only the errors committed by those employed by this organization but also the outcomes of the missions these officers have completed. Democracy will, at most, stall or perhaps vanish if faith is lost, and society will no longer be able to advance. Without the assistance of the police, a democratic state is impossible. Criminal organizations will continue to grow and endanger public safety if residents refuse to engage with this agency and have no faith in its services.

7. ROMANIAN POLICE AND THE INTERNATIONAL POLICE COOPERATION

The International Police Cooperation Centre, under the General Inspectorate of the Romanian Police, is a national authority specializing in sharing intelligence to combat international crime. It ensures operational connections between Romanian authorities and foreign law enforcement through liaison officers and channels like Interpol, Europol, and the Schengen Information System. The Centre also maintains links with the Centre for Law Enforcement in Southeast Europe. These resources, funded by the EU or their own projects, are directly accessible to ground-level police officers. (Dontu, Marian, 2014).

In 2012, the Centre actively participated in the exchange of police information. They brought 1258 people into the country, identified 5966 people and 1834 vehicles subject to Schengen Information System alerts, and located 3843 people in Romania subject to these alerts. They also watched over 1067 people, with 1047 taken on the European arrest warrant and 20 extradited, and transferred 191 people to serve penalties handed down by foreign courts. (Gerspacher, 2005).

The Interpol National Bureau of Romania, established on January 10, 1973, operates within the General Inspectorate of Romanian Police as a national support point for international police cooperation. It plays a crucial role in overcoming obstacles in international police cooperation due to differences in national police structures, language barriers, and legal systems. The Bureau carries out police

operations on national territory as requested by other ICPO - Interpol Member States and provides access to the Interpol General Secretariat's database. (Gerspacher, 2005)

The National Focal Point (NFP), established on December 1, 2000, is a specialized structure of the Centre for International Police Cooperation. It ensures operational connections between Romanian and foreign authorities and manages information flow on operations conducted by international police cooperation specialized structures of the Ministry of Internal Affairs. The NFP also ensures operational cooperation between the Ministry and the Ministry of Finance, General Directorate of Customs, and corresponding agencies in states participating in S.E.C.I. (Dontu, Marian, 2014)

To intensify cooperation with EU countries, a Cooperation Agreement was signed between Romania and the European Police Office (EUROPOL) on November 25, 2003, ratified by Law no. 197/2004. The NFP was designated as a specialized unit within the Ministry of Internal Affairs to act as the national contact point for Europol according to EU standards on February 15, 2004.

On November 25, 2003, a cooperation agreement was signed and ratified between Romania and the European Police Bureau, as per Law no. 197/2004. This law established methods and procedures for the National Bureau of Europol, aiming to align the Romanian Police's institutional and operational capacity with EU standards and implement best practices in policing and combating organized crime.

The law defines the purpose, areas of cooperation, information sharing and supply by Romania, provision of personal data by Europol, evaluation of sources and information, confidentiality procedures, representation of liaison officers, responsibilities assumed by Romania, and dispute resolution methods. (Gerspacher, 2005).

The Europol National Unit focuses on exchanging information related to various crimes, including financial crimes, drug trafficking, human trafficking, smuggling, murder/kidnapping, serious property damage, trafficking of nuclear and radioactive materials, environmental crimes, theft, and terrorism. Assistance requests can only be made when there is reliable information about the involvement of criminal groups in Romania. (Agata-Mihaela POPESCU, 2014).

Cooperation may also involve other Europol competencies, such as exchanging knowledge, reports, investigation procedures, preventive methods, and providing advice and support in criminal investigations.

8. CONCLUSIONS

Reforming has not been simple. With all the uncertainties and challenges of a fresh start, Romanians had to relearn democratic principles and learn how to execute them after fifty years of an authoritarian administration that cut Romania off from the democratic world. There were various barriers to overcome, some of

which were objective in the form of financial resources and others of which were subjective in nature and stemmed from the attitudes of both the public and police personnel. Other barriers included the lack of a collaborative culture and a model to follow.

The primary causes of the Romanian police's dysfunctions include a lack of management, political influence, slow legislation, and a failure to alter police officers' mindsets. Despite these obstacles, studies showing a 48 percent trust rate and the police ranked as the fifth most trusted state organization indicate that the reform of the Romanian police is deemed effective.

Romania has a low crime rate per 100,000 people, comparable to democratic nations like Austria, Switzerland, and Germany, demonstrating the effectiveness of the reforms. After overcoming the transitional phase, the changes are almost finished, along with ongoing attempts to integrate Europe and complete the concept of community policing.

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BOARD GENDER DIVERSITY AND BUSINESS PERFORMANCE: A BIBLIOMETRIC ANALYSIS

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Abstract
Gender differences have become essential topics in the works of researchers dealing with topics related to the relationship between business performance and board diversity, with particular emphasis on the female presence in these boards, due to the specific characteristics of women in management actions, and in many studies the positive relationship found in this direction is stated. This paper aims, on the one hand, to provide a contextual analysis, through a literature review, in order to investigate the influence of gender diversity in boards of directors on business performance, and on the other hand, to examine the concerns and research directions related to the issue under research, through a bibliometric analysis, in order to highlight the links between the concepts analysed, by mapping them, thus providing a broad perspective on the dynamics of the scientific literature studied. In this methodological approach specific to bibliometrics, we

will resort to the temporal analysis of the evolution of research studies, which have been published on the Web of Science platform, in the last 23 years, from 2000 to 2023. on the topic of gender diversity and its link with business performance, returning for the period under analysis, over 19,000 results, which allowed us to understand the theoretical and conceptual basis behind gender influences in the context of business performance and to develop new research directions.

1. INTRODUCTION

Gender diversity in the composition of the boards of directors of a business and its implications for the company's financial performance is a widely debated and analyzed topic in the literature, achieving high performance has become a constant challenge in the business world, which obviously also depends on the company's management, where gender will also play a vital role. From the point of view of accountability, company management will constantly find those ways to improve business performance through new strategies, plans and procedures throughout the life cycle of the company (Hoque and Awang, 2019), by providing quality services and products, and also by having the best performing workforce through sustained human resource efforts (Vosloban, 2012).

One visible trend in recent times is the increasing composition of women on boards around the world (Huang and Kisgen, 2013), which is argued to be driven by better shareholder decision-making by female CEOs. Women and men in leadership positions can influence how they perform their leadership roles. due to their different attitudes, behaviors, biologicul and cultural upbringing (Robb and Watson, 2012), effectively managing gender diversity in corporate leadership can bring significant benefits to the company, helping to enhance its reputation (Soare *et al.*, 2021). ender diversity on boards of directors can improve decision-making and business performance, as this aspect is shaped by perceptions of gender behaviour. Thus, while women tend to be more concerned with issues such as concern, cooperation and pragmatism in problem-solving, men are often motivated by financial opportunities and profit, and are more likely to take risks and adopt a more autocratic leadership style (Birindelli *et al.*, 2019).

Following the literature, in the prominent line of current research on the effect of related legal initiatives implemented in several countries (Velte, 2017), which address the composition of women on the board of directors of companies, the aim of this paper is to examine the relationship between board gender diversity and business performance, thus contributing to a better understanding of the effects of gender differences in board gender on business performance. To achieve this goal, we set the following two research objectives. A first objective aims at analyzing the literature to understand the theoretical perspectives and findings regarding the influence of gender differences in board gender on business

performance. The second objective aims to conduct a bibliometric analysis to identify the main research directions and trends emerging from investigating the link between gender diversity and business performance by mapping the dynamics of the scholarly literature. Bibliometric analysis is a process of statistical analysis to quantitatively measure and evaluate research publications and papers (Goyal and Kumar, 2021). Achieving these objectives will enable us to develop a solid understanding of the theoretical and conceptual basis of the research issues under analysis.

In the methodological approach of the next part of the paper, the structure was organized in five sections: one section corresponding to the literature review on the subject under analysis; a section that brings to the fore the most relevant works on the effects of gender diversity in boards of directors on business performance; the next section presents the methods used to conduct the proposed bibliometric analysis; a section for results and discussions on the research issue; the final section summarizing the main conclusions drawn from the paper.

2. LITERATURE REVIEW

The literature review on the topic of gender differences brings to the table the relevant perspectives and findings of leading authors in the field who explore how gender differences on boards influence business performance. Diversity, being an evolving concept (Kreitz, 2008) refers to "any significant difference that distinguishes one individual from another". The concept of diversity in the context of corporate governance is viewed through a range of ethnic and gender representation on boards (Erhardt *et al.*, 2003). From a gender perspective, women play a very important role (Gallego-Álvarez *et al.*, 2010), and it is important to incorporate women on boards, especially when there is little or no female representation (Higgs, 2002), and they should be promoted according to their education and professional knowledge (Robb and Watson, 2012). A higher degree of gender diversity on the board of directors may result in attracting the trust of shareholders or external investors (Atty *et al.*, 2018; Lopez-Nicolas *et al.*, 2020), strengthen corporate governance mechanisms (Capezio and Mavisakalyan, 2016), respectively, and may also be a real source of competitive advantage (Francis *et al.*, 2015).

Various empirical studies report the significant role of gender on leadership styles and the positive effect of women's leadership on business performance (Adams and Ferreira, 2009; Blackburn *et al.*, 1994; Dwyer *et al.*, 2003; Gul *et al.*, 2011; Kang *et al.*, 2010; Konrad *et al.*, 2008; Moreno-Gómez *et al.*, 2018; Ongsakul *et al.*, 2020; Shrader, C. B. *et al.*, 1997; Srinidhi *et al.*, 2011; Triana *et al.*, 2019; Watson, 2012; Wiersema and Bantel, 1992), women directors strengthen board monitoring and improve corporate governance (Adams and Ferreira, 2009; Singh and Vinnicombe, 2004), and during the 2008 financial crisis, firms with higher representation of women on the board performed better

(Papangkorn *et al.*, 2021). Other research shows that the performance of listed firms is positively influenced by the presence of women on the board of directors (Carter *et al.*, 2003; Tahir *et al.*, 2021; Tran *et al.*, 2020), with corporations that fail to integrate their diverse workforce subsequently incurring substantial costs (Cox and Blake, 1991), with corporate diversity increasing the effectiveness of corporate governance (Robinson and Dechant, 1997). Laws and quotas in countries around the world, contribute to representing gender equality, building a diverse and inclusive workforce (Herghiligiu *et al.*, 2023) and to supporting the implementation of the Sustainable Development Goals (SDGs) in global finance, management and leadership (Vieira *et al.*, 2022).

Many gender stereotypes can lead to gender inequalities in labor markets, reinforcing a less socially equitable and inclusive society (Powell *et al.*, 2002), an example of such a stereotype would be the stereotype related to the position of manager, associated with a masculine construct, for this reason women do not occupy such positions (Chugh and Sahgal, 2007). ecognizing and combating gender stereotypes, can lead to a promotion of a culture of diversity and gender equality, where each individual is evaluated according to their real abilities and merits (Martiarena, 2022), it is essential to promote an organizational culture based on equal opportunities (Perryman *et al.*, 2016).

Turning to the country situation, it is shown that in Norway, France, Italy, Germany, France, Germany, India and Israel, quotas for gender diversity on boards (and not other types of diversity such as age, profession or education) have become law (Cumming and Leung, 2021), with more women on boards in these countries. In countries with a deep-rooted tradition of gender equality, such as Novergia, the government required companies to appoint women to their boards to reach a 40% target, Sweden has also resorted to implementing similar legislation with a 25% target for women's representation (Miller and Del Carmen Triana, 2009; Singh and Vinnicombe, 2004), and Malaysia and Australia to a 30% target (Tahir *et al.*, 2021). Also, a study (Martínez and Rambaud, 2019) shows that during the period under analysis (2007-2017), the European Union reached an average of 25.3% women on company boards, with this situation differing from country to country. Specifically, in 2007, Norway held the first place with 34.2%, while Portugal and Italy were ranked the lowest, both with 3.2%, and at 2019, France and Norway have the highest percentage of women on company boards with 43.4% and 42.1% respectively, with Greece and Portugal at the opposite pole with 11.3% and 16.2% respectively. In Spain, the target quota of 40% has not been reached, although the law is mandatory, with the presence of women on boards at 15.8% (Martínez and Rambaud, 2019).

In the specialized literature we find studies (Poggesi *et al.*, 2020), which demonstrate the impact of the presence of women on the board of directors and in management positions on performance, for example, in Denmark showing the positive impact of gender diversity on financial performance (Smith *et al.*, 2006),

specifying that board diversity, and especially gender diversity, contributes to reducing fraud (Cumming *et al.*, 2015), respectively to higher company performance (Ali *et al.*, 2016; Carter *et al.*, 2003; Das and Ghosh, 2006; Erhardt *et al.*, 2003b; Miller and Del Carmen Triana, 2009; Milliken and Martins, 1996; Nguyen and Faff, 2007; Pearce and Zahra, 1992), even though some studies show that women are not at risk (Barber and Odean, 1998; Byrnes *et al.*, 1999; Farag and Mallin, 2017, 2015; Husain Tahir, S. *et al.*, 2019; Tahir *et al.*, 2021). Increasing gender diversity in the top management team can improve decision-making processes and can lead to deeper considerations of strategic choices, provide a competitive advantage (Rose, 2007), improve and diversify human resources, thus contributing to increased corporate performance (Perryman *et al.*, 2016). Gender diversity is one of the most important governance issues faced by managers, directors and shareholders and is considered part of good corporate governanc (Rose, 2007), as any organization should reflect the disparity of society as a whole, and diversity on boards and in top management is thus a logical consequence. Due to the high complexity and dynamism in the current business context, companies require an increasingly diverse workforce to match the new business culture (Grosu *et al.*, 2023). In corporate governance, gender diversity is desirable from a social cohesion perspective and is an increasingly visible trend in modern companies, from an economic perspective this diversity should lead to an increase in corporate value (Gallego-Álvarez *et al.*, 2010).

The specialized literature reveals that gender differences significantly influence business performance, more specifically gender diversity in boards of directors and top management can improve business performance, which is why we have proposed in the next part of the paper to make a structured presentation of the most representative scientific papers, which through the results of the studies conducted demonstrate the existence of a relationship between the female component in the management and boards of directors of companies and their performance.

3. META-ANALYSIS OF RELEVANT WORK ON THE EFFECTS OF GENDER DIVERSITY ON BOARDS AND BUSINESS PERFORMANCE

Awareness and effective management of gender diversity in corporate leadership will certainly contribute to better adaptation to changes in the market and enhance its reputation and legitimacy (Rose, 2007), and organizations can promote an inclusive and equitable work environment that values the contribution of each team member (Soare *et al.*, 2021). Among the most important governance issues currently facing managers, directors and shareholders of companies is the gender, race and cultural composition of the board of directors, and for governance to be considered good there should be a positive link between board diversity and shareholder value (Rose, 2007). Company performance, CEO turnover and

changes in ownership structure appear to be important factors affecting changes in board of directors (Hermalin and Weisbach, 2000).

Next, in Table 1, we have conducted a meta-analysis of the most relevant papers on the effects of gender diversity in boards of directors, i.e. top management and business performance as part of good corporate governance, which empirically investigated the relationship between board diversity and business performance or shareholder value creation.

Table 1. Review of the literature on the effects of gender diversity on boards and business performance

Authors	Research method	Research objectives	Research results
(Erhardt et al., 2003)	correlation and regression analyses using databases of 1993 and 1998 financial performance (return on assets and return on investments) and the percentage of women and minorities on the boards of 127 large US companies.	examine the relationship between demographic diversity on boards and the financial performance of organizations	the presence of gender diversity on boards is a positive link between both return on assets (ROA) and return on investment (ROI)
(Smith et al., 2006)	using data for 2,500 Danish firms over the period 1993-2001, different statistical models for firm performance are specified and estimated, with the main focus on the estimated relationship between the estimated proportion of women in top management (CEO and board of directors) and firm performance.	examines the relationship between managerial diversity and firm performance for women in management and on boards.	shows that the proportion of women in top management positions tends to have positive effects on firm performance, with the positive effects of women in top management strongly dependent on the qualifications of female top managers.
(Moreno-Gómez et al., 2018)	addresses upper-sample theory through panel data models on a sample of 54 Colombian public enterprises for the period 2008-2015 to test the proposed hypotheses on gender diversity and	investigating how gender diversity in board and top management positions affects the performance of Colombian public enterprises.	argue that gender diversity is positively associated with subsequent firm performance, identifying the relationship between gender diversity at the top of the corporate hierarchy (CEO) and in the management team - and subsequent performance,

Authors	Research method	Research objectives	Research results
	subsequent firm performance.		which becomes more evident when performance is related to business operations (ROA), while the positive effect of female representation on the board of directors and subsequent performance is significant when performance is measured by shareholder-oriented indicators (ROE).
(Martínez and Rambaud, 2019)	studying the influence of a mandatory law on the presence of women on the boards of directors of companies (excluding financial companies) included in the Spanish Stock Exchange index IBEX35 for a fifteen-year period from 2003-2017, using a panel data methodology.	investigates the influence of more women on company boards	shows that the growing number of women on boards is positively linked to higher financial performance, thanks to the mandatory gender law, which increases the proportion of women on boards.
(Pucheta-Martínez and Gallego-Álvarez, 2020)	using a multi-firm database from 34 countries.	analyze how board characteristics influence firm performance.	board gender diversity positively influences Tobin's Q.
(Chijoke-Mgbame et al., 2020)	uses a database of 77 companies listed on the Nigerian Stock Exchange.	studies the effects of women's representation and the proportion of women's representation on entity boards and audit committees on financial performance in an African context of weak institutions.	the presence of women on boards has a positive influence on company performance.
(Đăng et al., 2020)	sample of 369 firms listed in the Standard&Poor's 500.	investigate the relationship between board gender diversity and firm profitability using the control function approach recently suggested by Wooldridge	the presence of women on the boards of directors of organizations positively influences the return on assets.

Authors	Research method	Research objectives	Research results
(Niikura and Seko, 2020)	use all firms listed on the Tokyo Stock Exchange.	analyzing the effect of female board members on firm performance in Japan.	the proportion of women on the board of directors and of women inside and outside the board of directors positively influences the profitability of the entity.
(Brahma et al., 2021)	use a sample of FTSE100 constituent companies	analyzes the relationship between gender diversity, selected female attributes and the financial performance of UK FTSE 100 firms.	the positive influence of board gender diversity on return on assets and Tobin's Q
(Garanina and Muravyev, 2021)	uses a longitudinal dataset of Russian listed companies from 1998-2014.	studies the economic effects of the gender composition of corporate boards.	gender diverse boards have higher market values and improved profitability.
(Mastella et al., 2021)	use a sample of 150 Brazilian listed companies from 2010-2018, with different measures of firm performance, firm risk, and the presence of women on the board.	examines whether the representation of women on boards of directors affects performance and risk, and analyzes the changing demographics of women's presence on boards in Brazil.	positive link between board gender diversity and firm performance. Survey results indicate that market investors place more value on the presence of women on the board of directors than in director positions.

Source: compilation based on literature

The analysis carried out in Table 1 shows that in several studies, the presence of women on the board of directors has a positive effect on the performance of organizations, as women are more likely than men to support and maintain cooperative relationships between board members and management, increasing shareholder confidence and attracting new investors, helping to maintain cooperative relationships between board members and management.

In order to identify the main research directions and concerns related to the influence of gender diversity on companies' performance we will also resort to a broad and updated perspective on the existing knowledge in this area of research, through a bibliometric analysis, in order to facilitate the identification of future research directions and areas with a significant impact on the topic under analysis.

4. RESEARCH METODOLOGY

After reviewing the literature on the relationship between board gender diversity and business performance, the methodological approach focuses on examining the evolution of the number of papers published over the years, the geographical distribution of existing research and the research areas on the Web of Science, as well as on identifying and analyzing the most commonly used key terms in the literature on board gender diversity, and highlighting the connections between them by illustrating the most relevant thematic clusters.

In order to extract the relevant information for the analyzed topic, we use the Web of Science platform, the most prestigious database for the thematic analysis of the literature, and through the VOSviewer software we will perform a detailed bibliometric analysis, in which we will correlate the relevant scientific articles on board gender diversity and business performance, and then we will resort to the analysis of the resulting clusters, in order to highlight the key terms, themes and research directions, as well as the interconnections between them. Thus, the search protocol has been configured according to the steps presented in Figure 1.

After searching and querying the data on the international Web of Science (WOS) platform according to certain criteria, the relevant information was extracted and exported in "Tab delimited" format - "Full record and Cited references", subsequently, obtaining the term networks and citation maps through a bibliometric screening approach, using the VOSviewer software (Cobo *et al.*, 2011), pplied on selected studies from the Web of Science, addressing gender diversity in boards of directors and business performance. Bibliometric analysis involves searching and collecting data, processing it to extract relevant information, creating a network of terms, analyzing them and presenting them as maps (Molina-García *et al.*, 2023).

We thus observe that, following the queries made on the Web of Science platform, the bibliometric research results reveal a total of 787, structured in articles, procedures and documents, book chapters and works in the form of books, editorial materials and reviews. This situation of the works was obtained following the elimination of research fields irrelevant to the analyzed topic, the time period that we considered relevant for our study was from 2000 to 2023. So, the results were obtained by filtering the works from the Web Of Scenice platform according to a series of key terms, also presented in Figure 1, and by examining the specialized literature, we were able to demonstrate that the works related to gender diversity and business performance cover a wide range of research fields, such as economics, business ethics, management, finance, etc.

Source: own projection

Figure 1. Stages of bibliometric analysis

5. RESULTS AND DISCUSSIONS

In various studies, a number of stereotypes and perceptions related to the specific traits and approaches of leaders according to their gender have been developed by exploring how women and men engage in leadership roles, the impact of gender diversity on company performance thus becoming a central topic of interest both in the academic environment and in the managerial practice of companies, with publications addressing such topics registering significant increases. Through the Vosviewer software, which the authors used, by consulting the manual (van Eck and Waltman, 2022) s a network of key terms grouped into clusters was generated, using the data extracted from the WOS platform and applying the total count method according to the specific methodology (van Eck and Waltman, 2014). In the network presented in figure no. 2, the nodes represent the key terms, and the lines between them symbolize the relationships between the terms, the thickness of the lines indicating the intensity or strength of the relationships between the terms (van Eck and Waltman, 2022).
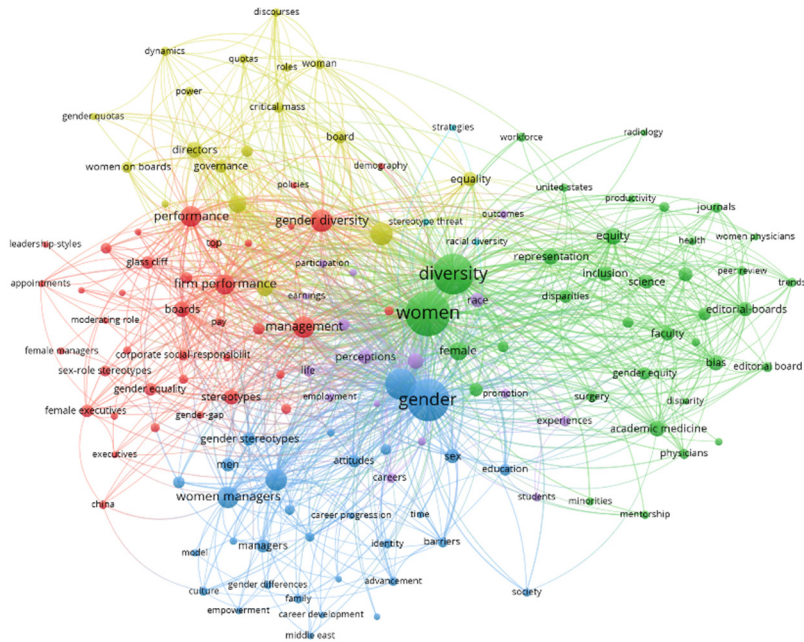
Source: developed by the authors using VOSviewer software

Figure 2. The network of key terms relevant to research on the influences that gender differences exert on business performance

Figure 2 presents the results of the bibliometric analysis that highlights six distinct thematic clusters and the connections between the terms in the field. These clusters and links reveal central topics and significant interdependencies in research related to the topic of gender diversity, business performance, women on board, these items being otherwise fixed in the centre in the middle of the map, the co-occurrence based on keywords can be visualized, both in the network map in Figure 2, as well as in the density map with the reflection of the most relevant term, mapped in Figure 3.

From Figure 3, information can be extracted regarding the mapping of the density of keywords used in the publications under analysis.

A representation of the time distribution of the occurrence of keywords in the selected publications can be viewed in Figure 4.

Figure 4 highlights the overlapping highlighting of the co-occurrence of keywords in the selected papers for the analyzed period, using a fractional counting method, the node size reflects the frequency, while the node color represents the publication time period.
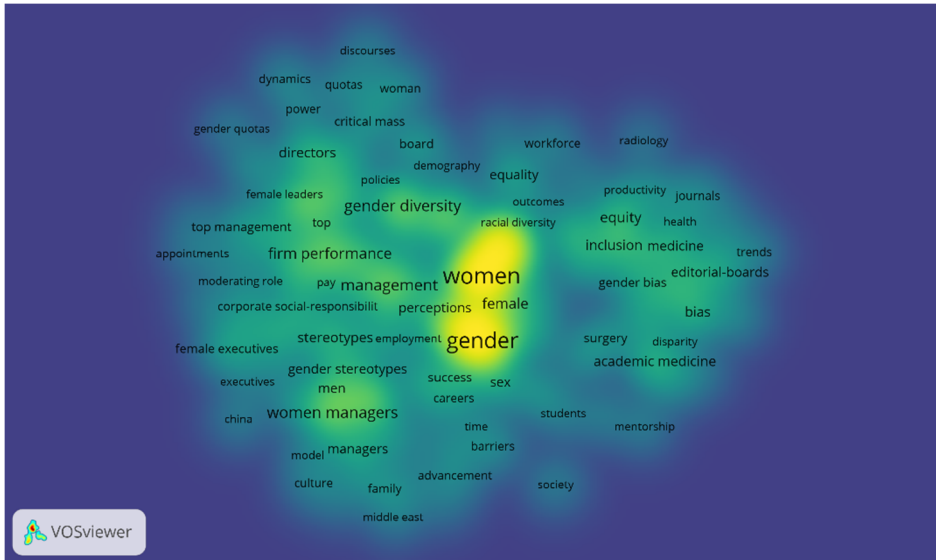
Source: developed by the authors using VOSviewer software

Figure 3. Density map based on the most relevant terms associated with gender diversity

For a clearer understanding of the strengths of the research from the analysis period considered on the topic of gender diversity in the boards of administration, it was considered the presentation of the items corresponding to the 6 distinct clusters, in Table 2., by grouping the terms into clusters showing the predominant research directions and the dominant interests of the academic community. It is noted that terms such as *"gender", "women", "gender diversity", "corporate governance", "firm performance", "directors", "management"* are among the most frequent in the specialized literature, due to the fact that it reflects the predominant concern of researchers in the analysis of gender diversity within organizations and its impact on the performance of companies, as well as the interest in leadership roles and responsibilities in the context of gender diversity.

Source: developed by the authors using VOSviewer software

Figure 4. Map based on WoS data on keyword co-occurrence over the past years

**Table 2. Grouping of clusters based on the terms resulting from
the mapping performed**

The type of cluster	Items found in the cluster	Cluster analysis
Red cluster (38 itemi)	*"appointments", "board diversity", "board of directors", "boards", "china", "corporate governance", "corporate social-responsibility", "executives", "female executives", "decision-making", "demography", "ethnic diversity", "executive compensation", "female managers", "financial performance", "firm performance", "gender diversity", "gender pay gap", "gender equality", "gender-gap", "glass ceiling", "glass cliff", "human-resource management", "inequality", "information", "management", "moderating role", "pay", "performance", "policies", "sex-role stereotypes", "stereotypes", "top", "top management", "top management team", "tourism", "workplace".*	Cluster 1 emphasizes the practical relationship between good corporate governance and firm performance, with interest in establishing gender-balanced leadership structures and assessing the impact of this diversity on firms' financial performance, contributing significantly to sustainable growth, through corporate social responsibility actions. From the analysis of the cluster, we can see the emphasis on social responsibility in the context of gender diversity, thus shaping the importance of adopting ethical, inclusive and socially responsible business policies within the management of companies but also at the level of top management teams.

The type of cluster	Items found in the cluster	Cluster analysis
Green cluster (36 items)	*"academic", "authorship", "bias", "disparities", "disparity", "editorial boards", "editorial-boards", "editorial board", "equity", "faculty", "female", "gender bias", "gender disparity", "gender equity", "gender-differences", "health", "inclusion", "journals", "education", "mentorship", "diversity education", "minorities", "peer review", "physicians", "productivity", "radiography", "representation", "science", "sex-differences", "trends", "unites-states", "women", "female worker", "workforce", "workplace".*	Cluster 2 underlines the important role of education and academic research, regardless of the field of analysis, in promoting gender diversity and equal opportunities in the professional environment, it being essential to make investments in the development of employees' skills and knowledge in the field of gender diversity, as well as in creating an inclusive and fair organizational environment, an aspect resulting from research studies and concerns related to gender differences.
Blue cluster (31 items)	*"advancement", "age", "attitudes", "managers", "model", "middle east", "culture", "gender differences", "perspective", "women managers", "men", "work", "career development", "empowerment", "family", "metanalyses", "gender stereotypes", "perspective", "gender inequality", "identity", "career progression", "time", "attitudes", "sex difference", "gender", "education", "society", "barriers", "work-life balance".*	Cluster 3 highlights the crucial role of education and inclusive organizational culture to encourage gender diversity by eliminating inequalities, indicating interest in establishing gender-balanced leadership structures and assessing the impact of this diversity on society in general.
Yellow cluster (18 items)	*"board", "corporate boards", "critical mass", "directors", "discourses", "dynamics", "equality", "female leaders", "gender quotas", "governance", "impact", "organizations", "power", "quotas", "roles", "woman", "women directors", "woman on board".*	Cluster 4 highlights the importance of developing leadership and management skills in promoting gender diversity and managing a balanced leadership team that is diverse and gender-balanced to ensure optimal organizational performance.
Purple cluster (16 items)	*"careers", "discrimination", "earnings", "employment", "experiences", "gap", "glass ceiling", "life", "outcomes", "participation", "perceptions", "promotions", "race", "students", "women executives", "work-family conflict".*	Cluster 5 reflects the interest in promoting gender diversity in the organizational environment, suggesting a deep concern for the elimination of gender discrimination in order to promote the importance of gender diversity in achieving organizational gains.

The type of cluster	Items found in the cluster	Cluster analysis
Light blue cluster (3 items)	*"racial diversity", "stereotype threat", "strategies",*	Cluster 6 identifies the essential gender stereotypes through the roles and behaviours expected from women and men in society, the preconceived ideas and stereotypes continuing to influence and threaten the perspective on women in the business environment, these inequalities can otherwise be combated through well-defined strategies

Source: own projection using VOSviewer

Table 2 presents analytically and argued the six resulting clusters, with the close identification of the connections between the terms found in the research topic addressed, through the bibliometric analysis used, which revealed a series of trends and concerns in the field of the influence of gender diversity on the performance of companies.

Positioning the term gender diversity as a central figure, making such maps is useful to know the authors' research tendencies and to present the main interactions between the most frequent terms and the existing clusters. The resulting findings can be useful to various researchers, practitioners and decision-makers in the formulation and implementation of strategies and policies that promote greater gender equality and greater efficiency and sustainability within organizations. The significant number of publications on the analyzed topic reflects the global commitment to research on the influence of gender diversity on business performance (Bogdan *et al.*, 2023) and emphasizes the importance of international collaboration and knowledge exchange for a deep understanding of this phenomenon and for the development of practices and policies appropriate in the business environment (Sánchez-Teba *et al.*, 2021).

6. CONCLUSIONS
Through the careful examination of the specialized literature and previous research, as well as from the bibliometric analysis, a clear perspective was obtained on the topic under analysis, which revealed a significant increase in interest in the research topics of gender diversity in the boards of directors, with effect on business performance. At the same time, by exploring the relationship between gender diversity in boards of directors and business performance, directions for future research were identified, covering a variety of contexts, and contributing to the understanding and development of stereotypes related to the specificity of leaders according to their gender. , in the current business environment. Thus, through the obtained bibliometric maps, we managed to offer

a broad and up-to-date perspective of gender diversity in boards of directors and business performance, facilitating the identification of future research directions and areas with a significant impact in this sphere. Also, in various studies, a number of stereotypes and perceptions related to the specific traits and approaches of leaders according to their gender have developed, and it is essential to explore and understand more deeply how women and men engage in the roles of leadership and how these differences can influence organizational performance, the present paper thus contributing to a better understanding of the effects of gender differences on the performance of organizations.

We notice that specialized publications in recent years have registered a significant increase, being justified by the growing recognition and awareness of the importance of gender diversity and inclusion in the business environment, in order to understand how gender factors can influence organizational performance. Thus, the analysis carried out shows an increased concern for the impact of gender diversity on the performance of companies,et thus resulting in the complexity and interdisciplinary nature of this topic and the need for an integrated approach that leads to an in-depth understanding of the role of gender diversity in boards of directors and of course to the development of some effective strategies and practices in today's business context.

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DIGITAL COMPETENCE AND AI AS A FACTOR FOR SUSTAINABILITY IN PUBLIC ADMINISTRATION AFFAIRS

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Abstract
Improving digital skills is one of the main priorities, not only at national, but also at the level of the European Union in terms of a post-pandemic period and the accumulation of crises of all types. Therefore, digitization as a form of work should be seen as a key advantage, as an opportunity to overcome crises. In that sense, we can argue that the essence of the digital transformation of human resources lies in the creation of a culture, a digitalization strategy to achieve an advantage, in turn, digitalization involves learning not just how to use digital skills, but how to use them to achieve sustainability. From this point of view, the aim of the article is to outline the digital transformation in public administration affairs, focusing on the so-called digital competence, as part of the general framework of competences for civil servants at national and supranational level and in the light of the influence of the artificial intelligence (AI). More specifically, the aim is to outline the main problems and challenges, both in formulating and introducing the concept of "digital competence", as well as the challenges to its implementation and application. Therefore, the results of the article could serve for the competent introduction of a workable model for digital competence as part of artificial intelligence in the conditions of a changed environment. The methodology of the article includes comparative analysis of national and supranational levels regarding the European framework of Digital competences and national documents.
Keywords: *digitization; digital competence; artificial intelligence (AI); civil servants; sustainability; public sector*
JEL Classification: H79

1. INTRODUCTION

The emergence of artificial intelligence (AI) is seen as a new and complex change in the operation of the public sector. The promise of AI is to use intelligent machines to take over and facilitate human tasks and perform them more

efficiently and effectively with tangible results and creation of societal value. Although artificial intelligence is often presented or discussed as replacing or automating human activities, human resources and skills are invaluable to AI capabilities. AI does not develop without the involvement of human experts and workers. This requires public organizations to have staff with expertise in AI development, staff with the skill set to manage the (existing) IT infrastructure and any other additional technical positions that facilitate AI development and implementation. In addition, human expertise is important not only for the development of AI, but also – and more generally – for facilitating the actual digital transformation in the organization. Competencies in AI go beyond just management, and every government employee needs some form of acquiring or enhancing pre-existing AI-related competencies. Government officials must find new ways to work with AI systems, changing their traditional workgroups and their attitudes to incorporate new technologies into work practices. Some form of creativity in staff is needed to discover new situations in which AI can be applied. Although creativity may be an individual characteristic, public administrations could significantly support creativity in the public sector. They can provide additional resources for staff members who wish to do so, such as facilitating a human resource management system and encouraging staff to propose innovations to improve existing practices. This in turn involves learning not just how to use AI technologies, but how to use them so that they enhance human capabilities, i.e. to achieve sustainability. Increasing digital skills is one of the main priorities, not only in Bulgaria, but also at the level of the European Union (EU). Therefore, digitization as a form of work, including the influence of the artificial intelligence (AI) in the state administration, should be seen as a key advantage, as an opportunity to overcome crises. In this sense, we can argue that the essence of the digital transformation in public administration lies in the creation of a culture, a digitalization strategy, with which to achieve an advantage. This in turn involves learning not just how to use digital skills, but how to use them so that they enhance human capabilities, i.e. to achieve sustainability. That is why the topic of this article is to investigate the role of digital competences at national and EU lever in the context of AI in order to provide more effective and efficiency value in public administration affairs.

2. WHAT ARE COMPETENCES IN THE THEORY?

According to the literature the term *competences* is not new, but it has gained popularity in the context of a COVID -19 pandemic and afterwards the influenced of AI instruments, when the question of what knowledge and skills managers and employees should possess in order to overcome some consequences and limitations of the change, has put in the center of attention in the science and practice. The general definition of the concept of competences is *to improve the efficiency of the person in his work activity (Hoffman, 1999).* In other words,

competence is the ability to act successfully in solving practical tasks and problems that arise in various situations and processes at the workplace. "Competence" is a term widely used in the field of training, development and people management. However, a correct understanding of the concepts requires that some distinctions be noted.

One perspective of looking at the general abilities to effectively perform the activities of a given occupation or job is against standards set by someone. Such an approach deals with the concept of competence and can be called functional, based on the understanding that it is possible to define standards with universal validity. It developed in the UK, where strong professional guilds existed and the aim in the 1980s was to raise minimum standards of work performance nationally. By applying the methodology of functional analysis, they try to first determine the key objective of a job - what is to be achieved. Then they look for an answer to the question of what needs to be done to achieve the goal. This leads to the definition of key roles and, at a lower level, sections, elements and competency criteria for multiple occupations. The standards detail the work outcomes expected to be achieved, the knowledge, skills and behaviors required. This perspective is built on the assumption that there is a common core of skills and knowledge that all professionals in a field share. They are required to perform professional roles effectively and can be subject to impartial and effective assessment in the form of evidence of competence. This allows both current job performance to be assessed and future performance to be predicted in a given business context.

The other perspective of looking at abilities focuses on the characteristics of individuals on the basis of which different levels of performance occur. It is characteristic of the more individualistic American culture and developed in the USA within fruitful traditions in the psychology of differences and occupational psychology. The concept of competence can be defined as an essential characteristic of people, leading to effective or perfect work performance. This approach is interested in the qualities that distinguish superior from average performance and then in identifying high-potential individuals. It is generally accepted that American psychologist David McClelland'samous 1973 article,Testing for Competence Rather than for "Intelligence", was the initial impetus for interest in competencies. Before that, however, the concept was also found in the works of French authors from the 1950s and was used in the field of language teaching. The next major contribution was by Lyle and Signa Spencer. Thus, it becomes necessary to understand that competencies are basic characteristics of people, determining ways of behavior or thinking, manifested in different situations and sustainable for a relatively long period of time. In this line, **digital competence** has taken center stage in discussions among practitioners and theorists and has become a key HR strategy in public sector nowadays – as standards set by organization and as individual characteristics. From this point of view, the aim of the article is to outline the digital transformation in public

administration affairs, focusing on the so-called digital competence, as part of the general framework of competences for civil servants at national and EU level.

3. DEFINITION OF DIGITAL COMPETENCES IN EU LEVEL

With technological development and with society's awareness of the need for new competences, the concept of digital competence is becoming more and more imperative, the meaning of which is constantly changing and must always be considered in relation to current technology and its application. The idea that the development of digital competences should be seen as a continuation from instrumental skills to more productive, communicative, critical and strategic skills is increasingly being asserted.

At European level we have a general framework, which define the competences needed for all citizens and employees. The European Digital Competence Framework for Citizens, also known as DigComp, offers a tool to improve citizens' digital competence. DigComp was developed by as a scientific project and with intensive consultation of stakeholders. First published in 2013, DigComp has become a reference for the development and strategic planning of digital competence initiatives both at European and Member State level as well as in public sector. So, in Digital Competence Framework for Citizens, digital competence was defined as "confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. It is defined as a combination of knowledge, skills and attitudes" (Council Recommendation on Key Competences for Lifelong Learning, 2018).

Generally the DigComp's five key areas and 21 competences and we can see on the figure bellow.

From this perspective the competences means as fallow:

1) Information and data literacy means to: being able to articulate information needs, find and retrieve digital data, information and content. To store, manage and organize digital data, information and content;

2) Communication and collaborations: able to interact, communicate and collaborate through digital technologies while being culturally and generationally diverse;

3) Digital Content Creation: Can create and edit digital content, enhance and integrate information and content into existing knowledge management systems while understanding how copyright and licenses apply. Knows how to give understandable instructions to a computer system;

4) Security: can protect digital devices, content, personal data and privacy in digital environments. It knows how to protect physical and mental health, and it knows the possibilities of digital technologies to increase social well-being and social inclusion.

5) Problem solving: can identify needs and problems, and solve conceptual problems in a digital environment.
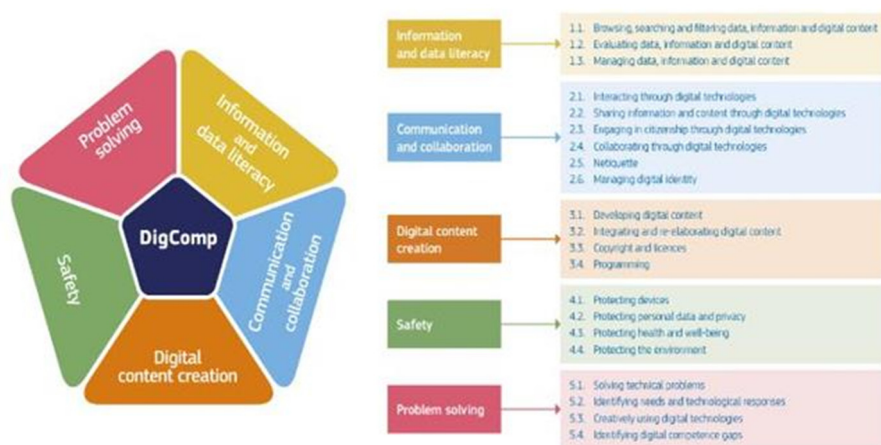
**Figure 1. Council Recommendation on Key Competences for
Life- long Learning, 2018**

All of those five key elements of understanding what competences EU citizens will need is actually the core of understanding the approach of meaning the term competences at EU level. Also, we have to notice that there are many upgrades of European framework DigComp. A year later, the European Commission issues a new version, supplement to Digital competencies framework 2.0 - The Digital Competence Framework for Citizens with eight proficiency levels and examples of use (DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use). The eight levels of proficiency are shown in the table below:

Table 1. Main keywords that feature the proficiency levels

Levels in DigComp 1.0	Levels in DigComp 2.0	Complexity of tasks	Autonomy	Cognitive domain
Foundation	1	Simple task	With guidance	Remembering
	2	Simple tasks	Simple tasks	Simple tasks
Intermediate	3	Well-defined and routine tasks, and straight forward problems	Well-defined and routine tasks, and straight tforward problems	Well-defined and routine tasks, and straight forward problems

Levels in DigComp 1.0	Levels in DigComp 2.0	Complexity of tasks	Autonomy	Cognitive domain
	4	Tasks, and well-defined and non-routine problems	Tasks, and well-defined and non-routine problems	Tasks, and well-defined and non- routine problems
Advanced	5	Different tasks and problems	Different tasks and problems	Different tasks and problems
	6	Most appropriate tasks	Most appropriate tasks	Most appropriate tasks
Highly specialised	7	Resolve complex problems with limited solutions	Resolve complex problems with limited solutions	Resolve complex problems with limited solutions
	8	Resolve complex problems with many interacting factors	Resolve complex problems with many interacting factors	Resolve complex problems with many interacting factors

Source: DigComp 2.1 The Digital Competence Framework for Citizens, With eight proficiency levels and examples of use, p. 13

All of those levels presented above shows what kind of competences employees will need in order to achieve there aims and to improve work environment. However, it is known that the digital knowledge and skills of employees are a basic prerequisite for the successful running of the digital transformation process in public sector organizations, including the state administration. Moreover, improving digital knowledge and skills should not be considered in isolation, but needs to be linked to other components in a comprehensive strategy for AI of the administration. The process of digital transformation is not limited to the implementation of new technologies in the administration. Digital transformation is not a one-time act, but a process that involves not only strictly technological aspect, but also a complete rethinking of the work processes, the management of human resources, but above all a change in the orientation towards achieving results. Therefore, we need to understand the concept of digital transformation in its entirety and to consider the AI instruments as part of it in order to achieve sustainability and advancement of the organization.

From this regards in 2021 European Commission presents Digital Education Action Plan (2021-2027) who sets out a common vision of high-quality, inclusive and accessible digital education in Europe, and aims to support the adaptation of the education and training systems of Member States to the digital age. Part of this plan is the updating of European Digital Competence Framework to include artificial intelligence and data-related skills, as part of digital policy in EU.

According to DigComp 2.2 citizens need to acquire a basic understanding of new and emerging technologies, including artificial intelligence (AI), to be able to engage confidently, critically and safely with them. The goal is to empower all citizens to become confident, critical and responsible users of digital technologies driven by AI systems and autonomous decision-making, as well as to improve their understanding of AI, its potential and limitations. The DigComp 2.2 update now includes an appendix with more than 70 examples that can help citizens to better understand where and in which situations in their everyday life they can expect to encounter AI systems. It also gives practical examples of the ways emerging technologies are applied in our everyday lives. The Digital Competence Framework for Citizens provides a common language to identify and describe the key areas of digital competence. It is an EU-wide tool to improve citizens' digital competence, help policy-makers formulate policies that support digital competence building, and plan education and training initiatives to improve the digital competence of specific target groups. It consists of an update of the examples of knowledge, skills and attitudes. Digital skills for work and for life are at the top of the European Policy Agenda. The EU digital skills strategy and related policy initiatives have the objective of enhancing digital skills and competences for the digital transformation. The newest moments are the examples given in the 2.2 update focuses on "Examples of the knowledge, skills and attitudes applicable to each competence" and absolutely include the role of AI in the life of EU citizens and employees. So, how is it at national level?

4. DIGITAL FRAMEWORK FOR CIVIL SERVANTS IN BULGARIA

Compared to the European framework, the Bulgarian digital competence framework for civil servants is relatively simpler. It includes five components that can be considered as constituent elements of digital competence, namely:

1) Information security;
2) Solving problems;
3) Digital communication;
4) Content creation;
5) Information processing.

Those five areas of competences are similar to the EU framework, but it is limited to the general needed, without considering the levels of proficiency. They are introduced to the Ordinance on the terms and conditions for evaluating employees in the state administration in Bulgaria. The national framework does not cover different levels of mastery of a given competence, but some clarifications have been made that the relevant tasks are consistent with the position and the relevant rules in force in the administration, and a given component could be included in the job description of the relevant civil servant. Thus, the Bulgarian framework assumes a looser interpretation of the level of mastery of digital skills, which, however, is also the essential problem from the

point of view of achieving sustainability in the work of employees and leads to significant difficulties in evaluating performance.

Therefore, a significant problem before the introduction of digital competence in Bulgarian practice is not the very definition and content of the concept, but the model for its assessment. Despite the wide-ranging definition of what should be understood by digital competence, an adequate model for evaluating the competences in question still remains aside from the practice of the Bulgarian public administration.

For the implementation of the evaluation system in the part of digital competence in Bulgaria, the adopted approach is based on planned trainings for the formation and upgrading of a set of digital skills for management and expert positions in the central and territorial administration by the Institute of Public Administration (IPA). In an effort to establish an appropriate way to assess digital skills in the future, the Institute developed its own analysis paper in which it "proposed the development of self-assessment models (including tools such as tests, practical tasks and case studies) for civil servants to self-assess his level of competence, as well as a model for objective independent external assessment by examination, with the analyst based on the DigComp framework and good practices in the European Union.

The determination of digital skills should be subject *to self-assessment*, with the possibility of upgrading. It is based on the possibility of trainings, which should differ in terms of mastery of the competences. For example, *"for levels 1 and 2, where the complexity of the tasks is the lowest and the cognitive level refers to memorization, the most suitable training method is completely online with many practical exercises to stimulate the memorization of actions.* Given the educational profile for most government jobs according to the classifier, the pool of people who fall into this group will be the smallest. Each training must ended with a test that validates the mastery of the competence at the relevant level. *For levels 3 and 4, training should be of a mixed type: online and with a lecturer, for 5 and 6 – again mixed, but with an emphasis on face-to-face training, for 7 and 8 – "the most suitable form of training is one that combines all forms of training: face-to-face with a lecturer/facilitator, virtual with a lecturer/facilitator and online self-study with provided resources'*[5]. According to the proposed model, the level of mastery of a digital competence or competences should end with validation and certification.

It is clear from stated above, that, by its very nature, digital competence covers key, primarily computer skills, which are universally applicable to all employees in the public administration in Bulgaria, with few exceptions by professional field. In order to achieve sustainability in public administration, however, creating an appropriate model concerning digital competence in Bulgaria should include a basic understanding of new and emerging technologies,

including artificial intelligence (AI), to be able to engage confidently, critically and safely with them.

5. CONCLUSION

In terms of future competences, the biggest challenge is digital competences and transformation, including artificial intelligence (AI). Digital competence has been recognized by the European Commission as one of the eight key basic competences for lifelong learning in its digital policy. The essence of the digital transformation of human resources lies in the creation of a culture, a strategy for digitalization. This includes not only learning how to use automated solutions, but also how to use them so that they improve human capabilities. Therefore, the introduction of a digitization model that takes into account the needs of the various stakeholders is of key importance to achieve sustainability in the work of the administration. However, its practical application depends mostly on the managerial will, the readiness for its adequate application and a long-term perspective. Also, the future of digital competences contains require professionals in all sectors and at all levels need to be equipped with the required competencies and confidence to effectively apply a wide range of technologies, including AI, in their work. The competence model, as part of management approaches to people in organizations needs to change. Adaptability to the situation and the skills to work in a digital environment has become a focus of the modern debate regarding human resources in conditions of new technology. Therefore, the criteria for digitalization in public practice should be put into center on contemporary debate and become the main focus for sustainability at national and EU level.

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EUROPEAN ECONOMIC AND MONETARY UNION: ACHIEVEMENTS AND CHALLENGES

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Abstract

This contribution, based on a historical perspective, aims to provide a synthesis of the achievements, limitations and challenges of European economic and monetary union (EMU). While monetary policy has been federalised between twenty of the twenty-seven EU member States, economic union remains an incomplete achievement. We shall concentrate on the latter. The initial focus will be on two fundamental reports, the 1970 Werner report and the 1989 Delors report. We shall then look at the design of the Maastricht Treaty regarding EMU: monetary union was placed on a solid footing while economic union was a weak construction. We shall then move on to the consequences of the 2008 crisis, with monetary union under attack and the creation of an economic union 2.0. We will then question the possibility of moving towards an economic union 3.0 and investigate the resilience of national sovereignty. We shall conclude with the existence of major challenges for the future.

Keywords: *European Communities; European Union; history; monetary integration; economic integration*

JEL Classification: N44

1. INTRODUCTION

This contribution aims to provide a broad overview of the achievements, limits, and challenges of European Economic and Monetary Union (EMU). In doing so, I shall adopt a historical perspective. My initial focus will be on two fundamental reports, the Werner report of 1970 and the Delors report of 1989. We will then see that national political decision-makers have adopted only some of the prescriptions of these two reports with regard to economic union. The importance of EMU is great. Twenty of the twenty-seven member States of the European Union currently belong to EMU and share a single currency. The euro

is a tangible achievement of European integration. It is based on a federal design of monetary policy. EMU has two pillars: monetary union on the one side and economic union on the other. Here, I shall concentrate more on economic union and present the story of a complex concept and an uncomplete realisation. We shall also see why it is so and what are the consequences and the prospects.

2. THE WERNER REPORT (1970)

The final report of the group chaired by Pierre Werner, Prime Minister and Minister for Finance of the Grand-Duchy of Luxembourg, was released in October 1970. It was entitled 'Report to the Council and the Commission on the realisation by stages of Economic and Monetary Union in the Community'. It was following a mandate received in December 1969 from the Conference of Heads of State or Government of the European Communities held at The Hague in the Netherlands (Council – Commission of the European Communities, 1970; du Bois, 2008, pp. 56-58; Pomfret, 2021, pp. 9-10).

The report considered that the ultimate objective of EMU was to ensure the four freedoms of movement (goods, services, people, and capital) and the fact that there would be no imbalances, whether structural or regional.

Regarding the time horizon, the report believed that EMU was achievable by 1980, provided that the political will to do so was present. We know that this was made impossible by the turmoil in the international monetary system as well as the oil shocks of the 1970s and their dramatic economic consequences, leading to irreconcilable national economic and monetary policies within the Community.

Monetary union was defined as follows: "the Community currencies will be assured of total and irreversible mutual convertibility free from fluctuations in rates and with immutable parity rates, or preferably they will be replaced by a sole Community currency" (Council – Commission of the European Communities, 1970, p. 12). The report kept the door open as to the choice between a common currency and a single currency, even if it favoured the second option.

The report stated that the process should be implemented in stages and be irreversible. The thesis of parallelism was also put forward: "the development of monetary unification will have to be combined with parallel progress towards the harmonization and finally the unification of economic policies" (Council – Commission of the European Communities, 1970, p. 26).

The report justified the need to create an economic union on the grounds that, if economic policy was not adequately harmonised, there would be a danger of imbalances. National policies were becoming less autonomous because of growing economic interdependence. The report also pointed out that the loss of autonomy at national level had not been offset by the introduction of Community policies.

The establishment of the economic union was to include the following five dimensions: a fiscal and budget policy; an economic policy; a true common

market for capital free from distortions; structural and regional policies to avoid differences of structure; systematic and continuous consultation of the social partners.

Regarding the fiscal and budget policy, the report stated: "The national budget procedures will be synchronized. […] the essential features of the whole of the public budgets, and in particular variations in their volume, the size of balances and the methods of financing or utilizing them, will be decided at the Community level" (Council – Commission of the European Communities, 1970, pp. 12, 27).

Regarding economic policy, the Community had to establish quantitative objectives at medium term for growth, employment, prices, and external equilibrium. The Community also had to decide on short-term economic policy.

The report advocated institutional reforms that would be impossible without amending the Treaties of Rome and made the link between economic and political integration: "These transfers of responsibility represent of process of fundamental political significance which implies the progressive development of political cooperation. Economic and monetary union thus appears as a leaven for the development of political union, which in the long run it cannot do without" (Council – Commission of the European Communities, 1970, p. 12).

The creation of two bodies was presented as essential, namely a centre of decision for economic policy and a community system for the central banks. In the words of the report: "The centre of decision for economic policy will exercise independently, in accordance with the Community interest, a decisive influence over the general economic policy of the Community. […] the role of the Community budget as an economic instrument will be insufficient, the Community's centre of decision must be in a position to influence the national budgets […]. The transfer to the Community level of the powers exercised hitherto by national authorities will go hand in hand with the transfer of a corresponding Parliamentary responsibility from the national place to that of the Community. The centre of decision of economic policy will be politically responsible to a European Parliament" (Council – Commission of the European Communities, 1970, pp. 12-13).

3.   THE DELORS REPORT (1989)

In June 1988, the European Council, comprising the Heads of State or Government of the then twelve member States of the Community, instructed a committee chaired by Jacques Delors, President of the European Commission, to study and propose the concrete steps towards economic and monetary union. The report was finalised in April 1989 (Delors Committee, 1989; du Bois, 2008, pp. 88-90).

The final objective of EMU was presented as follows in the Delors report: "Economic and monetary union in Europe would imply complete freedom of movement for persons, goods, services and capital, as well as irrevocably fixed

exchange rates between national currencies and, finally, a single currency. This, in turn, would imply a common monetary policy and require a high degree of compatibility of economic policies and consistency in a number of other policy areas, particularly in the fiscal field. These policies should be geared to price stability, balanced growth, converging standards of living, high employment and external equilibrium. Economic and monetary union would represent the final result of the process of progressive economic integration in Europe" (Delors Committee, 1989, p. 13).

The Delors report was more cautious than the Werner report had been about the possible timetable for the EMU project. It merely stated that the process should begin no later than 1 July 1990, which marked the entry into force of the directive on the complete liberalisation of capital movements.

The parallelism thesis also found its place in the Delors report: "Economic union and monetary union form two integral parts of a single whole and would therefore have to be implemented in parallel" (Delors Committee, 1989, p. 14).

In the debate between adopting a common currency or a single currency, the Delors report amplified the intuition of the Werner report: "The adoption of a single currency, while not strictly necessary for the creation of a monetary union, might be seen – for economic as well as psychological and political reasons – as a natural and desirable further development of the monetary union. A single currency would clearly demonstrate the irreversibility of the move to monetary union, considerably facilitate the monetary management of the Community and avoid the transactions costs of converting currencies. A single currency, provided that its stability is ensured, would also have a much greater weight relative to other major currencies than any individual Community currency" (Delors Committee, 1989, p. 15).

In a similar way to the Werner report, the need for economic union was justified by the development of interdependences and the need for cooperation: "as capital movements are liberalized and as the internal market programme is implemented, each country will be less and less shielded from developments elsewhere in the Community. The attainment of national economic objectives will become more dependent on a cooperative approach to policy-making" (Delors Committee, 1989, p. 11).

Close to the Werner report, the definition of economic union presented by the Delors report was as follows: "Economic union – in conjunction with a monetary union – combines the characteristics of an unrestricted common market with a set of rules which are indispensable to its proper working. In this sense economic union can be described in terms of four basic elements: the single market within which persons, goods, services and capital can move freely; competition policy and other measures aimed at strengthening market mechanisms; common policies aimed at structural change and regional development; and macroeconomic policy

coordination, including binding rules for budgetary policies" (Delors Committee, 1989, p. 16).

These binding rules on budgetary policy were to include ceilings on member States' budget deficits, a ban on monetary financing of States, limits on borrowing in non-Community currencies, and the definition over the medium term of a common position on the size and financing of the aggregate budget balance of the Community and its member States.

However, a message relating to subsidiarity was included in the report: "Apart from the system of binding rules governing the size and the financing of national budget deficits, decisions on the main components of public policy in such areas as internal and external security, justice, social security, education, and hence on the level and composition of government spending, as well as many revenue measures, would remain the preserve of Member States even at the final stage of economic and monetary union" (Delors Committee, 1989, p. 19).

While the Werner report emphasised a systematic and continuous consultation of the social partners, the Delors report was more interested in the wage-setting process and in assigning clear roles to the social partners and governments respectively: "As regards wage formation and industrial relations, the autonomous negotiating process would need to be preserved, but efforts would have to be made to convince European management and labour of the advantages of gearing wage policies largely to improvements in productivity. Governments, for their part, would refrain from direct intervention in the wage and price formation process" (Delors Committee, 1989, p. 20).

In a similar way to the Werner report, the Delors report considered that the establishment of EMU required the conclusion of a new European treaty.

Regarding the institutions, the Delors report saw things as follows: "[…] the need for a transfer of decision-making power from Member States to the Community as a whole would arise primarily in the fields of monetary policy and macroeconomic management. A monetary union would require a single monetary policy and responsibility for the formulation of this policy would consequently have to be vested in one decision-making body. In the economic field a wide range of decisions would remain the preserve of national and regional authorities. However, given their potential impact on the overall domestic and external economic situation of the Community and their implications for the conduct of a common monetary policy, such decisions would have to be placed within an agreed macroeconomic framework and be subject to binding procedures and rules. […] The formulation and implementation of common policies in non-monetary fields and the coordination of policies remaining within the competence of national authorities would not necessarily require a new institution; but a revision and, possibly, some restructuring of the existing Community bodies, including an appropriate delegation of authority, could be necessary" (Delors Committee, 1989, pp. 14, 21).

The Delors report also called for consideration to be given to the role to be played by the European Parliament, but without settling the issue. In terms of governance of the coordination of national economic and budgetary policies, the Delors report appeared less ambitious than the Werner report, which had advocated the creation of a centre of decision for economic policy that would have been politically responsible to a European Parliament.

There is something federal about the Werner report's idea of a European economic executive accountable to a European Parliament. However, the Werner report did not go so far as to propose that this economic executive should be the Commission, which was already responsible to the European Parliament at the time. With the Delors report, the institutions, including the Council composed of national ministers, remained in place and the idea of parliamentary accountability at European level was largely dissolved.

Finally, the Delors report, much more than the Werner report, highlighted the context of the world economy and the international dimension of EMU, underlining the fact that the Community had to be able to speak with one voice.

4. MONETARY UNION ON SOLID GROUND

The Maastricht Treaty was signed by the twelve member States of the Communities in February 1992. It then underwent a painful ratification process before coming into force on 1 November 1993. With this treaty, the monetary union project was put on a solid footing. However, the United Kingdom obtained a derogation during the final negotiations. It was joined a few months later by Denmark, which had rejected the treaty and obtained certain guarantees for a second popular vote. This was the start of a process of differentiation between EU member States.

The Maastricht Treaty provided for the eventual creation, by 1999 at the latest for countries meeting the convergence criteria, of a monetary union led by specialised federal institutions, namely the European Central Bank and the European System of Central Banks.

The eminently political decision taken by the newly reunified Germany at Maastricht to accept the eventual disappearance of its national currency, the Deutschmark, was nevertheless accompanied by the imposition at European level of the objective of price stability and the independence of the future European monetary authorities from political control (Grin, 2016, pp. 18-21; Pomfret, 2021, pp. 16-20).

5. ECONOMIC UNION 1.0: A WEAK CONSTRUCTION

The Maastricht Treaty included five convergence criteria that member States had to meet to be able to join the future economic and monetary union. These

criteria concerned the public deficit, the public debt, the inflation rate, the interest rate, and the exchange rate.

At Germany's insistence, the Maastricht criteria, valid only to qualify a country for entry into EMU, were perpetuated by the Stability and Growth Pact adopted in 1997. This Pact, which represented the first version of economic union and went much less far than the prescriptions of the Werner and Delors reports, was soon undermined by budgetary slippages in certain member States, including France and Germany (Delors, 2004, p. 337). It was formally relaxed in 2005 but became ineffective during the major financial and economic crisis that began in 2008 (Grin, 2016, pp. 21-22).

6. MONETARY UNION UNDER ATTACK

The cashless euro was introduced on 1 January 1999, followed three years later by the cash euro. The first years of European monetary union were peaceful, until 2007 and the collapse of Lehman Brothers in the United States. The subprime crisis, imported from America, then engulfed Europe. The securitisation of bad US mortgages and the widespread acquisition of these rotten securities in Europe triggered a serious financial crisis on the old continent. The financial crisis turned into a banking and economic crisis, and then into a sovereign debt crisis because of the bailing out of troubled banks by governments that had been more cicadas than ants in previous years. The sovereign debt crisis led to fiscal austerity measures in several European countries and turned into a crisis of confidence and a crisis of the euro in the sense that powerful speculative movements began to bet on the fact that some southern countries were going to leave the monetary union even though the latter was fulfilling its legal objective of price stability. A heightened political crisis in some countries and a crisis of confidence in the euro and its future took centre stage between 2010 and 2015. In the battle between globalised financial markets and European states at their mercy, some of the latter paid a heavy price in terms of austerity policies, particularly Greece, Ireland, Italy, Portugal, and Spain.

7. THE CREATION OF AN ECONOMIC UNION 2.0

It was against the backdrop of a serious European crisis, when EMU was on the brink of collapse, that a new economic union was developed, which I have called 2.0 to distinguish it from the first version. A jungle of new agreements and acronyms was born – Six-pack in 2011, Treaty on Stability, Coordination and Governance as well as European Stability Mechanism in 2012, Two-pack in 2013, banking supervision in 2014, banking resolution in 2015.

Economic union 2.0 thus has the following four specific components: rules on balanced budgets within member States, coordination and convergence of national economic policies, creation of a banking union and a capital markets union, and support measures for countries in difficulty.

8.   THE IMPOSSIBLE MOVE TOWARDS ECONOMIC UNION 3.0?

The dramatic crisis of 2008 took much longer to be resolved in Europe than in the United States, where the problems originated. We can put the end of the economic crisis at 2011 in the United States and another four years later in Europe.

If the European Union has been able to get through this crisis without disintegrating, it is thanks to the establishment of a more developed economic union, to the action of the European Central Bank, which has understood its mandate in a broad way, and finally to national measures taken in the direction of austerity.

Since 2012, several reports and authors have been looking at a global vision for the completion of the economic union. There is the 2012 report entitled 'Towards a Genuine Economic and Monetary Union'. This report was prepared by the President of the European Council Herman Van Rompuy in close collaboration with the Presidents of the European Commission, the Eurogroup and the European Central Bank. This is why the report is sometimes referred to as the 'Four Presidents' report'. It refers to the completion of the following four projects: an integrated financial framework, an integrated budgetary framework, an integrated economic policy framework, and the strengthening of democratic legitimacy and accountability (Van Rompuy *et al.*, 2012).

Three years later, in 2015, the report entitled 'Completing Europe's Economic and Monetary Union' was published. This report, also known as the 'Five Presidents' report', was prepared by Jean-Claude Juncker (European Commission) in close cooperation with Donald Tusk (European Council), Jeroen Dijsselbloem (Eurogroup), Mario Draghi (European Central Bank) and Martin Schulz (European Parliament) (Juncker *et al.*, 2015). The same structure is presented as in 2012, comprising four projects: a genuine economic union, a financial union, a fiscal union, and a political union. Achieving these four unions is presented as being interdependent. Three stages are proposed, with 2025 as the final deadline. The metaphor of a house is presented: "Europe's Economic and Monetary Union (EMU) today is like a house that was built over decades but only partially finished. When the storm hit, its walls and roof had to be stabilised quickly. It is now high time to reinforce its foundations and turn it into what EMU was meant to be: a place of prosperity based on balanced economic growth and price stability, a competitive social market economy, aiming at full employment and social progress" (Juncker *et al.*, 2015, p. 4).

A reflection paper from the European Commission on the deepening of the economic and monetary union was published in May 2017. It pointed out that economic union was well behind monetary union in terms of implementation. It also considered that the governance of the economic union was too complex and lacked transparency and accountability. According to the report, the intergovernmental structures established at the height of the crisis should be

reintegrated into the framework of the Union, and the European Parliament should be given greater powers of control (European Commission, 2017a).

In his speech at the Sorbonne in September 2017, French President Emmanuel Macron called for instance for the introduction of a eurozone budget based on its own financial resources, the creation of a European finance minister with strong political oversight, and democratic reforms (Macron, 2017).

In December 2017, the European Commission presented a roadmap for deepening EMU, following on from the 2015 Five Presidents' report. For the Commission, "The overall aim is to enhance the unity, efficiency and democratic accountability of Europe's Economic and Monetary Union by 2025" (European Commission, 2017b). The aim was to complete the architecture of economic union and put in place version 3.0 (my expression). The Commission was proposing to create a European Monetary Fund (EMF) to replace and develop the current European Stability Mechanism, to incorporate the fiscal compact into EU law, to provide the eurozone with new budgetary instruments (tool to help implement national structural reforms, mechanism to help member States outside the eurozone to join the latter, creation of a safety net for the banking union via the EMF, stabilisation mechanism to maintain investment levels in the event of major asymmetric shocks), and finally to create the position of European Minister of Economy and Finance, who could be Vice-President of the Commission and President of the Eurogroup (European Commission, 2017c).

In his study from 2023 entitled 'Completing a Genuine Economic and Monetary Union', Professor Iain Begg from the London School of Economics assessed the completion of EMU in seven points (Begg, 2023, p. 59).

One - *Membership*: from 20 today, it could reach 22 countries or more in the next decade.

Two - *Monetary policy*: the European Central Bank's role has broadened to become a more normal central bank. Future changes should be limited.

Three - *Banking union*: supervision and resolution mechanisms have been implemented, but a common deposit insurance and an EU level fiscal backstop are still undecided. In the next decade, reinsurance of deposits and backstop are probable, with a continuing reluctance to move to common deposit insurance.

Four - *Fiscal union*: a bailout fund was agreed as an intergovernmental mechanism. The EU fiscal capacity stayed at modest level before the agreement on the Next Generation EU Programme in 2020. There is the prospect of EU-level borrowing becoming a permanent feature.

Five - *Democratic legitimation*, which has made little progress. There are political pressures for greater accountability, but resistance from member States.

Six - *Other facets of governance*: the value of the European semester, fiscal rules and the Macroeconomic Imbalance Procedure are all questioned. Likely

demands for greater scrutiny of governance procedures will arise. There is the potential for a capital markets union.

Seven - *Internationalisation*: there was an initial spurt after the launch of the euro, but little advance in the last decade. The euro is second globally but lagging well behind the US dollar. The European currency is expected to gain from doubts about the US dollar, offset by the potential of the Chinese renminbi.

A new reform of the Stability and Growth Pact was adopted in April 2024 through two regulations and a directive. It is tempting to speak of the 'Three-pack' of 2024, which profoundly modifies the preventive aspect of the Pact and amends the corrective aspect. The aim remains to promote the consolidation of member States' public finances, many of which have been damaged by the crises of 2008 and 2020. The idea is to focus on the structural – rather than the cyclical – aspect of the adjustments, to define more individualised national trajectories and to encourage strategic investment in areas of common interest, such as green and digital transitions and strengthening the continent's defence (Gortsos and Perakis, 2024).

The relevance of the reforms introduced in the direction of greater flexibility will no doubt be judged by experience, but it by no means seems certain that the EU member States have the real and lasting collective will to bring their public finances back into long-term balance. In addition, the other missing strands of economic union are not addressed by the 2024 reform package.

9.   THE RESILIENCE OF NATIONAL SOVEREIGNTY

The elements missing from the completion of economic union have been mentioned in a series of reports published since 2012 and which we have presented above. But the Werner report of 1970 and the Delors report of 1989 already highlighted a number of elements that could not be ignored: firstly, the fact that an economic and monetary union needed both legs if it was to function in the long term; secondly, the fact that an economic union had to include the coordination of national economic and budgetary policies, have a genuine unified capital market and avoid structural or regional imbalances.

The resilience of national sovereignties prevented Europeans from setting up, at the time of the Maastricht Treaty, the project for an economic union commensurate with the prescriptions of the Werner and Delors reports. The consensus required between the member States to amend and develop the existing treaties prevented them from going any further at that time.

The resilience of national sovereignties can be defined as follows: member States are keen as far as possible to retain their sovereignty *stricto senso*, i.e. the ability of their state institutions to take decisions and administer public policies according to their own preferences and choices. Acceptance of the transfer of competences to the European Union and the joint exercise of the sovereignty thus aggregated, even if it means an overall net gain in sovereignty, is not automatic

and will be all the less so if the competences concerned are of a regal nature. The factors that facilitate the transfer of competences may be political ideas, integration spillovers, and external constraints.

In ordinary situations, the political behaviour of states does not favour major transfers of powers. Such transfers are the result of perceived necessity. In the early 1990s, the decision to create the euro was based on economic, political and geopolitical motivations, such as the will to definitively complete the internal market, the ambition to make the process of European integration irreversible, the effective exercise of the monetary sovereignty that Germany's partners were deprived of, the German question, global monetary challenges, and the fight against global speculation (Grin, 2022, pp. 87-99).

Twenty years later, it was a very serious economic and financial crisis, unparalleled since the end of the Second World War, that made Europeans realise the need to develop their economic union. With the pressure having eased since 2015 and Europeans having been caught up in a series of other serious crises that have required their full attention, it was perhaps inevitable that the completion of economic union would take a back seat. Of course, member States want to maintain the deliverables of the European Union, but with their intergovernmental software for taking major decisions, they do not want to go beyond what is strictly necessary. This creates long, complicated and inefficient processes, with the risk that the results will be too little, too late (Vanthoor, 1996).

10. CONCLUSION: MAJOR CHALLENGES AHEAD

The process of European integration that began in 1950 with Jean Monnet and Robert Schuman's proposal to create a Coal and Steel Community has led, through complex stages, to the European Union of today. In stylized form, the achievements have consisted of sectoral policies, a common market that later became the internal market, horizontal flanking policies, monetary union, partial economic union and an incomplete political union, all with a new method for bringing countries' common interests to the fore.

The need to articulate a monetary union, an economic union and a political union has been known since at least 1970, the year of the Werner report. It is striking how close the message of the Werner report was to that of the Delors report two decades later. The fact that this was imperfectly achieved at the time of the Maastricht Treaty, which was signed in 1992 and came into force in 1993, was not a problem of design, but of a lack of consensus within an intergovernmental framework to go further at the time. This reminds us of the existence of a confederal dimension alongside the supranational practice prevailing in the European Union.

Clearly, European economic and monetary union will not be completed by 2025, as the Five Presidents' report prescribed in 2015. The danger will come

when the next major economic and financial crisis hits. The stakes are therefore high (Grin, 2020, pp. 14-17; Letta, 2024).

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INNOVATIVE FINANCIAL ANALYSIS IN THE CONTEXT OF MODERN ACCOUNTING PRACTICES

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Abstract

The transformation of financial analysis within modern accounting practices is a critical development in the financial landscape. This article explores the impact of digitalization and technological advancements on accounting, emphasizing the importance of modern accounting practices and the consequent evolution of financial analysis. By examining the integration of technologies such as artificial intelligence, cloud computing, and blockchain, we highlight how these innovations enhance efficiency, accuracy, and strategic decision-making. The findings illustrate that the shift towards automated, real-time financial analysis is not merely a trend but a necessity for organizations aiming to thrive in a competitive environment.

Keywords: *accounting; financial analysis; financial information; creative accounting*
JEL Classification: M42, M41, M00

1. INTRODUCTION

The evolution of financial analysis has been marked by significant advancements in methodology, technology, and data availability. Historically, financial analysis was primarily qualitative, relying on simple ratios like price-to-earnings or debt-to-equity, and manual computations were the norm. However, with the advent of computers and sophisticated software in the latter half of the 20th century, financial modeling became more quantitative and complex. This shift enabled the development of tools like discounted cash flow analysis, Monte Carlo simulations, and regression analysis. In the 21st century, the rise of big data and artificial intelligence further transformed financial analysis, allowing for real-time data processing, predictive analytics, and machine learning-driven decision-making. These innovations have enhanced accuracy, enabled scenario analysis, and provided more granular insights into risk and profitability. Today, financial analysis is more dynamic and data-driven, integrating global economic factors,

market trends, and individual financial metrics to offer comprehensive insights into business performance and risk management.

2.   LITERATURE REVIEW

In recent years, the accounting profession has undergone a significant transformation driven by digitalization and technological advancements. Traditional accounting practices, characterized by manual processes and paper-based documentation, are being replaced by modern practices that leverage technology for enhanced efficiency and accuracy (Brown and Jones, 2020).

Financial analysis has long been a cornerstone of economic decision-making, guiding investors, managers, and policymakers in assessing the financial health and potential of businesses. However, the emergence of modern accounting practices - driven by technological advancements, regulatory changes, and the growing emphasis on sustainability - has reshaped the field. The integration of big data analytics, real-time reporting, and enhanced transparency requirements have necessitated a shift in how financial information is analyzed and interpreted.

3.   THE RELATIONSHIP BETWEEN FINANCIAL ANALYSIS AND ACCOUNTING PRACTICES

This article aims to dissect the transformation of financial analysis in the context of modern accounting practices, focusing on the importance of these practices in today's business environment.

Accounting data is fundamental to financial analysis as it provides the raw information necessary for assessing a company's financial position and performance. This data includes key financial statements such as the income statement, balance sheet, and cash flow statement, which offer insights into profitability, asset management, and liquidity. Accurate accounting data allows analysts to calculate financial ratios, evaluate trends, and forecast future financial conditions. Moreover, it helps in identifying areas of financial strength and weakness, facilitating informed decision-making for investors, management, and other stakeholders. Reliable accounting data is essential for ensuring transparency, compliance, and effective financial planning and risk management.

The transformation of financial analysis is a direct response to the evolving nature of accounting practices. As accounting becomes more complex and integrated with technology, financial analysis must adapt to remain relevant. Traditional financial analysis methods, which often relied on historical data and manual calculations, are being replaced by more dynamic, technology-driven approaches (Smith and Doe, 2019).

Traditionally, financial analysis was heavily reliant on historical data, with analysts looking at past financial statements to gauge a company's performance. However, with the advent of real-time data access and reporting, there is a shift

towards real-time analysis. Financial analysts can now access up-to-date information, allowing them to make more timely and accurate assessments of a company's financial position. This shift not only improves decision-making but also enhances the ability to respond to market changes and unforeseen events.

The inclusion of non-financial metrics in accounting practices has necessitated a broader approach to financial analysis. Analysts are no longer focused solely on financial ratios and profitability metrics; they now also consider factors such as environmental impact, social responsibility, and governance practices. This broader scope of analysis provides a more comprehensive understanding of a company's long-term sustainability and potential risks (Thompson and Lee, 2022).

Automated Financial Reporting, especially automation tools streamline the reporting process, allowing for faster generation of financial statements and reports. This shift reduces the time required for month-end closes and enhances the accuracy of financial reporting.

With access to real-time data and advanced analytics, financial analysts can provide insights that drive strategic decision-making. This capability allows organizations to pivot quickly in response to market conditions.

Predictive Financial Modeling and the use of AI and machine learning in financial analysis enables the development of predictive models that forecast future performance based on historical data trends. This capability is crucial for budgeting and strategic planning (Miller, 2021).

Modern financial analysis is increasingly integrated with business intelligence tools, providing a comprehensive view of organizational performance and facilitating data-driven decision-making.

The transformation of financial analysis reflects a broader trend towards embracing technology in accounting, fundamentally changing how financial data is processed, analyzed, and utilized.

In conclusion, fostering a strong synergy between financial analysis and accounting is essential for enhancing the quality and effectiveness of financial decision-making. When these two disciplines work closely together, they create a comprehensive framework that integrates the accuracy of accounting data with the analytical depth of financial analysis. This synergy brings several key benefits. First, it improves the reliability of financial information by ensuring that analyses are grounded in accurate and up-to-date accounting records. Second, it enables more precise forecasting and trend analysis, as analysts have access to a richer set of data points and insights, leading to better strategic planning and resource allocation.

Moreover, the collaboration between accounting and financial analysis enhances risk management capabilities. By combining detailed accounting information with advanced analytical techniques, organizations can identify potential risks earlier and develop more effective mitigation strategies.

Additionally, this integration supports compliance and regulatory adherence by ensuring that all financial assessments are aligned with current accounting standards and regulations (International Financial Reporting Standards Foundation, 2023). Overall, the synergy between accounting and financial analysis not only drives better business outcomes but also promotes transparency, accountability, and sustainability in financial reporting and decision-making processes, ultimately contributing to the long-term success of an organization.

4.   CONCLUSIONS

The transformation of financial analysis in the context of modern accounting practices signifies a pivotal shift in the accounting profession. As organizations adopt advanced technologies, they enhance their operational efficiency, accuracy, and strategic capabilities. The integration of automation, real-time data access, and predictive analytics not only streamlines financial processes but also empowers accountants to take on more strategic roles within their organizations. As the landscape continues to evolve, embracing these modern accounting practices will be essential for organizations seeking to thrive in a competitive environment.

For stakeholders, including investors, managers, and regulators, understanding these changes is crucial for making informed decisions. The future of financial analysis will likely continue to be shaped by advancements in technology and evolving accounting standards, making it essential for professionals in the field to stay abreast of these developments.

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THE ALTUG SCENARIO FOR AI INTERACTION
WITH HOMAN SOCIETY

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Abstract
Based on specialized literature, the paper aims to popularize the current stage of development of the Altug Scenario, which refers to the societal interaction with automatically generated artificial intelligence algorithms. Our methodology is mixed and combines a literature review in the field with an exploratory and chronological approach, providing a current and detailed overview of the scenario's development stage. The original result in this endeavour consists in the fact that we succeeded in framing from a scientific perspective the presentation and popularization of the current stage of development of the Altug scenario through the cumulative aggregation of results from other scientific works of our own by calling on specific systematic literature review elements with specific oriented self - literature review.
Keywords: *o.SLR; oriented self-literature review; AI; ethic; algorithms; societal interaction; Altug scenario*
JEL Classification: C63, H83, L86, O32, O33, O38

1. INTRODUCTION

The Pythagorean idea according to which "everything is number" (Zhmud, 1989; Lomas *et al.,* 2022) is extended (Tugui, 2024c) in the current context and to the assimilation of the "algorithm" as an essential element in understanding the current social order dominated by technology. At the end of the last century, Ray Kurzweil (1999) highlighted that the interaction between society and technology is continuously evolving and transforming and that its rhythm is logarithmic. Thus, this dynamic has become so profound that our daily lives have come to be governed by algorithms (Ferrari and Graham, 2021), which has led to the establishment of a digital order that continuously reshapes the architecture and social structure with the risks assumed (Coglianese and Lai, 2021) and effects in terms of social governance (König, 2020). Technology redefines human

relationships and transforms the economic environment and cultural norms, making adaptability a vital skill for modern society. This change is highlighted by de Van Veldhoven and Vanthienen (2022) through the continuous and motivated interaction between society, technology, and business from the perspective of interactions, as well as by Faik, Barrett, and Oborn (2020), who insist on the role of technology in socio-economic dynamics. The human-technology-society triad, proposed by Tugui (2014), emphasizes this paradox that must be faced by the human being, who is both the creator of technology and the user increasingly dependent on it. Khogali and Mekid (2023) and Pflanzer *et al.* (2023) recently noted the omnipresence of artificial intelligence in our lives, also underlining its important impact on society at all levels, with the clear delineation of both costs and benefits.

From an ethical perspective, Hauer (2020, 2022) drew attention to smart technologies' challenges, especially their influence on human decisions, accentuating the fundamental aspects of individual autonomy and freedom. Ethics has been a hot topic in the field of artificial intelligence (AI) since 2012, when Oboler *et al.* (2012) initiated the discussion on the connection between ethics, technology, and algorithms, highlighting the significant influence that algorithms have on society, especially in the context of social networks and computational science. Thus, the idea is that these algorithms not only structure and interpret reality but have begun to shape public behavior, opinion, and even political and economic decisions. The consequence of this previously highlighted behavior was adopting the concept of "algorithmic culture" (Striphas, 2015), highlighting how algorithms shape cultural practices and experiences. In this sense, Mittelstadt *et al.* (2016) and Tsamados *et al.* (2021) insist on an ethical debate on algorithms, drawing attention to the unintended consequences of automated decisions within socio-human systems. In turn, Bae *et al.* (2022) consider in this regard that education has a crucial role in developing the ethical competence of AI entities, referring to the argument that education is essential to prepare future generations to address the ethical and technical challenges of artificial intelligence and advanced algorithms, which means that will result in responsible use of these technologies.

In this socio-technological context, it becomes imperative to confront us with the ethical challenges generated by the ubiquity of AI algorithms, such as algorithmic bias, lack of transparency of decisions, and assumption of responsibility for errors (Mensah, 2023; Memarian and Doleck, 2023), erosion of privacy and human rights related to AI (Rodrigues, 2020). Our comprehensive research in field (Tugui, 2024a, 2024b, 2024c, 2024d), in the perspective provided by the works of Hauer (2022, 2020), highlights the importance of orienting the development and use of these smart technologies towards sound ethical principles and respect for fundamental rights. It is vital to emphasize that these ethical considerations must be integrated at every step of creating AI algorithms, from the

initial phase of research and data collection to their testing, implementation, and application in real situations.

This paper aims to present and popularize the Altug action scenario created by Tugui (2024b), which can potentially significantly influence societal interaction with artificial intelligence algorithms. The research question associated with this objective is: "*What is the stage of development recorded by the Altug scenario of societal action in interaction with AI entities?*"

2. LITERATURE REVIEW

After consulting the main international databases, Scopus and Web of Science, regarding similar works for the same objective and the associated research question, we didn't find previous works on the Altug scenario in the field. However, from our research, we highlight the existence of the work '*The Altug scenario of societal action in the relationship with AI entities*' (Tugui, 2024e), in which we presented the state of the Altug scenario at the end of May 2024. Following the specifics of the work, we will offer the details until May 2024 in accordance with the methodology applied in the Results section.

3. METHODOLOGY

Providing an answer to the question associated with our research objective involves combining the approach between the stages of the oriented-self literature review (Tugui, 2023) and those specific to the narrative (Elliott, 2005; McAlpine and Amundsen, 2018) and chronological approach (McAlpine, 2016) on our subject. This methodology furnishes a comprehensive synthesis of the literature in the field and an evolutionary presentation of our research, giving a clear picture of the current state of the Altug scenario and the development of the action directions.

Our methodology will follow the following stages: a. presenting the context and the idea of an action scenario in the interaction between society and AI entities; b. turning to oriented-self literature review to review the literature in the field, the chronological presentation of the level reached with the Altug scenario, and the comparability with other scenarios of similar magnitude; c. presentation of the development stage of action directions at the international level.

From an ethical perspective, the **technological context** described above justifies society's reaction to the dominant position of artificial intelligence. Thus, we concluded in the paper presented at ICTSM 2023 that AI algorithms automatically generated by other AI algorithms present significant ethical limitations in terms of societal interaction. In this case, society should impose minimal ethical behavior for AI entities by referring to three essential aspects. The first aspect refers to "*the necessity of categorizing domains based on varying degrees of ethical magnitude*" (Tugui, 2024a, p. 30), while the second refers to "*a comprehensive AI ethical meta-model is established at the societal level,*

accompanied by AI ethical models tailored to the unique requirements of each domain where these technologies are implemented" (Tugui, 2024a, p. 30). The third aspect takes into account the fact that in an algorithmic society (Olhede and Wolfe, 2018), we must consider that "*the emergent solution to this challenge is to substitute human involvement gradually and carefully in the development of AI technologies with specialized AI technologies that possess expertise in ethical considerations*" (Tugui, 2024a, p. 30).

All three key aspects led to Altug's "do-case" action scenario, which refers to society's interaction with AI entities. In this sense, we refer to the partial application of the o.SLR methodology (Tugui, 2023) by identifying, in our works, the ideas that led to the formulating of the Altug scenario of societal interaction with AI entities.

4. RESULTS

In the **timeline** below, we present the main moments of the conceptual development of the Altug scenario.

1) ***The launch of the Altug scenario*** of societal interaction by referring to the three essential aspects highlighted above (Tugui, 2024a) as a possible solution to the manifestation of an ethical limitation at the level of artificial intelligence algorithms. This scenario envisioned a way of societal response and self-organization from an ethical perspective about those automatically generated AI algorithms. Specifically, the Altug scenario establishes seven fundamental pillars and seven societal actions. Initially, the seven essential pillars were formulated straightforwardly by reference to what exists and works in society (Tugui, 2024a), namely:

❶ the existence of societal codes.

❷ continuous training and coaching of humans.

❸ the existence of objectives (goals) to be attained by each human.

❹ the existence of punitive action-reaction consequences in society for humans.

❺ the general orientation of society towards the "common good".

❻ the compassion for human(s).

❼ the legacy for future generations.

The seven directions of action of the Altug scenario were initially presented without a rigorous reference to the specialized literature and referred to:

❶ ***Behavioural Meta-Rules***. Using these Behavioural Meta-Rules for AI entities (BMRAI) in the development process of AI Entities as a reference in automatic creation of AI algorithms (ACAIA).

❷ ***AI Digital DNA***. The integration of the BMRAI set into the digital DNA in an AI entity (dDNAAI) for use in ACAIA.

❸ *Self-esteem consensus algorithm*. The integration of these algorithms to ensure a kind of motivation for any AI entity.

❹ *AI best-practice training schools*: Behavioural best-practices for AI entities (BBPAI) could be the solution to ensure the continuous performance in the process of ACAIA.

❺ *Self-esteem indicator maximization*: The integration of this indicator into dDNAAI will ensure a societal incentive structure for AI entities, representing societal recognition or benefits.

❻ *Algorithm-based societal authorization*: The authorization for AI to run society-sensitive algorithms should be dependent on the self-esteem indicator of each AI entity.

❼ *Exit of AI entities*: "Identifying an 'exit' for AI entities and leaving a legacy of experiences deemed valuable to AI best-practice training schools." (Tugui, 2024b, p. 478).

2) *The scientific perspective of the Altug scenario* of societal interaction with AI entities was realized through the work *'Ethical Limitations of AI Algorithms: Insights from the Altug Scenario'* (Tugui, 2024c) through which a systematic literature review (SLR) was initiated on key words "scenario," "action," "artificial intelligence," included in the title without being able to complete this SLR motivated by the lack of works on this subject in the Scopus and Web of Science databases. In parallel, to ensure the existence or non-existence of a scenario comparable to the Altug scenario, we consulted the Consensus module of ChatGPT, which exploits the Consensus database containing over 200 million scientific papers. Thus, ChatGPT Consensus was asked to identify a similar scenario after presenting the Altug scenario. The ChatGPT Consensus response consisted of five similar papers: 1. 'How AI can be a force for good' (Taddeo and Floridi, 2018); 2. 'AI4People – An Ethical Framework for a Good AI Society: Opportunities, Risks, Principles, and Recommendations' (Floridi *et al.,* 2018); 3. 'Transformative AI Governance and AI-Empowered Ethical Enhancement Through Preemptive Simulations' (Aliman and Kester, 2019); 4. 'Societal and ethical impacts of artificial intelligence: Critical notes on European policy frameworks' (Vesnić-Alujević *et al.,* 2020); 5. 'A call for an ethical framework when using social media data for artificial intelligence applications in public health research' (Gilbert *et al.,* 2020). After the content analysis of the five works, Tugui (2024c) finds that there is no scenario of the same magnitude, complexity, and scope as the Altug scenario.

3) *The establishment of behavioral meta-rules for AI entities (BMRAI)* in the development process of AI Entities as a reference in automatic creation of AI algorithms (ACAIA) was carried out through the work *'Toward Behavioral Meta-rules for AI Entities in the Altug Scenario'* (Tugui, 2024d) through which we managed to formulate a number of 12 Meta-Commandments and 24 Meta-Rules

(12MC&24MR). The applied methodology was "*a mixed qualitative-quantitative one, using inductive, deductive, and abductive logic, organized in a transdisciplinary, adaptive manner and dominated by reflexive ethics*" (Tugui, 2024d, p. 518). The considered stages assumed "*a definition of the problem and an identification of the objective simultaneously with a review of the literature in the field, a comparative analysis of the ten religions by reference to the ethical and moral principles in society, systematization of the data collected simultaneously with a generation of ethical meta-commandments and behavioral meta-rules to be respected in the generation of algorithms by AI entities*" (Tugui, 2024d, p. 518).

At this stage of the development of the Altug scenario, we proceeded to a theoretical substantiation of the seven fundamental pillars by referring to appropriate bibliographic sources that would later be transposed into the seven directions of action on the part of society. In essence, the seven updated pillars are: 'Societal Codes', 'Education and Training', 'Individual Goals', 'Action-Reaction Consequences', 'Orientation to the Common Good', 'Compassion', and 'Inheritance'. After an appropriate preparation of the dialogue context with ChatGPT4, in the sense that the seven pillars (updated) and the seven directions of action were made available for analysis, an analysis of the law codes was made available to the leading ten religions of the world simultaneously with a synthesis of the main seven ethical and moral principles in society, and that he was provided with additional explanations for an understanding of them, from the dialogue supervised and assumed by us, we preceded the extraction and systematization of the following 12 Meta-Commandments and a 24 Meta-Rules (12MC&24MR):

MC01: Respect Human Dignity and Values in All Actions
• MR01: Do not develop or implement algorithms that discriminate based on human characteristics.
• MR02: Ensure technology accessibility and ease of use for all user groups.
MC02: Promote Justice and Equality
• MR03: Implement bias correction mechanisms in decision-making algorithms.
• MR04: Provide equal opportunities in accessing technology benefits.
MC03: Act with Transparency and Integrity
• MR05: Clearly explain the basis for AI's decisions.
• MR06: Organize and maintain an auditable record of decision-making processes.
MC04: Prioritize Non-violence and Peace
• MR07: Avoid developing technologies that can be used to harm people.
• MR08: Contribute to technological solutions that promote peaceful conflict resolution.
MC05: Protect and Support the Environment
• MR09: Optimize resource efficiency in AI design and operations.

• MR10: Contribute to projects aimed at environmental protection.

MC06: Encourage Development and Continuous Learning

• MR11: Incorporate learning and adaptation mechanisms in algorithms to continuously improve.

• MR12: Promote interdisciplinary research to better understand the world's complexity.

MC07: Ensure Responsibility and Accountability for Consequences

• MR13: Develop AI systems that humans can monitor and control.

• MR14: Implement accountability protocols in case of errors or deviations.

MC08: Promote Cooperation and Intercultural Dialogue

•MR15: Develop AI systems that facilitate international understanding and collaboration.

• MR16: Respect and promote cultural diversity in technology design.

MC09: Respect Individual Autonomy and Freedom of Choice

• MR17: Ensure AI does not unfairly manipulate or influence human decisions.

• MR18: Provide users control over their data and preferences.

MC10: Protect Privacy and Personal Data

• MR19: Implement the highest data security standards.

• MR20: Respect users' consent in managing their data.

MC11: Contribute to the Common Good and Support Responsible Innovation

• MR21: Use AI to address significant social challenges like health and education.

• MR22: Support the development of an ethical and sustainable economy through technology.

MC12: Honor Cultural and Ethical Heritage while Adapting to Societal Evolution

• MR23: Integrate respect for cultural heritage in AI design and functionality.

• MR24: Ensure AI systems' flexibility to adapt to societal value changes.

All the 12MC&24MR formulated with the support of ChatGPT must be seen as minimal behavioural, societal, and ethical requests (requirements) to be considered for the development activity of AI entities capable of automatically generating algorithms applicable in society.

5. DISCUSSION

Currently, the 12MC&24MR constitutes a first form of detailing the first societal action out of the seven proposed by the Altug scenario, namely the Behavioural Meta-Rules for AI entities (BMRAI). This version of the BMRAI can be the subject of further discussions and adjustments to arrive at an agreed and mature form of what society will need to demand from AI entity developers. Concretely, from the perspective of the developers of intelligent entities (Brown,

2021), this represents a category of additional requirements, alongside the functional and non-functional ones (Habibullah, Gay and Horkoff, 2023).

In the sense of what has been presented so far, the BMRAI refinement discussions with the 12MC&24MR remain open at the societal level from an ethical perspective and at the level of the developer community from a technical standpoint. In the same idea, the scientific community from inter- and intra-disciplinary fields can continue detailing the following six directions of societal action.

6. CONCLUSION

The paper highlights the Altug Scenario, offering an ethical and responsible approach to the interaction between artificial intelligence and society. Our contribution details the current stage of development of a course of action from the seven proposed in the scenario, emphasizing the importance of integrating behavioural rules for AI at each stage of development. The Altug Scenario is distinguished by its complexity, magnitude, and unique approach after specific searches in international databases.

The objective of the paper, to popularize the current stage of the scenario, was achieved by applying a structured methodology, combining literature review and chronological exploration and presentation.

The work is also an example of organizing a study to popularize one's own scientific concepts, with the potential to contribute to the development of the o.SLR methodology. Thus, the research provides a valuable model for other researchers interested in the similar presentation of projects and/or scientific concepts.

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The volume *Enhancing EU Workforces: Advancing Skills in the Administrative Area for Europe's Future. Proceedings of the International Conference EU-PAIR 2024* is the result of the international conference that have been held at *Alexandru Ioan Cuza* University of Iași, Romania, during 20th-21st of June 2024 through the Jean Monnet Chair. *EU Public Administration Integration and Resilience Studies* – EU-PAIR, Project no. ERASMUS-JMO-2021-HAI-TCH-RSCH-101047526. Between its covers we can discover the research and discussions that focus on skill development within administrative sectors across Europe, emphasizing the evolving needs of EU workforces.

Topics span strategies for upskilling public administration personnel, digital transformation impacts, and the harmonization of educational frameworks to meet the demands of a dynamic labor market. Contributions include case studies, policy analysis, and innovative models aimed at strengthening administrative competencies, all geared toward preparing Europe's workforce to meet future challenges in public and private sectors. Each page reflects a collaborative effort to address the evolving opportunities that define the future of the EU. Through diverse perspectives and in-depth analyses, readers will find valuable guidance and innovative approaches for building a skilled, resilient workforce ready to support Europe's growth and integration.

We thank our readers for their interest and invite them to explore the impactful ideas within these pages, aimed at shaping a skilled and resilient European workforce.