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CONTENTS

SECTION ECONOMICS, BUSINESS ADMINISTRATION, TOURISM AND STATISTICS **18**

THE ECONOMIC IMPACT OF ARTIFICIAL INTELLIGENCE AND THE DILEMMAS SURROUNDING THE LABOUR MARKET	18

NOÉMI CSUNYÓ	18

THE ROLE OF LIFELONG LEARNING IN INCREASING OF LABOUR MARKET COMPETITIVENESS	31

RITA ZAKOR-BRODA, ANITA R. FEDOR	31

THE OPPORTUNITIES OF HEALTH TOURISM IN HUNGARY IN ADDRESSING THE HEALTH CHALLENGES OF AN AGING SOCIETY	42

GABRIELLA HELMECZI, MAGDOLNA LÁCZAY	42

WHY DO PEOPLE TRAVEL TO INLAND WATER RESORTS AND HOW DO THEY SELECT THEIR DESTINATION? DO AGE AND TRAVEL COMPANIONSHIP MATTER?	53

ISTVÁN EGRESI, BIANCA SORINA POP-RĂCĂȘAN	53

ROMANIAN TRANSPORT SECTOR COMPANIES: DIFFERENCES FROM OTHER INDUSTRIES AND FACTORS INFLUENCING SUSTAINABILITY	71

ADRIAN-GHEORGHE FLOREA, DIANA-CLAUDIA PERȚICAȘ, VIKTOR BORODIN, MOUNA HAJJAJ	71

POVERTY DYNAMICS IN ROMANIA	89

SERBAN OLAH	89

DIGITAL NOTARIAL LEGAL ACTS	104

CARMEN-TEODORA POPA, FLORINA MOROZAN	104

THE OFFENCE-CONSTITUTIONAL CHALLENGES OR CONTROVERSIES. ECONOMIC IMPLICATIONS	110

ELVIRA MIHAELA PĂTRĂUȘ	110

SECTION: FINANCE, BANKING, ACCOUNTING AND AUDIT **123**

A BIBLIOMETRIC ANALYSIS ON THE IMPACT OF TAXATION ON DIGITAL GOODS AND SERVICES	123

ROXANA CIORTIN GANGOȘ	123

LIQUIDATION OF COMPANIES: ACCOUNTING, LEGAL AND FISCAL IMPLICATIONS IN THE CURRENT CONTEXT	132

KINGA-ERZSÉBET FÜLÖP, ÁRPÁD-ZOLTÁN FÜLÖP	132

ANALYSIS OF THE TYPE OF COMPANIES INVOLVED IN TAX FRAUD	141

CORINA BOLOȘ, LORANT HERCZEG	141

PRINCIPAL METHODS OF PREVENTION CORRUPTION AND FRAUD IN PUBLIC PROCUREMENT	150
CORINA BOLOȘ, LORANT HERCZEG	150
CULTURAL ROOTS OF TAX EVASION: A CROSS-COUNTRY STUDY	157
CARINA DAN, IOANA FLORINA COITA	157
AUDITING THE COUNTRY-LEVEL TAX COMPLIANCE SITUATION: RECENT FINDINGS FOR THE CASE OF ROMANIA	169
IONEL BOSTAN, BOGDAN NARCIS FIRTESCU, LAURENȚIU DROJ	169
EMERGING TRENDS IN ESG RESEARCH. BIBLIOMETRIC ANALYSIS	185
RAMI ALRTAIMAT	185
ESG REPORTING IN ROMANIA: ASSESSING SUSTAINABILITY PRACTICES AND THEIR FINANCIAL IMPACT ON BET-LISTED COMPANIES	206
RAUL-CONSTANTIN BUCUREAN, ROXANA-NADINA BUCUREAN (ROIBAN)	206
EUROPEAN FUNDS AND REGIONAL GDP DYNAMICS IN ROMANIA. CASE STUDY: NORTH-WEST REGION AND BIHOR COUNTY	220
MARIUS-FLORIN MOȘ, OANA-LAURA NICULA, PETRU-ȘANDRU ALBOI	220
THE ROLE OF PRIVATE INVESTMENT IN THE TRANSITION TO A CIRCULAR AND SUSTAINABLE ECONOMY IN THE EUROPEAN UNION	229
CLAUDIA DIANA SABĂU-POPA, ALEXANDRA MARIA BELE	229
BANK BRANCHES AND LENDING IN THE EURO AREA – A PANEL ANALYSIS	245
RADU POPA, ALIN IOAN VID	245
ANALYSIS OF THE FINANCIAL PERFORMANCE OF THE COMPANIES OPERATING IN THE SOFTWARE INDUSTRY LOCATED IN ROMANIA, HUNGARY AND CZECH REPUBLIC IN THE PERIOD OF 2019-2023	252
LAURENȚIU DROJ, DOROTEEA ANDREEA SURLEA, BOGDAN COSMIN MOLDOVAN, ALEXANDRU-DANIEL MADA	252
PERFORMANCE ANALYSIS OF HUNGARIAN FOOD INDUSTRY ENTERPRISES USING THE DEA METHOD	263
ORSOLYA TÜNDE NAGY, ÉVA DARABOS, BERNADETT BÉRESNÉ MÁRTHA, ANITA KISS	263
THE IMPORTANCE OF INDEBTEDNESS AND PROFITABILITY INDICATORS IN ASSESSING THE PERFORMANCE OF SMEs	278
OANA-LETITIA CATUTOIU, MARIANA MAN	278
A STUDY OF PEOPLE'S PERCEPTION OF ARTIFICIAL INTELLIGENCE IN FINANCE AND SOCIETY	288
DAN MITRA, IOANA-FLORINA COITA	288
REFLECTIONS ABOUT THE ECHO OF THE EMPLOYEES IN THE ECONOMIC ENTITY'S SOUND	298

DANA-FLORINA PERȚE, LUMINIȚA RUS, DANA SIMONA GHERAI, MARIOARA BELENEȘI	298
INTEGRATED CONTROLLING APPROACHES AND THEIR IMPACT ON WORKING CAPITAL EFFICIENCY AND CORPORATE PROFITABILITY	309
PETER BAGDACS	309
LEVEL UP! THE AI ACCOUNTING COMPETENCY MATRIX. A PROPOSAL FOR DEVELOPING THE SKILLS OF MODERN ACCOUNTING PROFESSIONALS	322
RÉKA MELINDA TÖRÖK, ANDREEA IURAȘ, VICTORIA BOGDAN	322
ANALYSIS OF THE IMPACT OF EUROPEAN FUNDS ON REGIONAL, ECONOMIC, AND SOCIAL DEVELOPMENT IN CENTRAL AND EASTERN EUROPEAN COUNTRIES	338
BOGDAN COSMIN MOLDOVAN	338

SECTION INTERNATIONAL BUSINESS, EUROPEAN INTEGRATION, FOREIGN LANGUAGES AND BUSINESS ENVIRONMENT **347**

INTEGRATING HOFSTEDE'S INDIVIDUALISM-COLLECTIVISM DIMENSION INTO ENGLISH FOR SPECIFIC PURPOSES: A FRAMEWORK FOR INTERCULTURAL SKILLS	347
PATRICK LAVRITS, DANIELA ISTODOR	347
THE IMPORTANCE OF TEACHING CROSS-CULTURAL COMMUNICATION: APPLYING HOFSTEDE'S POWER DISTANCE IN BUSINESS ENGLISH FOR SPECIFIC PURPOSES	358
DANIELA ISTODOR, PATRICK LAVRITS	358
TEACHING BUSINESS CORRESPONDENCE: BRIDGING TRADITIONAL METHODS AND ARTIFICIAL INTELLIGENCE TO ENHANCE LEARNING EFFICIENCY AND PROFESSIONAL COMMUNICATION SKILLS	369
MONICA-ARIANA SIM, ANAMARIA MIRABELA POP, RODICA BOGDAN	369
LA COMMUNICATION D'AFFAIRES : DE LA LETTRE COMMERCIALE AU COURRIEL ET AUX PLATEFORMES / THE BUSINESS COMMUNICATION : FROM BUSINESS LETTERS TO EMAILS AND PLATFORMS	380
ANDRA-TEODORA PORUMB, ADINA SĂCARA-ONIȚA	380
COMMUNICATION BARRIERS ENCOUNTERED BY ERASMUS STUDENTS AT THE UNIVERSITY OF ORADEA: CHALLENGES AND ADAPTATION STRATEGIES	389
AMALIA-ANA STURZA, SIMONA-VERONICA ABRUDAN CACIORA, LILIANA DOINA MĂGDOIU	389
PROJECT-BASED LEARNING AND ITS EFFECTS ON DEVELOPING WRITING SKILLS IN BUSINESS ENGLISH STUDENTS	405

CRISTINA-LAURA ABRUDAN	405
THE WAY OF TEACHING WIRTSCHAFTSDEUTSCH TO THE ECONOMICS STUDENTS	416
ADINA SĂCARA-ONIȚA, ANDRA-TEODORA PORUMB	416
STUDENTS' PERSPECTIVES ON THE IMPACT OF ARTIFICIAL INTELLIGENCE IN LEARNING BUSINESS ENGLISH	422
CRISTINA LAURA ABRUDAN	422
THE ROLE OF CHATBOTS IN BUSINESS COMMUNICATION. CUSTOMER INQUIRIES. CASE STUDY: H&M	436
ANAMARIA-MIRABELA POP, MONICA-ARIANA SIM, IOANA CLAUDIA HOREA	436
THE ROLE OF BIG TECH IN INTERNATIONAL TRADE: PLATFORMS AS FACILITATORS OF CROSS-BORDER E-COMMERCE	447
DANIEL NICU IONAȘ, ANDREEA-FLORINA FORA	447
GIG ECONOMY: THE FUTURE OF WORK OR THE ILLUSION OF FREEDOM? A DATA-DRIVEN ANALYSIS	457
ROXANA HATOS, NICOLETA-GEORGETA BUGNAR, ANDREEA-FLORINA FORA	457
INTERNATIONAL REGIMES AND TRANSPORTATIONS; TIR REGIME AND ITS MAIN TRAITS	470
CIPRIAN BENIAMIN BENEĂ, ADRIAN NEGREA	470
WHY CHOOSING SOCIAL RESPONSIBILITY ACTIONS OVER PLANNED INVESTMENTS IN POTENTIAL WORLD WAR III	480
ANGELA-ALEXANDRA VALACHE-DARINGA	480
SOME INSIGHTS ON WHY ROMANIA SHOULD BE DOWNGRADED TO JUNK STATUS IN 2025	489
ADRIAN NEGREA, ADRIANA GIURGIU, CIPRIAN BENIAMIN BENEĂ	489
<u>SECTION MANAGEMENT, MARKETING, ECONOMIC, INFORMATICS AND CYBERNETICS</u>	500
CULTURAL DISTINCTION WITHIN SCHOOL ORGANIZATIONAL CULTURE AND ITS EFFECTS ON TEACHERS' REGULATION OF EMOTIONS IN ARAB HIGH SCHOOLS IN ISRAEL	500
MANAL AWAD HIJAZI	500
WORK ADAPTABILITY AND TURNOVER INTENTIONS AMONG UNIVERSITY GRADUATES: INSIGHTS FROM ROMANIA AND ZANZIBAR	517
ELENA BOTEZAT, OLIMPIA BAN, LIDIA CHIRICOI, OMAR HAJI OMAR, MOH`D MAHAME HAJI	517
THE INFLUENCE OF THE LEADERSHIP STYLE OF SCHOOL PRINCIPALS ON THE TEACHERS' HAPPINESS AND MOTIVATION IN ISRAELI ARAB SCHOOLS	531

LOUREEN HADDAD, NICOLAE BIBU	531
COMPARATIVE ANALYSIS OF AUTHENTIC LEADERSHIP MEASUREMENT TOOLS IN A SMALL BUSINESS CASE STUDY	541
LÁSZLÓ KOLLÁR, ANITA PIEROG	541
INTRINSIC AND EXTRINSIC MOTIVATION IN ACADEMIA: A MIXED- METHOD EXPLORATION OF MOTIVATIONAL DRIVERS	551
MIRABELA MATEI, MARIA-MADELA ABRUDAN, TOMINA-GABRIELA SĂVEANU, ALECSANDRA ANDREEA SCÎNTEE	551
THE PROPOSAL OF AN ONTOLOGY FOR THE RECRUITMENT PROCESS	561
ANA-MARIA TEODORESCU	561
MAIN CONCEPTS ABOUT ARTIFICIAL INTELLIGENCE. GENERATIVE AI	574
ADRIAN GEORGE BOZINTAN, EMIL LUCIAN CRIȘAN	574
ARTIFICIAL INTELLIGENCE: IMPORTANCE FOR THE ECONOMY AND RISKS FOR THE SOCIAL STRUCTURE OF SOCIETY	583
VALENTINA BUTMALAI, IRINA SUSANU, ALEXANDRU SEBASTIAN CHIHAIA, ALINA-FLORENTINA SĂRACU	583
SUSTAINABILITY, GOVERNANCE AND CAPITAL: REALITIES AND RISKS IN THE ESG ERA	592
ALEXANDRU BAGOSI	592
A BIBLIOMETRIC ANALYSIS OF ENTREPRENEURIAL ECOSYSTEMS FROM A SYSTEMS THINKING PERSPECTIVE	599
ADRIAN BURTA	599
ADAPTING THE PROFIT AND LOSS REPORT BY BUSINESS LINES IN ROMANIAN ACCOUNTING	612
HORIA DEMIAN	612
LEADERSHIP SUCCESSION IN THE NORTHERN GREAT PLAIN REGION - RESULTS OF A PILOT STUDY	620
IVETT STUMPF-TAMÁS, MARIANNA MÓRÉ	620

**SECTION ECONOMICS, BUSINESS ADMINISTRATION,
TOURISM AND STATISTICS**

**THE ECONOMIC IMPACT OF ARTIFICIAL INTELLIGENCE AND THE
DILEMMAS SURROUNDING THE LABOUR MARKET**

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Abstract: *The study focuses on the concerns and opportunities surrounding artificial intelligence. The research questions associated with the study focused on the economic impacts related to AI and the additional dilemmas that arise concerning the adaptation of AI. Therefore, the study discusses the beneficial effects of AI on the economy as a whole, the labour market, and specific processes. At the same time, concerns are raised about labour and security dilemmas, including job insecurity, fear of losing jobs, data distortions and false outcomes. The topic is considered to be highly up-to-date, with a particular focus on the opportunities and concerns related to the changing trends in the labour market, which is being researched by several authors in international academic fields. As regards the methodology, it is a theoretical, descriptive research aiming to examine and accurately describe the topic and its effects from multiple perspectives. It is essentially based on qualitative data already available, supported by quantitative statistical data and forecasts. The approach of the research is based on a joint analysis of economic and security dilemmas and opportunities, in combination with examples and case studies related to the topic. The study analyses the impacts in general terms; however, it can be concluded that the impacts appear differently depending on how governments and companies can exploit the potential of AI. Generally, society still relies excessively on interpersonal relationships, thus, the replacement of processes by artificial intelligence is still limited, regardless of the current level of technology.*

Keywords: *AI; economy; labour; efficiency; dilemmas*

JEL Classifications: *E0, E2, F6, J2, O1, O3, O4*

1. Introduction

Given recent technological trends, the development and adaptation of digital technology and increasingly complex processes are having a significant impact on both the social and economic spheres. The business environment is constantly changing, shaping the economy, including organizational and management strategies, the way companies interact with each other and the labour market as a whole. Technological advances in artificial intelligence and their impact on social and

economic processes have become one of the most current issues of our time, as evidenced by the dynamic growth of the AI market globally.¹

The main research questions of the study are:

- What economic effects are associated with the application of AI?
- What concerns and security dilemmas are associated with AI?

Public opinion on AI is divided, with common assumptions such as “AI will take people’s jobs”, “human capital will disappear from the labour market”, or the ongoing development of AI, robotics and machine learning being referred to as a “curse”. The basic aim of the current study is to dispel the doubts about these assumptions, highlighting the potential and concerns of AI for the labour market.

2. The general economic impacts of artificial intelligence

The impact of AI on the economy can take several forms:

- Changes in working methods and tools used in the work process;
- Negative labour demand effects due to artificial intelligence replacing human decisions;
- Changes in management and decision-making to improve the effectiveness of governance;
- Replacement of existing jobs, creation of new industries and departments;
- Income growth, rising living standards;
- Reduced production costs, improved labour productivity;
- Fostering economic development and social progress (Aly, 2020).

There is also concern among economists that AI reduces the number of jobs and contributes to the increase in inequality that has been observed since 1980 (Acemoglu et al., 2023). These trends are most relevant for developing countries with a substantially high youth unemployment rate. Within the scope of economic development, technological reforms — including artificial intelligence — are contributing to GDP growth differently across sectors. Optimistic projections suggest that the introduction of AI could contribute 1.5 percentage points per year to productivity growth over 10 years and could increase global GDP by up to 7% (7 trillion USD in additional output) (Goldman Sachs, 2023; Acemoglu and Johnson, 2023).

Global statistics show that the development and productivity effects of artificial intelligence will lead to a significant increase in gross domestic product across different sectoral activities by 2030 (Statista, 2025). The most affected sectors are expected to be public and personal services and hospitality. As already outlined by Schumpeter, technological progress is not the same for all sectors of the economy but can have a more significant impact on certain sectors (Schumpeter, 1961). However, technological innovations not only affect various sectors and industries in different ways but also have other degrees of impact in different regions, depending on the economic development of the area and the availability of the capabilities and opportunities to adapt new technologies.

¹ By 2031, the market size of artificial intelligence is estimated at 1.01 trillion USD (Statista, 2025).

Rapid adaptation boosts revenues, supports industries, develops global value chains and drives economic growth. Digital transformation and innovation have positive impacts on society, culture and the environment, while expanding internet access and increasing demand for knowledge-based labour (Aly, 2020).

Key findings: Technological progress has an undoubtedly significant impact on economic growth and development. Despite the proven positive effects of the adoption of AI on economic growth and development, it is also projected to exacerbate concerns about rising inequality. In addition to differences in applicability across industries, it may also increase divergence between countries, leading to further underdevelopment and further stagnation in developing regions. Leading countries in technological development may face competition and thus technological and political conflicts (e.g. USA and China).

3. Trends in productivity and efficiency

Increased productivity leads to lower prices and higher real incomes, which positively affect output and labour demand (Learning People, 2022). Automation enables machines to learn new skills faster (Ernst, 2022), and AI reduces repetitive tasks, improving productivity (Ramachandran et al., 2022). There is a positive relationship between digital transformation, economic development, labour productivity and employment. AI generates new labour, stimulates efficiency, adds to capital and fosters innovation (Aly, 2020). Firms that adopt AI generate higher revenues, which improves labour productivity and the workplace environment. AI analytics helps to process the data and process control systems (Ramachandran et al, 2022). However, it cannot be integrated into every production process. Integrability into systems depends to a large extent on the systems, production processes and technology used, but also on data collection techniques and the systematic nature of existing data, factors that depend on the existing human workforce and management decisions (Yang, 2022). Some companies claim that automation is aimed at increasing efficiency and improving the quality and providing faster service. McDonald's referred to the efficiency of fast service and fewer errors after automation. Tesla highlighted the efficiency of automating data tagging (Marx, 2023). The push for efficiency can take two forms, depending on the policy of the organization. A negative example is when companies seek to achieve higher levels of efficiency through stricter monitoring of employees, which is achieved by incorporating computer monitoring software such as keystroke tracking or software that evaluates employee movements (Marx, 2023). These actions can have several negative consequences that can be destructive to the work environment. Stress and insecurity at work can appear, leading to a deterioration in employee performance. It also reduces trust between management and employees and worsens the relationship between employees, which has a negative impact on work culture. Excessive control tends employees to change jobs. This kind of performance-driven business policy erodes morale and can reduce labour supply.

On the other hand, the use of artificial intelligence can help employees work to achieve efficiency for the organization. AI allows restructuring roles, reduces

repetitive processes and the time spent on them, and therefore contributes to faster and more efficient decision-making. However, its implementation requires training and retraining of employees and the willingness to adapt to the trends expected for the effective use of AI (Kiderlin, 2023). In terms of value creation, the contribution of AI to existing processes varies depending on the industry. Internationally, the estimated growth rate of gross value added by industry is illustrated in Figure 1 for the year 2035.

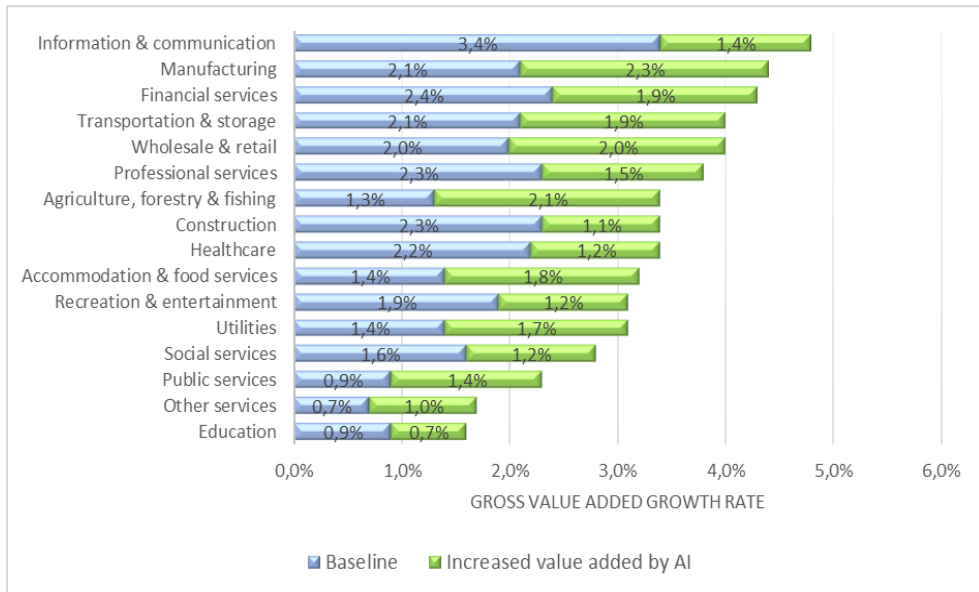


Figure 1: Impact of artificial intelligence on the growth rate of gross value added worldwide, by industry (2035)

Source: Thormundsson (2022)

The chart shows that the highest gross value added is in the information and communication sector, followed by manufacturing and financial services. AI value added is highest in manufacturing, but shows a comparable 2% increase in value added in sectors such as agriculture, forestry, fishing, wholesale and retail trade, and finance, transport and storage (Thormundsson, 2022).

Key findings: The impacts on the economy are complex and somewhat contradictory, not equally across countries with different levels of development or across sectors within the economy. AI can make certain processes more efficient, but the extent of the impact is also strongly influenced by the attitude of governments and decision-makers towards technological developments and the adaptation of new technology. Companies need to think carefully about the implementation of AI, as there are many factors and potential consequences to consider in addition to optimized efficiency and productivity. In addition to the issue of industry applicability, ethical and human aspects are both of key importance and can have an impact on the success of an organization's operations.

4. Impacts on the labour market

The effects of artificial intelligence on employment include mass unemployment and a rearrangement of labour market trends, which may increase wealth inequalities (Faggella, 2019). The concept of technological unemployment has been around since the 1930s (Keynes, 1997). In his 1995 book, Jeremy Rifkin predicted the loss of millions of jobs due to the development of information technologies (Rifkin, 1995). Since the 2000s, the development of robotics and digitalization has been steadily reducing the burden on human resources, automating production processes more efficiently and faster, and shifting human concentration towards more complex activities and processes (Urwin, 2023). This phenomenon has been seen as a similar trend in the past, for example, when computers were introduced and specialized machines replaced human labour in factories and agriculture. The new technology — then considered an innovation — brought changes in working methods and replaced part of the human workforce. However, in most cases, the workforce was simply redeployed or the functions changed which had previously been assigned to the job (Kiderlin, 2023). Martin Ford argues that jobs that can be easily automated are being lost in sectors where machines can effectively replace human labour. He also highlights the increasing divergence resulting from technological progress, with the consequence that labour market effects are not equally reflected in economies with different levels of technology (Ford, 2018). The economic inequalities brought about by AI increase the gap between those who benefit from AI and those who are left behind (Ford, 2022). In influencing the labour market, a distinction can be made between the direct replacement of employees and an increase in demand due to technological development. These factors can lead to concerns about the replacement of humans by AI systems in certain sectors and jobs (Chernov and Chernova, 2019).

According to a 2014 analysis by The Economist, 47% of jobs could be lost by 2034 due to automation, especially in self-driving technology (The Economist, 2014). Nevertheless, the demand for truck drivers has since increased (Marx, 2023), as confirmed by International Road Transport Union data. In 2022, there was a shortage of 380,000 drivers in Europe, accounting for 10% of total demand (Truck Mobility Info, 2023; International Road Transport Union, 2022). In addition, autonomous driving technology requires significant human resources, often provided by low- skilled labour in developing countries. According to a survey by Odoxa (2018), 37% of French respondents considered the replacement of jobs by AI as the main risk, 34% considered the replacement of human decision-making by AI, while 28% were also concerned about the loss of control (Thormundsson, 2024). Based on the World Economic Forum's (2020) Future of Jobs Report, by 2025, 85 million jobs could be lost due to the human-machine division of labour, but 97 million new roles could be created. Machines performed 34% of the jobs in 2022, which could increase to 43% by 2027 (World Economic Forum, 2023). The adaptation of technology also requires human resources; the more a country or a sector can integrate technology, the more people are required to do so (Simon, 2022).

According to the most recent reports (2025), advances in artificial intelligence and related technologies could create around 19 million jobs over the next five years, while the displacement of roughly 9 million positions is predicted. Certain

debates suggest that up to 170 million new roles could be created over the decade. The general trend points to a shift in work attitudes and support roles that emerge human skills and technological capabilities (World Economic Forum, 2025; Mavunga, 2025; Werner, 2025).

4.1. Job insecurity

The introduction of AI leads to job losses and job cuts as production efficiency increases (e.g. in manufacturing). This can lead to job insecurity and structural unemployment, which raises the need for requalification (Liu and Zhan, 2020). An ethical dilemma is the question of corporate responsibility: to what extent should they participate in the requalification or relocation of employees? To mitigate this issue, continuous learning and knowledge updating are essential, as emphasized by Ford (2018) and Rifkin (1995). At the individual level, workers must develop marketable skills to adapt to the changing labour market.

According to a survey by Koo et al. (2021), hotel industry workers had an ambivalent reception to the introduction of AI. Although they were concerned about jobs, they acknowledged that AI could relieve their workload and improve customer satisfaction. While some guests still prefer personalized services, demand for contactless solutions has also increased in recent years, particularly as a result of COVID-19.

The use of AI in the healthcare sector is surrounded by job loss concerns and adoption issues. Also, many patients — especially the elders — establish a trusting relationship with doctors and the credibility of diagnoses is a critical factor (Stewart, 2023). The current market share of AI in the healthcare sector reaches 15.7% (Statista, 2025). Automation has a potential of 28% and creates new roles, such as AI-based health technicians² (Daugherty et al, 2023; Learning People, 2022). AI supports accurate diagnosis and personalization of treatment, for example, in the detection of cancer lesions (Sriram et al., 2021). Although its effectiveness is proven, the uptake of AI-based tools is slowed by interdisciplinary challenges³ in healthcare (Pise et al., 2022).

Although AI has great potential in the social sector, it is not completely feasible to replace the human workforce. The forecasts are controversial, as technology cannot replace empathy and social intelligence, which are crucial in these areas. In general, frequently changing tasks require adaptability and flexibility, and therefore, such tasks are more difficult to replace with technology. The likelihood that AI will fully replace jobs requiring interpersonal skills is low — for example, the job of a therapist (Kiderlin, 2023).

Key findings: Overall, technological developments may lead to the change or disappearance of many occupations and jobs in the future, resulting in job insecurity that can have a negative impact on the physical and mental health of workers, as

² AI-based health technicians assist in medical diagnostics, remote monitoring, personalized treatment, robotic surgery, virtual health support, drug discovery, and healthcare automation using AI-driven technologies.

³ Interdisciplinary challenges include for example data privacy concerns, regulatory hurdles, integration with existing systems, lack of AI training among healthcare professionals, and ethical considerations in patient care.

well as on the productivity and stability of the whole organization. At the same time, the introduction of new technologies can also create new job opportunities and increase the role of those in society whose knowledge and skills are sufficiently advanced to meet the demands of a changing labour market. More generally, the chapter points out that adapting to technological change will be essential to maintain labour market stability and individual employability. Managing the impact of labour market changes at an appropriate level and supporting workers is key to maintaining productivity in a dynamic economic environment.

5. The necessity of the human workforce behind artificial intelligence

Even though AI and other forms of automation are constantly evolving, it would be far too radical to say that new processes necessarily result in job losses. New technology is bringing changes in the way and type of work. The associations and assumptions that are made about labour being performed solely by robots are wrong, as they do not take into account the human workforce behind AI-powered systems. An example is the case of McDonald's. A video created by the franchise shows a food delivery machine, self-ordering kiosks and empty counters, seemingly showing the unnecessary need for human staff, but it would be inappropriate to speak about full automation. Although direct personal contact between customers and employees can be avoided, staff still have to perform the most important and complex tasks in restaurants, e.g. avoiding cross-contamination (Marx, 2023). Another example is customer service, where companies have been trying to reduce costs for years by switching to automated chat-based correspondence and using robotic assistants (e.g. Vanda at Hungarian Telekom). However, replacing human workers with robots is not feasible, as there are still efficiency problems in answering complex questions and security dilemmas due to the lack of human supervision.

As AI becomes part of our lives, security concerns are also growing, as humans remain a key actor in surveillance. Risks include intentional harm and also failures due to a lack of human oversight. Lack of transparency and explanatory power of AI systems, over-reliance on digital tools, as well as bias, discrimination, high costs and privacy concerns, are also worrying. AI systems can produce distorted results from corrupt data, therefore, the decision-making can be a risk, as the machines are unable to properly assess the consequences of actions (Gülen, 2023). According to Karvalics (2015), the moral responsibility in hybrid systems always belongs to the human component, as machines only operate according to their program. For example, in the healthcare sector, AI can help in making diagnoses, but if used incorrectly, it can lead to misdiagnosis and wrong treatment, in extreme cases, to death (Gülen, 2023).

5.1. Exploiting low-skilled labour in developing countries

Another, but more significant example of the demand for human labour is the use of cheap labour in developing countries in exchange for unfair wages. This activity is typically driven by the lower economic capacity of developing countries and cheap, unskilled labour.

In 2022, an MIT Technology Review study mentioned Tesla as an example of worker exploitation, paying workers in Venezuela an average of 90 cents an hour in exchange for data tagging for the aforementioned self-driving cars. According to MIT Technology Review, self-driving vehicle companies — including Tesla — have taken advantage of the Venezuelan economy by employing local workers in exchange for unfair wages (Hao and Hernandez, 2022). The fact that Tesla's automation would result in fewer workers being involved in the process of data tagging has also been suggested (Marx, 2023). Another example of the use of low-skilled labour is OpenAI's outsourced processes, which are focused on content verification for ChatGPT. In the context of outsourcing, OpenAI has hired Kenyan workers to monitor sensitive ChatGPT content such as murder, suicide, torture, child sexual abuse, or animal cruelty. The activity is aimed at trying to make the AI-driven tool less harmful. The Kenyan workers are required to view a wide range of content, and in compensation, they reportedly received an allowance of less than \$2 per hour. However, to effectively control content, OpenAI aims to detect, regulate and filter content published by AI by integrating security mechanisms. Doing so will contribute to the immediate removal of violent content from the dataset of AI models, which is more efficient and faster than using human labour (Perrigo, 2023).⁴

More tech companies rely on low-skilled workers from developing and less developed countries. Among the Silicon Valley giants, Meta, Microsoft and Google employ low-cost labour for data tagging and content moderation activities in Africa (e.g. Uganda), as well as in the Far East (e.g. India). In addition to unfair compensation and labour exploitation, there are arguments that these companies contribute to job creation and employment improvement in less developed regions (Marx, 2023).⁵

Overall, there is a growing trend towards replacing the human workforce with artificial intelligence, but at this stage, technology companies still rely heavily on human capital. The changes brought by AI will require a highly skilled workforce — given that low-skilled workers, such as those performing data tagging tasks, will eventually be replaced by technology. The question remains open about how quickly economies can respond, the composition of the workforce, skill levels, technology adaptation, and the possibilities for education, training and possible redeployment of the professionals involved in technological processes.

Key findings: In essence, the demand for higher-skilled labour that will result from AI adaptation could further increase inequalities within societies, and also between nations. Overcoming these problems is a complex task, and it cannot be expected

⁴ In order to be more efficient, OpenAI now uses tools such as the Moderation API and Azure OpenAI Service filters to detect and block harmful content. These systems rely on classification models and best practices to ensure safe and responsible AI use (OpenAI, 2025; Microsoft, 2025; OpenAI Community, 2023).

⁵ Meta also outsourced the moderation of content to Kenyan workers through Sama, where moderators monitored harmful content for low wages, leading to mental health problems, including PTSD. In 2023, 185 moderators sued Meta and Sama for 1.6 billion USD, claiming exploitation and inadequate support. The dispute also concerned fair pay, mental health support and fair treatment of social media workers (The Guardian, 2025; Musambi, 2024; Booth, 2024).

that organizations adopting new technologies will use their own resources to solve labour market challenges. Governments have a key role to play in providing training adapted to technological innovation, so that adaptation to a changing environment can be introduced in schools from an early age. The need for new skills and the willingness to learn are essential for training, retraining, redeployment and filling new positions in the sectors most affected, both in the labour demand and in the labour supply.

6. Conclusion

The main conclusion of the research is the positive impact of AI on work processes, the creation of new industries and departments, productivity gains and efficiency improvements, all of which contribute to improving economic performance. The introduction of AI can lead to a cyclical negative effect (e.g. negative labour demand effects or inequalities). Depending on the level of existing technology and the availability of the skills needed to use AI effectively, long-term adaptation by society will be needed. It is not possible to integrate digitalization processes uniformly across sectors, as many areas and generations still require interactions based on personal relationships. AI is effective in data analysis and planning processes, but its effectiveness in issues requiring empathy and human control is still not trusted. In some jobs, human skills remain essential even as AI becomes more widespread. AI is proving to take over some jobs. However, there is more of a shift in processes, as the adaptation of technology and the underlying processes require a significant amount of human capital. It currently does not appear that AI can replace jobs that require sophisticated solutions, but rather support and improve more complex, knowledge-based work. Labour reallocation to more complicated processes and more capital-intensive sectors will generate more relevant labour demand. Consequently, the direct substitution effect of AI is considered to be relatively modest.

The dilemmas discussed in the context of security may lead to the question of whether it is necessary to reevaluate the decisions of AI systems or to accept with full confidence the results they produce. A re-evaluation would require additional professional human resources, while full confidence would lead to excessive bias and the risks mentioned earlier. Therefore, in most sectors, AI systems still tend to perform merely an additional, supporting function.

In several cases, the research findings are based on general observations. However, differences in levels of development among nations, the potential for technological adaptation and sectoral differences all affect the conditions and opportunities for AI adoption and its impact on the labour market and on the economy as a whole (which also depends significantly on government decisions). Different levels of technological development and the high cost of technology do not allow nations to adapt technological innovations equally, which contributes to increasing divergence globally.

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THE ROLE OF LIFELONG LEARNING IN INCREASING OF LABOUR MARKET COMPETITIVENESS

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Abstract: *In today's knowledge-based society, lifelong learning is essential for maintaining competitiveness in the labour market. The study aims to examine the role of lifelong learning in increasing employability and reducing social inequalities in Hungary. A literature review and document analysis of national and EU-level reports and statistics are used to identify the main challenges and developments in adult education and training. The results show that while participation in lifelong learning is increasing, Hungary still lags behind the EU average. The results highlight the importance of strategic support for disadvantaged groups, especially the Roma population, in order to strengthen social inclusion and economic competitiveness.*

Keywords: *Lifelong Learning, labour market, competitiveness, employability, social mobility*

JEL Classification: Z13

1. Introduction

Social capital must play an increasingly important role in improving the competitiveness of a nation. Lifelong learning plays a crucial role in boosting labour market competitiveness, as continuous training and skills development are essential to maintain a workforce capable of meeting the needs of the modern economy. The concept of lifelong learning emerged in the 20th century and has since become a globally accepted strategic goal. Technological developments and the ever-changing needs of the labour market require workers to acquire new skills throughout their lives, ensuring their employability and productivity. Lifelong learning plays an important role in the integration of adults into the labour market and contributes to the development of successful labour market competences. Lifelong learning is becoming increasingly important today as the world is changing rapidly and information is constantly updated. Rapid developments in science and technology, as well as changes in the labour market, mean that formal education alone is no longer sufficient. The key to success and personal development is the ability to constantly acquire new skills and knowledge. The distribution of labour market participation by educational attainment shows clear trends and very clearly demonstrates the extreme importance of education in employment. In all cases, education contributes to the development of individuals' intellectual capital, helping them to become more effective workers. High employability and higher productivity have many economic benefits. Adult education and training provides opportunities

to overcome social disadvantage, to achieve social mobility through stratification and to keep up with the labour market needs of the economy, to meet the evolving economic and social needs and to acquire new skills.

2. The development and evolution of lifelong learning

Lifelong learning as a "way of life" can be described as the result of a process over several decades, during which theoretical research has become practice and a globally accepted strategic objective. Continuous learning and education have become a means of social coexistence, which can be seen as a way of adapting to the challenges of the knowledge society. The paradigm of lifelong learning has been the dominant agenda of the 20th century. The Universal Declaration of Human Rights adopted by the United Nations in 1948 states that everyone has the right to education (UN, 1948). In the 1970s, the report of a UNESCO working group on "Learning to be, Education for Today and Tomorrow" addressed adult education from an economic and employability perspective, and the concept of the learning society was born in the same decade (UNESCO, 1970). At the Fourth World Conference on Adult Education in Paris in 1985, adult education was considered as a key to solving social conflicts (Koltai, 2003). In the 1990s, lifelong learning became a strategic program, to which the Delors Report (Delors, 1997), prepared by the European Union, contributed. This document stated that individual development is an essential component in responding to the challenges of the information society, and that lifelong learning must be provided for this purpose.

3. Unravelling the link between lifelong learning and the economy

The spread of lifelong learning can be traced back to a number of social and economic causal factors: one of the fundamental phenomena is the rise in unemployment, which has been accompanied by the devaluation of unskilled labour. The re-integration of unskilled labour into the labour market is only possible through retraining, education and new skills. For workers, it is important to develop their adaptability, as technological progress requires individuals to be more practical. Negative demographic change across Europe and the emergence of ageing societies have contributed to the priority given to lifelong learning. It is essential to keep the older population in the active labour market as long as possible, contributing to economic output growth, for which up-to-date knowledge is indispensable. As info communication technologies are increasingly gaining ground in modern societies, and the welfare state is receding, leaving room for the family, the individual, the non-profit sector and market solutions, it has become necessary to redefine and transform the traditional educational structure (Csizmady & Schmidt, 2007).

Today, knowledge is seen as a resource that plays a crucial role in the functioning of the economy. The challenges of our knowledge-based society require continuous development and the acquisition and application of flexible, transferable knowledge. Individuals who are open to new knowledge are an essential condition for

maintaining economic competitiveness, as lifelong learning is a necessary and indispensable component for the reintegration of low-skilled groups into the labour market, for the development of labour market competences and for successful economic development. The role of knowledge and the education that makes it possible to acquire it has become more valued in modern societies and is an indispensable component for achieving social inclusion (Taródiné, 2017). One of the reasons that has made adult learning a market player is the need for lifelong learning. On the one hand, adult learning adapts to the demand side of employers in order to meet their need for skilled workers, but at the same time it also provides workers with the opportunity to acquire the knowledge and competences that will increase their chances on the labour market (Mócz, 2010).

The modern economy requires workers to continuously develop their knowledge. Training helps those who are employed to keep their jobs, while unemployed people are ideally equipped for work by developing their competences (Halmos, 2005).

Globalization and the technological revolution are placing new demands on workers. Old skills are rapidly becoming obsolete, while new competences are needed as new technologies and methods are introduced. In order to remain competitive in the labour market, workers need to continuously train themselves. Adaptation to environmental and social changes, the increasing use of artificial intelligence and the spread of automation have also transformed the needs of the labour market. To ensure that the employability of individuals in this changing economy does not deteriorate, the creation of a skilled and innovative workforce is key. Lifelong learning has become a key factor for business competitiveness and individual success, as it is the basis for flexible adaptability to changing labour market conditions. Adaptability, the willingness to expand knowledge, is the cornerstone of lifelong learning. A key point is that enterprises must also encourage and support their employees, contributing to their development needs, as a skilled workforce can give them an advantage over their competitors (Schulcz, 2023).

Experts in the field have concluded that it is foreseeable that new jobs will emerge in the next decade as a result of technological and industrial developments that are not yet known today (Agcas et al., 2021). The retraining of manual workers will become essential as a result of automation and they will increasingly need to acquire skills in IT and related fields in order to keep their jobs. In some areas, digital competences are already today, but in the future, they will become an essential workforce skill, with the use of digital tools and technical proficiency becoming a basic requirement. Adult learning plays a key role in acquiring these skills. Adult learning services, online training that goes beyond traditional education, new skills acquired through distance learning, mentoring programs provided by employers, help workers to evolve to meet changing market needs (Schulcz, 2023).

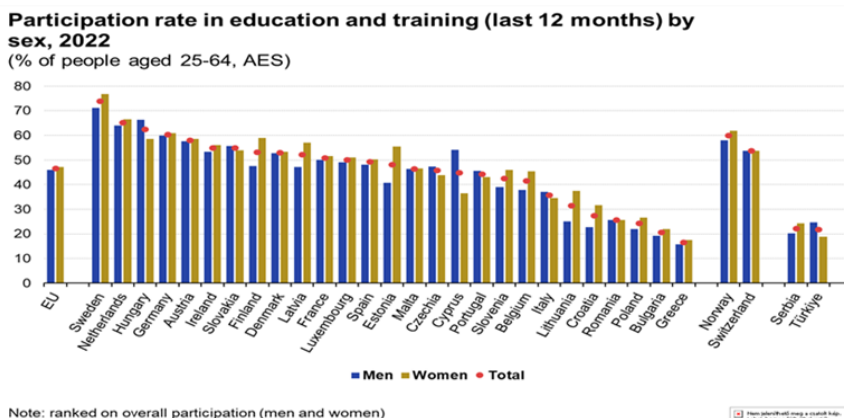


Figure: European Union Participation rate in education and training last 12 months by sex

Source: Eurostat, 2022, online

Knowledge is no longer the only key pillar of employability, as a number of key skills and competences now play an irreplaceable role in determining employment prospects, such as: work culture, flexibility, problem recognition and solving skills, responsibility, communication skills, creativity, stress tolerance, foreign language skills, IT skills, workload management, adaptability. All these are skills and competences that can be developed through lifelong learning. It is important to underline that the lifelong learning process is based on volunteering, so that the individual's intrinsic motivation to develop plays a decisive role. Lifelong learning is important not only for adaptability to the labour market, but also for personal development and quality of life. The acquisition of new skills can help to increase self-esteem and maintain mental well-being.

4. Lifelong learning in Hungary

In Hungary, the accession to the European Union has brought with it the concept of lifelong learning and has become a priority in our country as well, a requirement for the orientation towards a knowledge-based economy and society, which justifies the reform of education and training systems (Memorandum, 2000).

In 2023, an Evaluation Report on the evaluation of lifelong learning measures related to relevant EFOP interventions was prepared for the Prime Minister's Office. The evaluation examined the improvements and results of the lifelong learning measures for the 2014-2020 programming period. The evaluation examined eight EROPs and one VEKOP (EFOP-3.3.3- VEKOP-16, EFOP-3.3.2-16, EFOP-3.3.3-VEKOP-16, EFOP-3.7.3-16, EFOP-3.7.1-17, EFOP-4.1.7 16, EFOP-4.1.8-16, EFOP-4.1.9-16, EFOP-3.1.9-17, EFOP-3.7.1-17, VEKOP- 7. 3.4-17). The aim of the report was to identify critical points, based on the results and experience gained, which could be corrected in order to improve the effectiveness of the programs in

the future. The evaluation sought to identify the forms of development that could be used in the future, either modified or unchanged, which procedures had proved to be good practice and how future assistance could be better targeted.

In total, 553 projects were implemented under the schemes examined, covering the following elements of the Lifelong Learning Framework Strategy 2014-2020:

Development of methodological improvements, system of professional training, development of model projects. Competence development. Creation of infrastructural conditions for non-formal and informal learning in museums, libraries, archives, other community cultural institutions. Reintegrating young people with no secondary education beyond compulsory school age into secondary education. Reducing early school leaving. Improving the employability of people with low educational attainment.

Based on the main findings of the Lifelong Learning schemes implemented in the 2014-2020 programming period, it can be stated that in Hungary, lifelong learning has an important role to play in spreading lifelong learning as widely as possible, and therefore, in order to raise and develop the knowledge level of the population, it is essential to preserve the projects implemented and to reallocate further resources to this area (Kopint & Tarki, 2023).

According to KSH data (KSH, 2023), in the early 2000s, the share of people aged 25-64 in education and training was only 3% of the population and stagnated at 4% in the following years until 2012, when it started to decline. It can be observed that Budapest has an outstanding record in terms of the share of people participating in adult learning, but the statistics show that a single project with a major training component can have a significant impact on the change in the figures. Unfortunately, these figures are still below the European average, as the average participation rate in adult education and training in the European Union for the 25-64 age group over the same period was 9.2%. In two years, the national indicators for lifelong learning have moved in a positive direction. In 2022, the share of the population aged 25-64 in education and training increased to 7.9%. The largest gender gap in participation in education was observed in 2022. The balance shifted towards women, with 9.2% of women and 6.7% of men participating in education and training.

In 2022, the regional figures also include Northern Hungary (8.5%), Southern Great Plain (8.3%), Budapest (8.3%) and Northern Great Plain (8.2%), as these regions have above national average indicators. Our country is also currently performing below the EU average, with an average of 11.9% of 25-64-year-olds in education and training in the EU Member States in 2022. Sweden has the highest participation rate (36.2%).

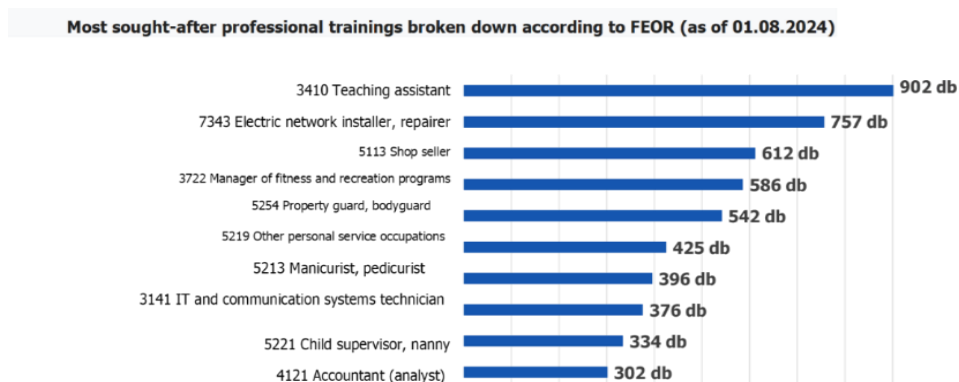


Figure: Most sought-after professional training broken down according to FEOR 2020- 2024

Source: Ministry of Culture and Innovation, 2024, online

5. Developing workers' skills and social benefits

In today's market economy, the role of education and knowledge has become more important as technological change has transformed the needs and expectations of the economy. Equal access to employment is a prerequisite for tackling social exclusion and reducing and fighting poverty. Improving employment conditions for disadvantaged and marginalized groups of workers is of paramount importance (R. Fedor et al, 2022). It has been found that lifelong learning serves labour market needs and contributes significantly to reducing unemployment, as there is an inverse correlation between unemployment and the increase in educational attainment (Csehné, 2007). The talent crisis as a phenomenon is having a growing impact on the global economy. Labour market conditions have been disrupted and there is both a shortage and an oversupply of labour. Negative labour market indicators are further exacerbated by specific local conditions, in particular severe the situation of the cumulatively disadvantaged, including the Roma population, the border the situation of the disadvantaged groups, including the Roma population, the precarious labour market conditions for people living in border areas and socio-cultural isolation. (R. Fedor & Lácay, 2021)

In our country, the Roma, who are considered disadvantaged in terms of the labour market, unfortunately have a low personal need to increase their education, and the reality that increasing their education, skills and knowledge can help them to increase their chances on the labour market and to escape from their unfavorable economic situation is often not evident for this precarious group.

The social, economic and political benefits of knowledge expansion are also crucial. Economically, it can contribute to increasing competitiveness, socially it can promote positive changes in individual well-being, and politically it can have an impact on social empowerment (Papp, 2005).

In addition to accumulated disadvantages within the family, under-schooling and early school leaving, discrimination and spatial segregation also hinder the labour market integration of Roma (R. Fedor & Balla, 2019).

Lifelong learning has a niche role for disadvantaged groups, including Roma, who are under-represented in terms of participation in learning. There is a growing need for supported programs that contribute to their integration, increase their chances of finding employment, continuing their studies, active economic participation, marketable skills and equal opportunities in education.

In most cases, disadvantage implies lower than average labour market opportunities and equality of opportunity across several areas. The lack of motivation to learn among disadvantaged groups leads to school failure, which can be seen as a precursor to under-qualification and subsequent difficulties in finding employment. This can lead to long-term unemployment, socialization difficulties and ultimately social segregation. Lifelong learning offers an opportunity to reduce these social disadvantages and to develop attitudes towards employment among disadvantaged and Roma groups (Halmos, 2005). The Lifelong Learning Policy Framework Strategy 2014-2020 has set out a number of objectives, with disadvantaged and Roma people as the main target groups.

This strategy gives priority to supporting the entry of disadvantaged people into the primary labour market, improving the labour market participation and employability of disadvantaged jobseekers, tackling segregated situations and discrimination, reducing the transmission of social disadvantage, increasing opportunities for disadvantaged young people and promoting inclusion. The framework strategy aims to improve the life chances of disadvantaged people by increasing their learning opportunities and improving access to learning opportunities. The priority objectives include improving the chances of school leavers without qualifications, early school leavers, young people who are neither in education nor in the labour market (Government of Hungary, 2014).

Training for the unemployed, including Roma, is part of the active tools used by the government to reduce unemployment and alleviate disadvantage. Training is one of the most commonly used strategies and methods to reduce the duration of unemployment, not only to acquire new skills, but also to prevent the loss of skills and to support the return to the labour market. Most experts agree that the pathway to the integration of disadvantaged Roma through education can only produce measurable positive effects in the long term. Unfortunately, both the literature and the opinion of practitioners support the fact that lifelong learning for Roma after primary and possibly secondary education is mainly provided through development programs. Adult, working-age members of Roma society mainly participate in subsidized training courses that require basic or even no basic level of education. Unfortunately, however, the voluntary nature of adult learning often means that the integration into lifelong learning of those individuals who are most in need of remedial training is still not achieved. Completion of primary education is now considered a basic requirement for vocational training, as only a fraction of the courses listed in the National Training Register can be completed without primary education. Those that do not have such an entry requirement can be considered as marketable occupations, the basis for career planning, to a minimal or almost non-existent extent (Szoboszlai, 2006).

6. Research methodology

The research was based on secondary analysis of relevant statistical data sets and reports. We paid special attention to indicators related to the participation of the Roma population in education and the labor market, and to the evaluation of intervention forms aimed at these. Descriptive statistical methods were used when processing the quantitative data. The aim of the study is to explore the impact of lifelong learning on labor market competitiveness in Hungary, with special regard to disadvantaged social groups, especially the Roma population. During the study, we ensured the complexity of the analysis by combining qualitative and quantitative methods. Secondary statistical data were processed and document analysis was carried out within the framework of the research. The basis of the quantitative data analysis was the evaluation reports of Eurostat, the Central Statistical Office (KSH), and the EFOP and VEKOP programs for the period 2014–2020. The data were used to examine participation rates in adult education, regional and gender differences, and the relationship between education and employment. The qualitative method was a document analysis, which covered national and international strategic documents, policy materials, and relevant scientific publications.

7. Results

The skills of workers are part of the economic potential of the knowledge societies and thus play a role in economic growth. Lifelong learning can also have an impact on curbing the effects of ageing societies. In our country, too, there is a downward trend in the number of people of working age. The acquisition of ever-renewing knowledge and the raising of the retirement age are helping to increase the number of people in the labour market. The possession of competitive knowledge also helps the older generation to slow down and alleviate the processes of exclusion. Education can support the economy and society not only now, but also in the decades to come, as rapid technological change requires investment in human capital, thus contributing to ensuring a mobile workforce (Taródiné, 2017). Lifelong learning plays a key role in addressing labour market needs, reducing unemployment and mitigating the effects of ageing societies. It is a tool for creating inclusion and opportunities, especially for disadvantaged groups such as the Roma population. The Lifelong Learning Framework Strategy emphasizes improving access to education, reducing early school leaving and improving the prospects of disadvantaged individuals.

Continuous investment in education supports economic and social development, ensuring a mobile workforce in the face of rapid technological change.

To sum up, lifelong learning in our country was initially a gap-filling function, its main purpose being to fill the knowledge gap, but nowadays it is a necessary process due to economic changes, focusing on meeting employers' needs, modernizing outdated knowledge, upgrading knowledge and is used in a cyclical way by the target group, the employees.

The results show positive trends in adult education participation in Hungary, increasing from 3% to 7.9% between 2000 and 2022. However, the rate remains

below the EU average of 11.9%. Regional disparities persist, with higher participation in Budapest and the Northern Great Plain region. The evaluation of EFOP programs indicates that a number of good practices have emerged, with Roma communities still limited by low motivation, poor primary education and systemic barriers. Programs that target disadvantaged groups have achieved greater success in improving employability outcomes.

Lifelong learning is a global phenomenon, which was deepened in our country by the integration processes of the European Union, thereby serving economic and social needs and wants. Lifelong learning is a prominent part of both education and employment policy, but it also fulfills catch-up, opportunity-creating and integration functions among disadvantaged groups, including the Roma.

Lifelong learning is becoming increasingly important for national competitiveness and economic growth, as it plays a key role in the integration of adults into the labour market and the development of essential skills for success. It helps overcome social disadvantages, promotes social mobility and responds to labour market needs, adapting to constantly changing economic and social needs. Lifelong learning is therefore not only the key to success in the labour market, but also contributes to personal satisfaction and social integration. In order to be successful in the modern world, it is essential to be open to receiving new knowledge and to constantly develop yourself.

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THE OPPORTUNITIES OF HEALTH TOURISM IN HUNGARY IN ADDRESSING THE HEALTH CHALLENGES OF AN AGING SOCIETY

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Abstract: *With an ageing population, the prevalence of musculoskeletal disorders is also rising significantly. This trend increases the burden on the health system and emphasizes the importance of health promotion and active ageing, for example through health tourism. The aim of my research is to explore the impact of Hungary's ageing population and the increasing prevalence of musculoskeletal disorders on labour market participation and economic sustainability. The focus of the survey is the prevalence of musculoskeletal complaints. In my research I work with secondary data, which is reliable, collected from official sources. The analysis is based on reports from general practitioners and the Central Statistical Office, which provide detailed insights into the evolution of the number of patients with musculoskeletal complaints, data from spas. The data clearly show that prevention programs and therapeutic opportunities (e.g. thermal baths) can be of particular importance for the middle-aged and older age groups, who are the most affected.*

Keywords: *health, activity, labour force activity, ageing society, health tourism*

1. Introduction

An ageing population is increasingly challenging health and social systems worldwide (Boros, 2017). This demographic change is particularly significant in Hungary, where the proportion of older people is steadily increasing while the population is decreasing. Chronic diseases associated with ageing, particularly musculoskeletal problems, not only reduce individual quality of life, but also threaten labour market participation and economic sustainability.

The value of tourism has been incorporated into studies on active ageing and the public health implications of the physical and mental health impacts of tourism on older people are recognized as an important issue (Qiao et al, 2022) .

In terms of our theme, I would like to highlight the importance of health tourism within the tourism sector. In Hungary, the concept of health tourism became more widely known in the context of the first Széchenyi Plan (2000-2001), in the context of the Tourism Development Program. Health tourism is a tourism product in which the attraction is to maintain and improve the health of the individual and to create a sense of well-being. Health tourism is therefore playing an increasing role in health promotion (wellness), disease prevention (prevention), treatment (therapy), aftercare (rehabilitation) and physical conditioning (fitness). (Michalkó, 2016).

The aim of this study is to examine Hungarian demographic conditions, with particular reference to changes in the age distribution of the population, the health

status of the Hungarian population and the health challenges and opportunities for spa services.

2. The challenges of an ageing society and the role of active ageing

Semsei (2013) argues that a society is sustainable if its structure is close to the optimal pyramidal structure. In contrast, the shift in age structure towards older age groups is one of the most important demographic and economic challenges of our time, affecting health, social and economic systems worldwide (Lampek, 2023).

In May 2011, the United Nations published its World Population Prospects: the 2010 Revision, with an accompanying country-by-country database. According to their estimated data, the proportion of the population aged 65 and over as a percentage of the total population has increased significantly in all countries of the world in recent decades (WHO, 2012; UNITED NATIONS, 2022). Their results show that Hungary's population has been declining since the 1980s, with the projected population falling from 10 million in 2010 to 9.2 million in 2050, while the proportion of people aged 65 and over will rise from 16% in 2011 to over 25% in 2050 (Földházi, 2011).

Based on data from the Country Economy¹ Table 1 shows the age distribution and life expectancy at birth of the Hungarian population for a given year. The data show that life expectancy is increasing in parallel with population ageing, placing an increasing burden on health and social systems.

Table 1: Age distribution of the Hungarian population and life expectancy at birth every two years from 1999 to 2021

Hungary - Population pyramid				Hungary - Life expectancy at birth			
Date	0-14 years%	15-64 years %	> 64 years %	Date	Life expectancy - Women	Life expectancy - Men	Expected lifetime
2021	14,49%	65,08%	20,43%	2021	77,6	70,7	74
2019	14,47%	65,76%	19,77%	2019	79,7	73	76,5
2017	14,50%	66,66%	18,84%	2017	79.30	72,5	76.00
2015	14,48%	67,33%	18,19%	2015	79.00	72.30	75,7
2013	14,42%	68,09%	17,50%	2013	okt.79	72.20	75,8
2011	14,50%	68,62%	16,87%	2011	78,7	71.20	75
2009	14,75%	68,64%	16,61%	2009	78.40	70.30	74,4
2007	15,02%	68,81%	16,17%	2007	77,8	69.40	73,6
2005	15,42%	68,80%	15,79%	2005	77.20	68,7	73.00
2003	15,88%	68,63%	15,49%	2003	76,7	68.40	72,6
2001	16,32%	68,43%	15,25%	2001	76,7	68.20	72,5
1999	16,92%	68,10%	14,98%	1999	75,6	66,7	71

Source: <https://countryeconomy.com/demography/life-expectancy/hungary>

¹ It provides comprehensive economic and sociodemographic data on different countries and regions.

With ageing, the concept of active ageing has also received increasing attention. In 2002, the World Health Organization (WHO) defined active ageing as "the process of optimizing opportunities in health, participation and safety to improve the quality of life of older people." (WHO, 2002:12; Raffael and Trásy, 2023). This approach emphasizes not only the individual well-being of older people, but also its social and economic impact. Active ageing depends on a number of factors called determinants. These factors affect the health of people of all ages. These factors include: Health and social services; Behavioral determinants; Personal determinants; Physical environment; Social determinants; Economic determinants (WHO, 2002:19).

An international organization, Help Age International, has compiled a complex index called the Global Age Watch Index, which provides an internationally comparable measure of the quality of life and well-being of older people. The index summarizes four dimensions: financial security, health, opportunities for older people to participate in society, and the enabling environment for social participation. According to the 2015 results, Hungary is ranked 39th out of 96 countries surveyed, but only 57th in the health status dimension. (www1; Boros 2017)

The concept of activity, which can be examined from different angles, plays a key role in understanding the economic impact of ageing. In addition to mental and social activity, the relevance of physical and workplace activity is particularly important for economic sustainability. Regular physical activity improves health and increases the number of years spent in good health, which has social and economic benefits (Makai, 2019).

3. Health challenges facing society and the role of chronic diseases

Ageing poses a number of challenges at both individual and societal levels, especially when it is associated with poor health (Boros, 2017).

The health status of older people in our country is associated with worse health indicators for the adult population as a whole. Both mortality and morbidity indicators and the burden of disease show that while there has been a noticeable improvement in some diseases, we are lagging behind compared to some developed countries. Life expectancy at birth is increasing steadily in Hungary, with small fluctuations, but the health indicators of the population are still unfavorable (Raffael and Trásy, 2023). According to the Organization for Economic Co-operation and Development, healthy people are more likely to be employed, have good jobs and retire later, while people with health problems or disabilities are more likely to lose their jobs and find it difficult to find new ones. Countries should therefore strive to improve the skills and employability of people facing health challenges at all ages.

The health of the population is influenced by several factors. According to the WHO, health determinants are the set of personal, social, economic and environmental factors that influence the expected healthy life expectancy of individuals and populations. The determinants of health are multiple and interrelated (Vitrai - Borenszki-Gutási, 2022). The growing range of diseases is a problem for the whole of society. Lifestyle, habits, harmful addictions, etc. play a major role in

their development, so prevention is very important, not only as a health issue but also as a social issue.

As society ages, the prevalence of chronic diseases, particularly musculoskeletal diseases, is increasing. These health problems not only negatively affect individual quality of life, but also increase the burden on the health system. The rates of common musculoskeletal disorders among the Hungarian population are examined below. EU Regulation (EC) No 1338/2008 requires a health survey of the population aged 15 and over every five years, based on a questionnaire. This is called the European Population Health Surveys. The health of the Hungarian population and the conditions influencing it are examined at regular intervals and published by the HCSO in its own publications. The data on the Hungarian situation are very thought-provoking, given the diversity of the most common diseases and the proportion of the most common types of disease leading to death (Table 2.).

The results show that musculoskeletal disorders are among the most common health problems, with a significantly higher prevalence than other diseases, accounting for about a third of all diseases among the Hungarian population (35,75%).

Table 2: Most common diseases and their rates in the Hungarian population

Most common diseases in the Hungarian population and their rates	
Category	Prevalence [%]
Hypertension	30,9
Problems with your back or spine	19,8
Arthritis, wear and tear of joint cartilage	15,2
Allergies	14,6
High cholesterol, high blood fat, high triglycerides	12,9
Rheumatoid arthritis, chronic arthritis	10,3
Diabetes	8,8
Neck pain or other chronic cervical spine problems	8,4
Irregular heartbeat, arrhythmia, atrial fibrillation	8,3
Osteoporosis	5,6
Mental illness, behavioral disorder	5,5
Other chronic illness	5,1
Asthma	4,7
Severe headache, e.g. migraine	4,4
Chronic bronchitis, bronchitis, emphysema	3,8
Coronary heart disease, angina	3,6
Other heart disease	3,3
Incontinence, urinary incontinence	2,8
Stomach or duodenal ulcers	2,7
Chronic kidney disease	2,4
Heart attack or its chronic sequelae	2,2
Stroke or its chronic sequelae	2
Malignant tumors	1,8
Liver cirrhosis, cirrhosis of the liver	0,5

Source: <https://www.ksh.hu/elef/kiadvanyok.html>

Illnesses can have a significant impact on individuals' ability to work, including absenteeism and reduced work efficiency (Péntek et al, 2020).

In addition to absenteeism² due to health problems, absenteeism is also a situation where a person who is ill at work but is unable to work as effectively as usual because of their health condition presenteeism³. (Péntek et al, 2020). Research on the relevance of this topic is constantly expanding (Ruhle et al., 2020; Lohaus, & Habermann, 2021). The number of sick days (Figure 1) is an important indicator of both the health situation and labour market trends⁴. In Hungary, the data show significant changes between 2000 and 2023. In the early 2000s, especially until 2003, the number of sick leave days increased, reaching 45.2 million days. However, from 2004 onwards, there was a significant decrease, which lasted until 2013. In 2013, the number of days of sick leave fell to just 19.8 million, the lowest level in two decades. From 2014 onwards, there was a slight increase in the number of days of sick leave, but 2020 marked a new turning point due to the impact of the COVID-19 pandemic. The number of days of sick leave increased to 29 million, reflecting the impact of the health crisis, the risk of infection and quarantine rules. High levels were observed in the following years, 2021 and 2022, but the figure for 2023 (25.2 million days) shows a slight decrease.

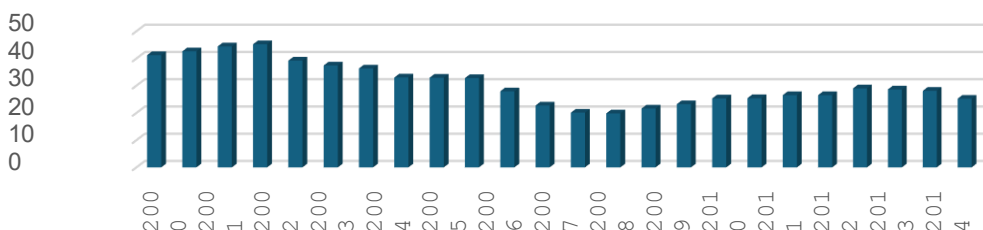


Figure 1: Number of days of sick leave, million

Source: https://www.ksh.hu/stadat_files/szo/hu/szo0030.html

4. The challenges of musculoskeletal diseases

Musculoskeletal disorders have a major impact on working capacity, not only for the individual but also for the country's workforce as a whole. They affect productivity and labour market participation of the masses of Hungarian workers. Available evidence suggests that musculoskeletal disorders account for a large proportion of work-related health problems (www2).

After aggregating the different types of musculoskeletal disorders (Table 2) (Figure 2), it is a shocking realization that they account for 35.75% of all diseases.

² absence due to illness

³ working despite illness

⁴ A separate influencing factor is the share of employed persons, which is not taken into account here.

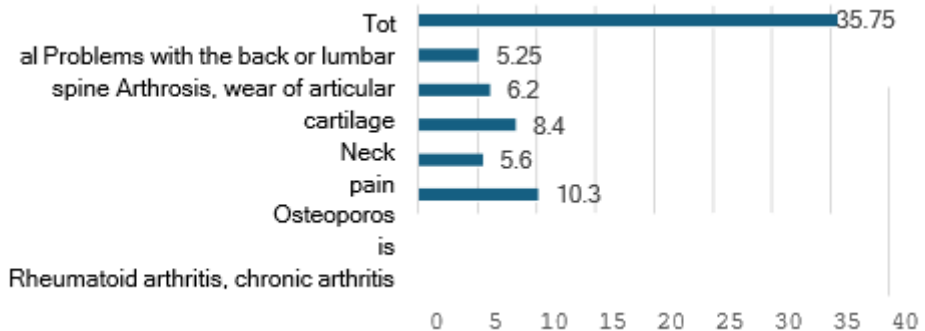


Figure 2: Rates of all musculoskeletal disorders

Source: <https://www.ksh.hu/elef/kiadvanyok.html>

According to data from the Hungarian Central Statistical Office (2019), chronic illnesses significantly increase the incidence of long-term absenteeism (Table 3), with a 6-7 times difference compared to healthy people. „Three tenths of the employed population had a health problem that prevented them from working in the 12 months before they were interviewed and so they were absent from work. Those who were on sick leave or on sick leave spent an average of 17.6 days away from work for this reason in a year. Among the chronically ill, more than one and a half times as many were absent from work for health reasons, and the average length of absence from work over 12 months was also nearly two and a half times longer than in the rest of the population surveyed. Compared with the average for chronic patients, 7 percentage points fewer people with hypertension and 3 percentage points more people with musculoskeletal disorders took sick leave, while the former were absent from work for longer and the latter for shorter periods.”

Table 3: Absence from work due to health problem and duration of absence, 2019

	Chronic illness		High blood pressure	Musculoskeletal
	None	Have	have a disease	
Percentage of missing %	24	39,1	32,4	41,7
Length of absence, days	10,3	25,2	28,7	23,6
Duration of absence %				
1 - 10 days	79,6	56,2	51	58,6
11 - 14 days	3,8	5,5	5,7	5,1
15 - 60 days	15,1	29	32,9	27,7
61 - 365 days	1,4	9,3	10,4	8,7

Source:

https://www.ksh.hu/docs/hun/xftp/idoszaki/elef/egeszsegi_allapot_2019/index.html

5. Prevalence of musculoskeletal complaints in Hungary based on general practitioner reports

Diseases are classified according to the International Classification of Diseases, which classifies musculoskeletal diseases under codes M00-M99. Patients with these conditions typically first seek help from their GP, where case numbers are recorded every two years based on GP reports. In my research, I analyzed data on the main musculoskeletal conditions of registered patients aged 19 years and over registered with GPs. The analysis covered conditions such as seropositive and other rheumatoid arthritis (M05, M06), juvenile arthritis (M08), gout (M10), deforming spinal deformities (M40-M43), spondylopathies (M45- M49), and bone density and bone structure disorders (osteoporosis) (M80-M85).

Table 4 shows the change in the number of musculoskeletal patients registered with a general practitioner every two years from 1999 to 2023, by age group. For the analysis, I have summarized the number of cases registered for the diseases corresponding to the codes indicated above. The summarization of the data allows a detailed analysis of the prevalence of musculoskeletal diseases and the identification of their trends by age group, time period and demographics. It is important to note that a person can only be included once in a report for a given disease, but several diseases can be registered for a single person.

Table 4: Change in the number of musculoskeletal patients registered with a general practitioner from 1999 to 2023 by age group

	19-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years	75 years and older	Total Age group
1999	17 948	33 871	87 789	190 438	234 203	257 473	210 582	1 032 304
2005	16 020	37 414	78 497	203 931	279 588	279 172	246 831	1 141 453
2011	35 158	114 173	225 367	356 008	614 340	492 118	424 124	2 261 288
2013	40 681	124 840	261 577	378 369	687 009	585 961	499 329	2 577 766
2015	47 690	140 720	307 774	423 396	751 123	689 598	592 110	2 952 411
2017	48 550	149 729	326 118	450 627	749 953	756 615	653 604	3 135 196
2019	45 692	154 759	319 508	481 849	699 977	826 499	707 772	3 236 056
2021	43 083	158 879	301 645	511 870	629 309	860 798	725 123	3 230 707
2023	39 042	148 155	273 686	512 785	608 565	860 506	762 999	3 205 738

Source: own editing based on HCSO data

Taking all age groups into account, the data show that the number of musculoskeletal patients registered with a GP has increased significantly over the years. In 1999, the total number of cases was 1 032 304, while by 2023 this number had increased to 3 205 738, an increase of more than threefold. Musculoskeletal disorders mainly affect the older age group. The incidence rates have risen sharply over the years for people aged 65-74 and over 75, but the tipping point is already noticeable in the 45-54 age group. Older age groups are more likely to be involved in the health system with musculoskeletal problems, which is linked to an ageing society and the age-related nature of diseases. There is also a gradual increase in middle age, indicating that the incidence of MSDs is not confined to older people, but can occur at younger ages. Younger age groups show a relatively stable

incidence rate, which may suggest that MSDs tend to become more prevalent over time.

This trend increases the burden on the health system and emphasizes the importance of health promotion and active ageing, for example through health tourism. The data clearly show that preventive programs and therapeutic opportunities (e.g. thermal baths) can be of particular importance for the middle-aged and older age groups who are most affected.

6. The importance of health tourism in the prevention and treatment of musculoskeletal diseases

Health tourism is a branch of tourism that focuses on the preservation and improvement of health. One of the most important areas of health tourism is health and wellness tourism, which draws on natural resources such as thermal waters and minerals. These forms of tourism not only play a role in maintaining health, but have also been shown to be effective in treating many diseases (Fábián, 2021).

Balneotherapy, i.e. the therapeutic use of medicinal waters, plays a particularly important role in this context. Numerous studies have demonstrated its effectiveness in treating musculoskeletal problems and there is evidence that spa bathing can relieve chronic pain (Bendere et al, 2014; Maeda et al, 2018).

Karagülle (2017) found that a 2-week spa therapy supplemented with conventional drug therapy resulted in favorable clinical outcomes. Bálint (2017) found that treatment with thermal mineral water significantly improved activity, relieved pain (Bálint et al, 2017).

Hungary's unique natural assets, especially the richness of its thermal waters, provide outstanding opportunities for health tourism. Hungarian spas and thermal waters are not only internationally recognized but also play a key role in the country's economic and social strategy. The decades-long tradition of spas and thermal waters has played a significant role not only in health promotion but also in therapeutic and rehabilitation processes. Hungary's thermal water resources are unique in the world. (Bendere et al, 2014). Given its environmental characteristics, the proper utilization of the Hungarian thermal water resources and the exploitation of its potential could be a major breakthrough. (Czikkely and Ligetvári, 2015).

7. Characteristic data of thermal and spa baths in Hungary, including Szabolcs-Szatmár- Bereg county

The data of the Hungarian Central Statistical Office (Table 5) show that the number of permanently operating baths in Hungary has remained stable over a long period of time, which demonstrates the sustainability of the infrastructure and bathing services. Although a slight decrease is expected around 2020 and 2021, this is most likely due to the global epidemic situation. The data show that the availability of spas, thermal baths and health promotion services in Hungary has been steadily increasing. However, we cannot be satisfied with the development of services offered specifically to patients, with spas offering medical examinations and

treatments showing only a moderate increase until 2019, while they have declined after the Covid epidemic. True, the use of wellness has doubled in a decade.

Table 5: Number of spas and selected services in Hungary from 2010 to 2023

National	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Permanently operating	260	300	390	394	386	386	397	380	371	348	324	322	333	321
Spa	98	105	125	122	130	132	85	103	116	115	104	106	105	100
Thermal Baths	104	110	141	156	154	160	169	155	162	157	136	136	142	137
Medical examination	86	85	107	105	103	115	111	103	105	102	89	86	79	72
Medical treatment	103	108	147	137	138	146	150	137	141	141	126	121	117	114
Health (wellness) services	102	123	272	280	272	277	286	258	264	258	213	212	227	220

Source: https://www.ksh.hu/stadat_files/tur/hu/tur0032.html

In the eastern part of the country, including Szabolcs-Szatmár-Bereg, the proportion of people with health problems is generally higher and the county is one of the most economically disadvantaged areas of the country.

I would like to highlight the spas of Szabolcs-Szatmár-Bereg county, as the county's health tourism offers a wide range of opportunities for those who wish to recover and relax, and the strategic development objective of tourism in this county is to promote its natural resources, its thermal waters and its spa culture. The table shows that several spas offer specialist medical examinations, treatments and health promotion services.

Table 6: Number of spas and some services in Szabolcs-Szatmár-Bereg county from 2010 to 2023

	Baths of a permanent nature	Baths by type Spa	Baths by type Thermal baths	Bath, where medical examination is available	Baths where medical treatment is available	Spa with health (wellness) facilities
2010	8	3	6	2	3	3
2015	18	8	10	6	6	12
2019	14	7	9	6	6	8
2020	14	5	7	3	4	7
2021	13	6	7	3	5	7
2022	15	7	6	2	4	8
2023	14	5	3	2	3	5

Source: https://www.ksh.hu/stadat_files/tur/hu/tur0038.html

Further research is needed to investigate the distribution of people using the services and who are visiting the baths for preventive or rehabilitative purposes. What is the distribution of subsidized and full-price users of treatments? This could provide a new perspective for the development of health tourism services.

The development of health tourism could be a breakthrough not only from a health but also from an economic point of view. The development of spas and the

promotion of health tourism can create jobs and develop settlements, while improving the quality of life of the population.

8. Summary

The prevalence of musculoskeletal disorders and their economic and social impact are an increasingly important problem in the life of an ageing and ageing society in Hungary. The role of health tourism, especially spas and wellness services, is becoming noticeably more important in prevention, therapy and rehabilitation. The research has highlighted the strategic importance of cooperation between the health and tourism sectors for sustainable economic development and improving the quality of life of the population.

I would particularly like to highlight the role of health tourism in Szabolcs-Szatmár-Bereg county, where the exploitation of the potential of health tourism not only strengthens the development of the region, but can also make a positive contribution to addressing the problems of an extremely high number of patients and an ageing society. At the same time, it highlights the need for new research to prove this hypothesis and to develop possible improvements, programs and additional services.

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WHY DO PEOPLE TRAVEL TO INLAND WATER RESORTS AND HOW DO THEY SELECT THEIR DESTINATION? DO AGE AND TRAVEL COMPANIONSHIP MATTER?

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Abstract: *This study explores the demographic profile, motivations, and preferences of visitors to Băile Figa, an inland water resort in Northwestern Romania. Data were collected using a convenience sampling method. The 200 questionnaires gathered were subsequently processed and analyzed using SPSS 26, a statistical software designed for social sciences. The majority of respondents were male, under 45 years old, with lower education levels and incomes. Most were repeat visitors, staying for at least two days and spending over 100 lei daily, primarily traveling by car with family or friends. The study found that key motivations for visiting included relaxation, swimming, sunbathing, and socializing, while medical treatment and boredom were cited less frequently. The resort's freshwater pools, affordable entry fees, and natural surroundings were identified as the most appealing features, whereas proximity to home and therapeutic facilities had a lesser influence on visitors' decisions. Băile Figa attracts a diverse audience, but motivations vary significantly by age and travel group: younger visitors (aged 18–29) prioritized socializing with friends, while older visitors were more motivated by health benefits, therapeutic facilities, and proximity to home. Family travelers valued the resort's scenic environment and therapeutic offerings, whereas those traveling with friends showed less interest in these aspects. These findings underscore the importance of tailoring marketing strategies to different demographic segments. For younger visitors, campaigns should emphasize leisure and affordability, while for older and family-oriented tourists, the focus should be on health benefits and therapeutic offerings. By addressing the distinct preferences of each group, Băile Figa can enhance its appeal and better meet the needs of its diverse visitor base.*

Keywords: *tourism motivation; inland water resort; push and pull motivation factors.*

JEL Classification: Z32.

1. Introduction

Water has historically been a significant draw for tourists. Two millennia ago, Roman baths not only catered to local residents but also drew visitors from beyond the town. Water was valued for its aesthetic, physical, and spiritual appeal, and water-based activities were considered an integral part of Roman life (Jennings, 2007). By the late Middle Ages, spa towns emerged as popular destinations for the upper classes, and by the late 18th century in England, they began to attract the lower-middle class as well (Jennings, 2007). In the latter half of the 20th century and the early 21st century, the demand for water-based experiences surged, particularly in more developed Western nations grappling with the impacts of urban and industrial pollution (Jennings, 2007).

Although water is increasingly central to many tourism and leisure activities, the topic of water-based experiences in tourism has received limited attention so far (Sánchez-Martín et al., 2020). The majority of existing research focuses on water tourism in coastal areas, while publications on inland water resorts remain scarce. However, this trend is gradually shifting, as recent years have seen a growing interest in developing tourism connected to water in inland regions (Sánchez-Martín et al., 2020).

Water-based tourism encompasses any tourist activity that takes place in or is connected to water resources (Jennings, 2007:10). In the context of inland water tourism, this excludes activities and experiences along coastal areas of oceans and seas but includes all other continental water resources such as rivers, lakes, springs, thermal waters, and similar.

Research has highlighted the significant importance of water-based tourism in inland areas (Sánchez-Martín et al., 2020), as it can enhance quality of life, satisfaction, and loyalty toward both the experience and the destination (Folgado-Fernández et al., 2019; Jennings, 2007). Overall, the natural attraction humans feel toward water resources (Sánchez-Rivero et al., 2020) could prove to be a crucial factor in the development of inland rural areas (Răcășan & Egresi, 2019; Răcășan et al., 2016).

Until recently, the majority of studies on inland water tourism were conducted in more developed Western countries. However, over the past decade, a growing body of literature has begun to emerge from developing nations (Ogunjinmi & Binuyo, 2018; Kazembe et al., 2015) as well as emerging economies (Jin et al., 2015; Liu et al., 2017).

To our knowledge, there has been no study conducted on inland water resorts in Romania to date. Additionally, there is a notable lack of research that provides insights into the profile of tourists visiting these destinations (Sánchez-Martín et al., 2020), and no published studies have explored the motivations behind people's visits to inland water resorts. Understanding tourist motivation is crucial for effective tourism destination management and marketing (Pesonen & Komppula, 2010), as it helps identify the needs and desires of travelers (Crompton & McKay, 1997). By uncovering what drives tourists to visit a destination, marketers and planners can tailor their offerings to meet those specific needs and preferences (Murphy et al., 2000), thereby enhancing the destination's competitiveness (Oh et al., 1995). This, in turn, positively influences tourist satisfaction (Navrátil et al., 2010) and

encourages repeat visits and word-of-mouth recommendations (Crompton & McKay, 1997).

The primary goal of this study is to explore the motivations behind people's decisions to travel to inland water resorts and to examine the reasons they choose Băile Figa as their vacation destination. A second objective is to examine whether age and the type of companionship have an impact on tourist motivation.

Băile Figa (The Figa Spa Complex) was inaugurated in 2010, funded by the European Union's PHARE program (Beclean Townhall, n.d.). Nestled in a forested depression just 3 km from the town of Beclean in Bistrița-Năsăud County, Northwestern Romania, the resort spans 15 hectares. Designed as a health and relaxation oasis, Băile Figa features saltwater and mud with therapeutic properties similar to those found in Techirghiol. The air is infused with salt aerosols, creating a beneficial saline effect. A rustic wooden area, complete with benches and salt blocks, provides a serene space for mud treatments, known to help alleviate various health conditions (Beclean Townhall, n.d.).

One of the resort's most popular attractions is its large freshwater pool. Opened at the start of the 2014 summer season, the pool is heated to 31-32°C, making it accessible to visitors even during cooler weather. This facility complements the resort's other amenities, catering to the increasing number of tourists, particularly on weekends and holidays. In 2012, a small Aqualand was inaugurated, and in 2020, a giant slide was added to enhance the visitor experience. Additionally, children can enjoy a spacious playground within the park. The resort's beautifully landscaped grounds, featuring grass, flowers, stones, and rustic decorations, create a charming and vibrant atmosphere (Beclean Townhall, n.d.).

Despite being a relatively recent addition to Romania's tourism offerings, Băile Figa has proven to be highly successful. In its first decade of operation, the complex welcomed over 1.5 million visitors from across the country. Today, it continues to attract hundreds of thousands of tourists annually, solidifying its reputation as a premier destination for relaxation and wellness. In 2021, Băile Figa was officially recognized as a tourist resort of local interest, further cementing its status as a must-visit location (Beclean Townhall, n.d.).

The paper is structured as follows: following a comprehensive review of existing literature, we will outline the methodology used for data collection and analysis. Subsequently, we will present our findings. In the final section, we will summarize the key findings, discuss their implications, highlight practical applications, and acknowledge the study's limitations.

2. Literature review

Motives are generally understood as the internal factors that arouse, direct, and integrate a person's behavior to achieve potential satisfaction (Iso-Ahola, 1982: 257; Chang, 2007). Simply put, motives are the forces that drive a person to travel (Pearce, 2005). Furthermore, motives influence destination choice (Josiam et al., 1999), shape tourist behavior (McKercher et al., 2021), and determine the activities they engage in at the destination (Mehmetoglu & Normann, 2013).

Most studies analyzed tourism motivation through the framework of "push" and "pull" factors, as introduced by Dann (1977). Push factors refer to the internal, socio-psychological drivers and conditions within tourists' home environments that inspire them to travel. In contrast, pull factors are the external attributes of a destination that draw tourists to it after they have decided to embark on a journey (Dann, 1977). The significance of "push" and "pull" factors in shaping tourist motivations was further highlighted by Crompton (1979) and has since been supported by numerous studies (e.g., Cha et al., 1995; Fodness, 1994; Ritchie et al., 2010, among others). For example, in a study conducted on tourists visiting Barbados, Dann (1977) identified two primary categories of "push" motivations: anomie and ego-enhancement. Anomie reflects the urge to overcome the sense of isolation experienced in daily life and to "get away from it all." In contrast, ego-enhancement stems from the need for recognition and status, which travel can provide. This motivation involves fulfilling personal desires, such as exploring new destinations or achieving a sense of accomplishment through travel. Another early investigation into tourism motivation by Crompton (1979) highlighted nine key motives: escape, exploration, relaxation, prestige, regression, strengthening family bonds, fostering social connections, seeking novelty, and pursuing educational experiences. The table below outlines the key push and pulls motivations for tourism, as identified in the literature (Table 1). It seems that many researchers emphasize push factors while downplaying the significance of pull factors, even though the latter play a crucial role in influencing an individual's decision to travel to a specific destination (Chang, 2007).

Table 1: Push and pull motivations in the literature

Push motivation	Study	Pull motivation	Study
Desire to escape	Chiricheș & Egresi, 2024; Dolnicar & Leisch, 2003; Frochot, 2005; Guillet & Kucukusta, 2016; Kassean & Gassita, 2013; Kim & Prideaux, 2005; Mak et al., 2009; Nikijoo & Ketabi, 2015; Nilsen, 2013; Park & Yoon, 2009; Pearce & Lee, 2005; Ritchie et al., 2010	Pleasant weather/climate	Carvache- Franco et al., 2020; Kassean & Gassita, 2013
Rest and relaxation	Bansal & Eiselt, 2004; Beh & Bruyere, 2007; Chiricheș & Egresi, 2024; Frochot, 2005; Guillet & Kucukusta, 2016;	Attractive (unspoiled) nature	Andreu et al., 2005; Beh & Bruyere, 2007; Carvache- Franco et al., 2020; Chan & Baum, 2007; Kassean &
	Gustavo, 2010; Joppe, 2010; Kamata & Mitsui, 2015; Kassean & Gassita, 2013; Kim & Prideaux, 2005; Mak et al., 2009; Pearce & Lee, 2005; Ritchie et al., 2010		Gassita, 2013; Park & Yoon, 2009; Pesonen et al., 2011; Yuan & McDonald, 1990
Seeking health, beauty and fitness	Gustavo, 2010; Kim & Prideaux, 2005; Mak et al., 2009; Ritchie et al., 2010	Variety of activities and events	Bal & Erdélyi, 2019; Baniya & Paudel, 2016; Carvache Franco et al., 2020; Chan & Baum, 2007; Dolnicar et al., 2008; Furr & Boon, 2006; Hu & Wu, 2007; Pesonen et al., 2011
Social interaction (including family and friends' togetherness)	Chiricheș & Egresi, 2024; Egresi & Kara, 2014; Kassean & Gassita, 2013; Kim & Prideaux, 2005; Nilsen, 2013; Pearce & Lee, 2005; Ritchie et al., 2010	Accessibility	Bal & Erdélyi, 2019; Duong et al., 2023; Nikijoo & Ketabi, 2015; Pesonen et al., 2011; Yuan & McDonald, 1990
Self-development/self-reward/Prestige	Kim & Prideaux, 2005; Mak et al., 2009; Nikijoo & Ketabi, 2015; Pearce & Lee, 2005; Ritchie et al., 2010	Affordability	Bal & Erdélyi, 2019; Egresi & Kara, 2014; Pesonen et al., 2011; Yuan & McDonald, 1990
Adventure	Kim & Prideaux, 2005	Facilities	Bal & Erdélyi, 2019; Pesonen et al., 2011; Yuan & McDonald, 1990

Source: Compiled by the authors

Tourists travel for different reasons (Bieger & Laesser, 2002) and may place varying levels of importance on the factors influencing their decision to travel (Yuan & McDonald, 1990). Motivation can differ based on geographic origin (Reid & Reid, 1997), expenditure (Mok & Iverson, 2000), demographics (Moscardo et al., 1996; Fan et al., 2015; Aziz et al., 2018), and travel characteristics (Aziz et al., 2018). Previous studies have shown that various demographic characteristics may influence why people travel (Moscardo et al., 1996; Aziz et al., 2018; Egresi, 2017).

In this research, we focus on how age influences tourism motivation and destination choice. The literature, however, is inconclusive on this matter. Some studies suggest that age is not a significant factor in differentiating travel motives (Andreu et al., 2005), while others indicate that age can be an important discriminant in tourism motivation studies (Ma et al., 2018; Irimiás et al., 2016; Park & Mok, 1998; Mohsin, 2008; Aziz et al., 2018).

Research has highlighted that younger travelers tend to be more interested in physically demanding activities (Jönsson & Devonish, 2008; Spence, 2002), whereas older tourists are more likely to seek relaxing activities and nature exploration (Ma et al., 2018). Older travelers are also more novelty-driven (Jönsson & Devonish, 2008) and are often motivated by a desire to learn, more so than younger tourists (Fleischer & Pizam, 2002; Horneman et al., 2002; Irimiás et al., 2016; Jang & Wu, 2006; Jönsson & Devonish, 2008). Additionally, older tourists are more inclined to travel for socialization and cultural experiences (Jönsson & Devonish, 2008).

When examining inland water tourism specifically, some researchers argue that most water tourism participants are young (under 35 years old) (Sánchez-Rivero et al., 2020), while others contend that water-motivated tourists tend to be older (over 55 years of age) (Folgado-Fernández et al., 2019).

Furthermore, previous studies have found that different tourist groups exhibit distinct motivational attributes (Hall et al., 2016; Sánchez-Rivero et al., 2020). For instance, Sánchez-Rivero et al. (2020) found that most people travel to inland water resorts as couples or with family. Jamrozy and Uysal (1994) observed that German overseas travelers display variations in push motivations depending on their travel companions. The study determined that those traveling alone or with friends were motivated by "novelty," "experience," and "adventure," whereas family groups were driven by "luxury" and the desire to "do nothing."

3. Methodology

Data were collected using a convenience sampling method. In the end, 200 questionnaires were collected and further processed using the SPSS 26 statistical software for social sciences. We applied descriptive statistical methods to examine the socio-demographic profile of our sample, their travel behavior, and their motivations for visiting an inland water resort, including their reasons for selecting Băile Figa. Additionally, we used the Kruskal-Wallis H Test to assess whether there were statistically significant differences in motivation based on age and travel group categories.

4. Findings

4.1. Socio-demographic and traveling characteristics of our respondents

There were more male (54%) than female respondents. Approximately two-thirds were under the age of 45 and had a lower level of education (high school or less). Additionally, the majority had lower incomes, with over 75% earning less than 2,500 lei (the equivalent of 500 euros) and only 9% earning more than 3,500 lei (approximately 700 euros) (table 2). A quarter of the respondents were visiting Băile Figa for the first time, while the majority were frequent visitors. Most stayed for at least two days and spent more than 100 lei (20 euros) per day. The vast majority traveled by car with family and/or friends. Finally, our study revealed that word-of-mouth may be the most effective marketing tool for the resort, with more than three-quarters of respondents having learned about Băile Figa through this method (table 3).

Table 2: Socio-demographic characteristics of our respondents

Attribute	%	Attribute	%
Gender (n= 200)		Education (n= 200)	
Male	54.0	High School and less	65.0
Female	46.0	University and more	35.0
Age (n= 200)		Income (n= 200)	
18-29 years	38.0	Up to 1499 lei	33.5
30-44 years	29.0	1500-2499 lei	42.0
45-59 years	23.5	2500-3499 lei	15.5
60+ years	9.5	3500+ lei	9.0

Source: Resulted from the study

Table 3: Traveling characteristics of our respondents

Attribute	%	Attribute	%
How many times have you been in BF in the past? (n= 200)		How long do you usually stay/intend to stay in BF (n= 200)	
Never	25.5	One day	43.5
Once	18.0	Two days	37.0
2-5 times	34.0	Three days or longer	19.5
6 times or more	20.5		
How did you hear about BF? (n= 200)		Who did you come with? (n= 200)	
Word-of-mouth	74.5	Alone or with my partner	24.5
Mass media	25.5	With family	47.5
		With friends	28.0
How did you get to BF? (n= 200)		How much money do you intend to spend per day? (n= 200)	
By car	83.0	Less than 100 lei	44.5
By other means (train, bus, etc.)	17.0	100 lei and more	55.5

Source: Resulted from the study

4.2. Motivation to vacation in an inland water resort

Our study shows that nearly all potential motives included in our survey were considered important. Most people visit inland water resorts to swim, sunbathe, socialize with friends, and spend time with family. However, the primary reason for visiting such a resort is to rest (table 4). Very few respondents chose to visit a water resort for medical treatment or because they were bored at home (table 4).

Table 4: Motivation to vacation in an inland water resort

Motivation to vacation in an inland water resort	Totally disagree (%)	Disagree (%)	Not sure (%)	Agree (%)	Totally agree (%)	Mean	Median	IQR
Spend more time with family	18.5	3.5	12.0	19.0	47.0	3.73	4.00	2
Socialize with friends	6.0	6.5	16.0	29.0	42.5	3.96	4.00	2
Escape everyday life (routine)	8.5	7.0	18.0	27.5	39.0	3.82	4.00	2
Rest	4.0	6.5	15.5	25.5	48.5	4.08	4.00	2
Out of boredom	25.0	14.5	22.5	16.0	22.0	2.96	3.00	3
For medical treatment	34.5	12.5	16.0	12.0	25.0	2.81	3.00	4
Sunbathe on the beach	5.0	7.5	22.0	21.0	44.5	3.93	4.00	2
Swim	7.0	7.0	15.5	24.5	46.0	3.96	4.00	2

Source: Resulted from the study

4.3. Motivation to choose Băile Figa for the vacation

The table below shows that people choose Băile Figa for their vacation for a variety of reasons. The most important factors include the presence of pools with cold and heated freshwater, affordable entry fees, and the beautiful natural surroundings of the resort (table 5). On the other hand, very few respondents chose this resort based on a doctor's recommendation (table 5). Additionally, most respondents were uncertain about the importance of other motivators, such as the availability of treatment facilities or therapeutic mud. Proximity to home was important to only 41% of respondents (table 5).

Table 5: Motivation to choose Băile Figa for the vacation

Motivation to choose Băile Figa for the vacation	Totally disagree (%)	Disagree	Not sure	Agree	Totally agree	Mean	Median	IQR
Proximity to home	18.0	12.0	29.0	18.5	22.5	3.16	3.00	2
Beauty of the environment	2.0	6.5	22.0	24.0	45.5	4.05	4.00	2
Therapeutic mud	23.5	11.0	21.0	13.5	31.0	3.18	3.00	3
Physical properties of the water	7.0	9.0	18.5	28.5	37.0	3.80	4.00	2
Pools with salt water	7.0	9.0	20.0	23.5	40.5	3.82	4.00	2
Pools with cold and heated freshwater	3.5	3.5	19.5	22.5	51.0	4.14	5.00	2
Heard about the place and was curious	11.5	12.0	21.0	23.5	32.0	3.53	4.00	2
Affordable entry fee	6.0	5.0	13.0	25.5	50.5	4.10	5.00	1
Recommended by my physician	53.5	5.5	12.0	11.0	18.0	2.35	1.00	3
Recommended by others	23.5	7.5	17.5	23.5	28.0	3.25	4.00	3
Facilities for treatment	26.5	10.5	22.5	17.5	23.0	3.00	3.00	3
Facilities for leisure	9.0	5.5	24.5	27.5	33.5	3.71	4.00	2
Facilities for children	25.5	7.0	17.0	17.0	33.5	3.26	4.00	4

Source: Resulted from the study

4.4. Differences in motivation among age groups

We found statistically significant differences among age groups for three push motivations. Specifically, our study shows that younger respondents (18–29 years) are the least likely to travel to Băile Figa to spend time with family ($p = .000$) and the most likely to socialize with friends ($p = .002$) (table 6). Additionally, unlike older groups, very few young people visit Băile Figa for medical treatment ($p = .000$). No significant differences were found among age groups for the other five motivations: escaping the routine of everyday life, resting, boredom, sunbathing on the beach, and swimming ($p > .05$) (table 6).

Table 6: Differences in motivation to vacation in an inland water resort among age groups

Motivation to vacation in an inland water resort	Mean ranks for age groups				Test statistic (DoF=3)	P value	Pairwise comparison**
	18-29 (N=76)	30-44 (N=58)	45-59 (N=47)	60+ (N=19)			
Spend more time with family	69.33	120.96	120.64	112.92	40.685	.000*	18-29/60+ ($p=.011$) 18-29/45-59 ($p=.000$) 18-29/30-44 ($p=.000$)
Socialize with friends	119.33	91.43	85.91	88.95	14.770	.002*	45-59/18-29 ($p=.006$) 30-44/18-29 ($p=.021$)
Escape everyday life (routine)	96.24	107.90	96.93	103.82	1.753	.625	
Rest	95.93	97.79	109.23	105.42	2.089	.554	
Out of boredom	111.30	89.72	92.35	110.39	6.433	.092	
For medical treatment	74.07	103.68	129.20	125.53	33.283	.000*	18-29/30-44 ($p=.014$) 18-29/60+ ($p=.002$) 18-29/45-59 ($p=.000$)
Sunbath on the beach	93.85	102.59	106.14	106.76	1.961	.581	
Swim	103.89	98.06	97.80	101.05	.530	.912	

* Significant at 95% confidence level

** Dunn's (1964) procedure with a Bonferroni correction

Source: Resulted from the study

In terms of pull motivations, we found that age can be considered an important discriminant. The table below shows that proximity to home is a more significant motivation for older tourists visiting Băile Figa (table 7). Similarly, all items related to Băile Figa as a destination for treatment or therapy—such as mud therapy, saltwater, and water with specific properties for medical treatment, the availability of treatment facilities, and recommendations from physicians—are more motivating for older tourists than for younger ones (table 7). Finally, the presence of facilities for children is a less important motivator for the youngest age group compared to older tourists (table 7).

Table 7: Differences in motivation to choose Băile Figa for the vacation among age groups

Motivation to choose Băile Figa for the vacation	Mean ranks for age groups				Test statistic (DoF=3)	P value	Pairwise comparison**
	18-29 (N=76)	30-44 (N=58)	45-59 (N=47)	60+ (N=19)			
Proximity to home	85.03	104.01	114.76	116.34	10.451	.015*	18-29/45-59 (p=.027)
Beauty of the environment	90.09	101.53	115.80	101.16	6.543	.088	
Therapeutic mud	75.43	105.43	123.76	128.18	28.182	.000*	18-29/30-44 (p=.013) 18-29/45-59 (p=.000) 18-29/60+ (p=.002)
Physical properties of the water	87.28	94.99	115.35	133.45	14.954	.002*	18-29/45-59 (p=.038) 18-29/60+ (p=.007)
Pools with salt water	85.60	103.05	109.39	130.32	12.399	.006*	18-29/60+ (p=.010)
Pools with cold and heated freshwater	99.76	103.90	98.30	98.55	.356	.949	
Heard about the place and was curious	97.39	94.46	109.59	108.89	2.558	.465	
Affordable entry fee	95.35	98.70	107.64	108.95	2.086	.555	
Recommended by my physician	88.57	96.38	117.63	118.39	11.279	.010*	
Recommended by others	97.28	100.44	114.98	77.74	6.462	.092	
Facilities for treatment	84.39	104.51	120.69	102.76	12.526	.006*	18-29/45-59 (p=.003)
Facilities for leisure	90.06	105.59	107.52	109.37	4.383	.223	
Facilities for children	81.46	111.29	107.72	125.84	15.620	.001*	18-29/30-44 (p=.013) 18-29/60+ (p=.012)

* Significant at 95% confidence level

** Dunn's (1964) procedure with a Bonferroni correction

Source: Resulted from the study

4.5. Differences in motivation among travel groups

The more interesting finding is that those who travel with their family are more likely to be motivated to vacation at an inland water resort for medical treatment compared to those who travel with friends (table 8). The other two items with statistically significant differences between groups are more obvious and expected, requiring no further discussion.

Table 8: Differences in motivation to vacation in an inland water resort among travel groups

Motivation to vacation in an inland water resort	Mean ranks for travel companions			Test statistic (DoF=2)	P value	Pairwise comparison**
	Alone or couple (N=49)	With family (N=95)	With friends (N=56)			
Spend more time with family	80.01	130.04	68.32	54.685	.000*	friends/family (p=.000) Alone/family (p=.000)
Socialize with friends	93.81	89.46	125.08	15.890	.000*	Family/friends (p=.000) Alone/friends (p=.010)
Escape everyday life (routine)	111.46	99.17	93.16	2.965	.227	
Rest	107.29	102.84	90.59	2.856	.240	
Out of boredom	108.45	90.91	109.81	5.215	.074	
For medical treatment	95.78	114.26	81.29	12.687	.002*	Friends/family (p=.001)
Sunbath on the beach	106.66	100.98	94.29	1.353	.508	
Swim	105.34	95.05	105.52	1.818	.403	

* Significant at 95% confidence level

** Dunn's (1964) procedure with a Bonferroni correction

Source: Resulted from the study

Travelers who visit Băile Figa with friends are the least likely to choose the resort due to its proximity to their homes (table 9). They also show the least interest in Băile Figa for reasons such as the beauty of its environment, the health benefits and facilities it offers, and the availability of amenities for children (table 9). On the other hand, those who travel with their families are the most inclined to select Băile Figa as their vacation destination for the resort's scenic surroundings, the therapeutic

properties of its water, the variety of pools (including saltwater, cold freshwater, and heated freshwater options), and the leisure facilities available (table 9).

Table 9: Differences in motivation to choose Băile Figa for the vacation among travel groups

Motivation to choose Băile Figa for the vacation	Mean ranks for travel companions			Test statistic (DoF=2)	P value	Pairwise comparison**
	Alone or couple (N=49)	With family (N=95)	With friends (N=56)			
Proximity to home	107.38	109.45	79.29	11.029	.004*	Friends/alone (p=.033) Friends/family (p=.005)
Beauty of the environment	96.72	110.86	86.22	7.560	.023*	Friends/family (p=.021)
Therapeutic mud	106.65	114.45	71.45	21.378	.000*	Friends/alone (p=.004) Friends/family (p=.000)
Physical properties of the water	92.51	112.14	87.75	8.153	.017*	Friends/family (p=.027)
Pools with salt water	97.61	110.59	85.91	7.204	.027*	Friends/family (p=.024)
Pools with cold and heated freshwater	92.62	112.45	87.12	9.374	.009*	Friends/family (p=.014)
Heard about the place and was curious	96.10	105.88	95.21	1.669	.434	
Affordable entry fee	92.16	103.62	102.50	1.596	.450	
Recommended by my physician	112.17	107.21	78.21	13.200	.001*	Friends/family (p=.005) Friends/alone (p=.004)
Recommended by others	98.32	105.86	93.31	1.848	.397	
Facilities for treatment	111.92	106.52	80.29	10.259	.006*	Friends/family (p=.017) Friends/alone (p=.013)
Facilities for leisure	95.77	110.58	87.54	6.495	.039*	Friends/family (p=.042)
Facilities for children	107.45	115.06	69.72	24.100	.000*	Friends/alone (p=.002) Friends/family (p=.000)

* Significant at 95% confidence level

** Dunn's (1964) procedure with a Bonferroni correction

Source: Resulted from the study

5. Discussion of results and conclusion

The primary objective of this study was to investigate the motivations behind individuals' decisions to visit inland water resorts, with a specific focus on understanding why they chose Băile Figa as their vacation destination. Key motivations for visiting included relaxation, swimming, sunbathing, and socializing, while medical treatment and boredom were cited less frequently. The resort's freshwater pools, affordable entry fees, and natural surroundings were identified as the most attractive features, whereas proximity to home and therapeutic facilities had a lesser influence on visitors' decisions.

From a theoretical perspective, our findings highlight that age and companionship significantly influence travel motivations and destination selection. Younger visitors (aged 18–29) prioritized socializing with friends, while older visitors were more motivated by health benefits, therapeutic facilities, and proximity to home. Family travelers valued the resort's scenic environment and therapeutic offerings, whereas those traveling with friends showed less interest in these aspects.

Our results also carry important implications for destination management and marketing. We found that the majority of Băile Figa's visitors are young, less educated, and have lower incomes. Marketing campaigns should therefore target these demographics, emphasizing leisure and affordability for younger visitors and health benefits for older and family-oriented tourists.

Additionally, the study revealed that most visitors stay for only 1-2 days, suggesting that Băile Figa is not their primary vacation destination but rather a short-term getaway. This raises important questions for resort managers: Why do tourists not extend their stays? Is it due to a lack of adequate accommodation or limited activities at the destination?

Another noteworthy finding is that over 75% of respondents learned about Băile Figa through word-of-mouth, underscoring the effectiveness of this organic marketing tool. These insights emphasize the need for tailored marketing strategies and potential improvements in infrastructure and activities to enhance visitor experiences and encourage longer stays.

The primary limitation of this study lies in the relatively small number of questionnaires collected, which was a result of budget constraints. Additionally, the sample population is not fully representative of the broader population visiting Băile Figa. This lack of representativity stems from the absence of prior information on the demographic profile of visitors to the resort, which made it challenging to construct a representative sample. Despite these limitations, they do not diminish the value of this study. Instead, this research serves as a foundational starting point for future investigations into the motivations behind visiting inland water resorts.

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ROMANIAN TRANSPORT SECTOR COMPANIES: DIFFERENCES FROM OTHER INDUSTRIES AND FACTORS INFLUENCING SUSTAINABILITY

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Abstract: *This study examines the interplay between economic performance and sustainability initiatives within Romanian corporations, with a particular focus on the transport sector. While corporate sustainability is gaining global prominence, its implementation and economic implications exhibit significant variation across industries in Romania. The research investigates three primary factors influencing sustainability adoption: financial performance, sectoral distinctions, and corporate maturity. To assess these dimensions, surveys were conducted with 444 CEOs and CFOs, evaluating financial health, innovation strategies, and proactive management approaches. These qualitative insights were systematically cross-referenced with financial records from the Romanian Ministry of Finance spanning a ten-year period. The findings indicate that companies in the transport sector encounter distinct challenges in integrating sustainable practices, primarily due to financial constraints such as the costs associated with upgrading aging vehicle fleets. Relative to other industries, transport enterprises exhibit lower levels of proactive engagement and innovation in sustainability initiatives. Additionally, younger companies demonstrate a stronger commitment to ecological practices compared to older organizations, which tend to prioritize regulatory compliance over voluntary sustainability efforts. These results highlight the necessity of tailored policy interventions, fiscal incentives, and innovation-driven strategies to address industry-specific obstacles to sustainability. Achieving a balance between economic growth and environmental objectives requires strategic planning and targeted support mechanisms, particularly for high-impact sectors such as transportation. This research enhances the understanding of sustainability adoption dynamics in Romania and provides valuable insights for future studies on the long-term implications of corporate sustainability and environmental outcomes.*

Keywords: *Economic Performance; Innovation; Proactivity Romanian Corporations; Sustainability*

JEL Classification: *R41, Q01, Q55*

1. Introduction

1.1 Foundations and context of the study

Corporate sustainability, once viewed as a financial burden, is now recognized as enhancing long-term economic performance. It integrates sustainability—preserving resources and minimizing harm to natural systems—and resilience, enabling organizations to adapt to disruptions. Together, these concepts drive corporate sustainability entrepreneurship, where economic health aligns with environmental responsibility.

Romania's economic growth, fueled by EU accession in 2007, has prompted structural reforms and foreign investment [1]. Corporate sustainability has gained momentum, reflecting broader European trends. Romanian companies increasingly adopt green initiatives, such as energy efficiency, to boost competitiveness and align with sustainable development goals. Studies (e.g., [2, 3]) show that sustainability principles drive innovation and competitiveness while addressing environmental challenges. However, gaps persist in sector-specific analyses and long-term impacts.

Despite research on CSR and financial performance [4], limited attention has been given to how green policies affect economic outcomes across sectors. This study addresses these gaps, exploring sectoral variations and managerial perspectives on sustainability implementation. By analyzing sustainable practices' economic impacts, the research contributes to both academic discourse and corporate strategies, offering insights for Romania's transition toward sustainable business practices.

Corporate sustainability has become a central concern in contemporary economies [5, 6]. Corporate sustainability entrepreneurship, closely linked to corporate social responsibility [7], identifies and maximizes sustainable economic opportunities. However, its practical implementation across industries remains inconsistent, requiring further exploration. Key frameworks, such as Elkington's [8] Triple Bottom Line (TBL) and the Resource-Based View [9], balance economic, environmental, and social goals. While TBL enhances reputation and efficiency, it also presents challenges like high initial costs [10]. The Resource-Based View highlights sustainability investments as strategic resources, offering cost savings, innovation, and competitive advantage [11, 12]. Financial health supports sustainability efforts, with strong companies better positioned to invest in green practices and innovation [13, 14]. Stakeholder theory [15] and signaling theory [16] further emphasize sustainability's role in enhancing stakeholder relationships, market signaling, and access to capital [17].

Institutional theory underscores external pressures like regulations in shaping sustainable practices [18], but intrinsic motivation ensures resilience to regulatory changes [19]. Thus, sustainability strategies foster long-term benefits through innovation, reduced risks, and improved market positioning [20, 21].

1.2Hypotheses development

1.2.1 Financial performance

Robust financial performance enables corporations to transition their strategic focus from short-term profitability to long-term objectives, including the integration of sustainability initiatives [22, 23]. In financially stable organizations, managers are more inclined to perceive environmental investments as strategic opportunities rather than financial burdens, thereby fostering innovation and promoting a proactive approach to sustainable business practices [24, 25]. Conversely, in firms with constrained financial resources, managerial priorities often center on immediate financial exigencies, which can hinder the adoption of sustainability-oriented strategies. This study explores the relationship between actual financial performance and managerial satisfaction with financial outcomes. Additionally, it examines the extent to which financial stability facilitates a proactive managerial orientation, fosters innovation-driven strategies, and enhances corporate engagement in sustainability practices.

H1. Real financial performance positively influences managerial financial satisfaction, proactive orientation, innovation orientation, and sustainability practices.

1.2.2 Sector difference

The transport sector is essential to economic progress but is a significant contributor to greenhouse gas emissions, with slower adoption of green technologies due to aging vehicle fleets and the high cost of technological upgrades [31]. In contrast, non-transport companies often face fewer structural barriers, allowing for more rapid integration of sustainable practices and innovative strategies.

This hypothesis explores the differences in proactive orientation, innovation orientation, and sustainability practices between transport and non-transport companies, highlighting sector-specific challenges and opportunities.

H2. Transport companies exhibit lower proactive orientation, innovation orientation, and sustainability practices compared to non-transport companies.

1.2.3 Company Age and Sustainability Practices

Younger companies are often founded during periods of heightened environmental awareness, making them more agile and receptive to incorporating sustainability into their strategies from the outset [29, 30]. These companies may prioritize proactive and innovative approaches to address ecological challenges. Conversely, older firms, con-strained by legacy systems and historical practices, may adopt green policies primarily to meet regulatory requirements rather than as a result of proactive or innovative motivations.

This hypothesis investigates the relationship between a company's age and its levels of proactive orientation, innovation orientation, and sustainability practices.

H3. Younger companies demonstrate higher proactive orientation, innovation orientation, and sustainability practices compared to older firm.

2. Materials and Methods

The first objective aims to review the number of new vehicles purchased in each development region of Romania in the timeframe 2001-2022.

Through the second objective, we propose to analyze a sample of 9,167 vehicles intended exclusively for road freight transport, whose maximum permissible laden weigh exceeds 7.5 tons, divided by the eight development regions of Romania. Thus, we propose to highlight how old the Romanian freight vehicle fleet is by each development region: Bucharest-Ilfov, Center, North-East, North-West, South-East, South-Muntenia, South-West Oltenia, and West. The purpose of this stage of the re-search is to validate the hypothesis according to which the older the cars are, the higher their fuel consumption, therefore resulting in a major negative impact primarily on the environment and on dependence on fossil fuels.

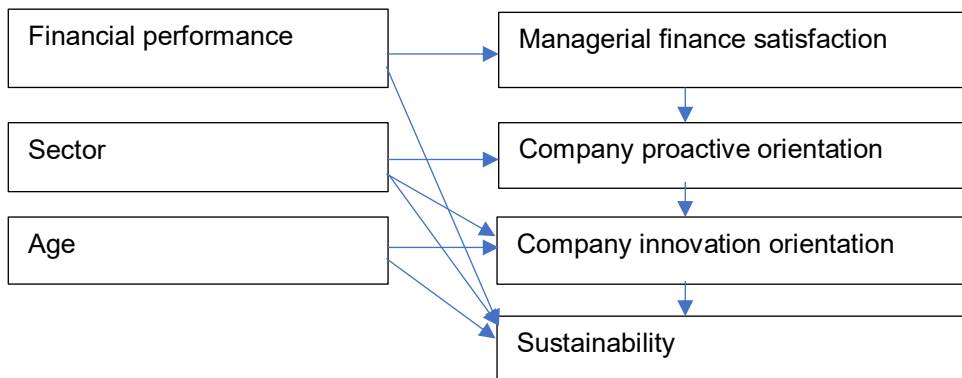


Figure 1. Research Model.

Soruce: Author

Hypotheses H1, H2, and H3 explore the key drivers that may influence green performance within Romanian corporations and investigate how specific attributes of Romanian companies shape their ecological performance and sustainability attitudes. Hypothesis H1 also delves into the psychological and cognitive dimensions of managerial decision-making. This framework ultimately aims to provide a nuanced understanding of how internal and external factors interact to shape corporate ecological performance in Romania.

2. Materials and Methods

2.1 Sample and Data Collection

To examine how managerial attitudes, company characteristics, and financial health influence environmental sustainability practices within Romanian corporations, data were collected via questionnaires from CEOs and CFOs of Romanian companies. The study used a combination of sampling techniques.

Convenience sampling [33] was employed to select participants based on accessibility and feasibility, while purposeful sampling [34] ensured the inclusion of representative companies of the Romanian business environment. Additionally, snowball sampling [35, 36] was utilized, leveraging initial respondents to recruit participants from a variety of industries, thereby broadening the scope of the study. The study employed a quantitative research method via an online survey. According to recent statistics, Romania has 1,414,809 registered companies, making representative sampling essential. The target respondents—CEOs and CFOs—were chosen for their expertise in both economic and green performance metrics. To determine the required sample size, the researchers set the estimated proportion to 0.5 and the power level to 0.95, yielding a minimum sample size of 385. To ensure robustness, 450 questionnaires were distributed, of which 444 valid responses were received, surpassing the minimum sample size required for analysis.

The study employed a practice-centered approach [37], focusing on managers' perspectives while disregarding demographic attributes, ensuring that demographic biases did not influence perceptions or judgments. Phenomenological approaches [38, 39] were utilized to capture managers' subjective experiences.

2.2 Data Analysis and Research Instrument

Data analysis focused on exploring "green performance" and "financial performance" across participating companies, with specific attention to the following factors: a) Industry Distribution: Companies were categorized into sectors such as manufacturing, food, healthcare, services, and finance. This distribution provided insights into sector-specific sustainability and financial performance practices; b) Company Age: Companies were grouped by age into categories such as very young (<12 years), young (12–24 years), and established (24+ years). The study highlights the predominance of younger companies and enabling an analysis of how age influences green and financial performance. Figure 2 shows the repartition of number of companies regarding their types and age.

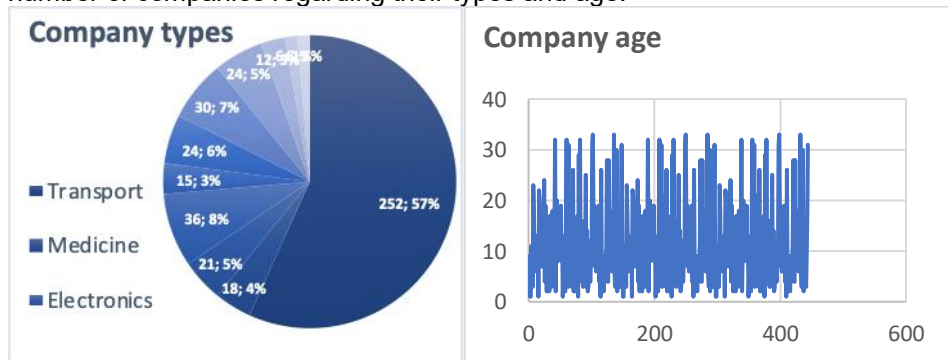


Figure 2. Sectorial breakdown and age distribution of companies in the dataset.

Source: Graph created by the author based on information received from private GPS monitoring companies in Romania.

The study ensured content validity through a pre-testing phase and semi-structured interviews with academic and industry experts familiar with business

strategy. This process led to minor adjustments in the questionnaire to enhance clarity. The research instrument used Likert scales (5-point) and semantic differentials for response options, ranging from "strongly disagree" (coded as 1) to "strongly agree" (coded as 5). The survey was conducted in Romanian, with translations following Brislin's [40] forward-backward translation method to ensure accuracy and consistency. To understand relationships between independent, moderating, and dependent variables, the authors conducted pairwise correlation analyses, confirming that all variables were interrelated. These findings facilitated the construction of the research model, capturing dependencies between financial health, innovation, proactive practices, and sustainability outcomes.

3. Results

3.1 Analysis of the real financial data for hypotheses (H1)

One critical question in this study is how to estimate the trustworthiness of the managers' responses in the dataset. Among the various parameters evaluated, the financial performance data stands out as the only block of parameters that can be independently validated using external sources. To this end, the authors refer to official documentation provided by the Ministry of Finance in Romania (2024), which includes data such as turnover, net profit, liabilities, fixed assets, circular assets, capital and reserves, and the average number of employees for each firm. In comparing the financial performance data from the official records with the survey responses, several challenges were encountered. The survey data includes metrics such as gross profit, return on assets (ROA), sales, earnings per share (EPS), and profit rate, which require mapping to their corresponding financial indicators by developing formulae to bridge the gap between the external data and survey responses, then transform the results of these formulae into a uniform ranking system (on a scale of 1 to 5) to minimize subjectivity.

Despite these efforts, full objectivity cannot be achieved due to subjective interpretations of financial performance. For instance, while one manager might consider a profit of \$10,000 per employee per year as exceptional, another might deem it unsatisfactory. Moreover, the financial data available in open-access sources may not fully reflect the companies' financial state, and factors such as company size, industry type, and other unmeasured variables may influence both actual and perceived performance. To further enhance the reliability of financial performance evaluations, the authors attempted to analyze trends over the past 2-3 years. However, this approach was limited by the availability of only single-year financial data for some companies and the diverse nature of financial metrics, making it difficult to accurately assess progress or regression. Nonetheless, the authors sought to validate whether the managers' subjective responses correlated with their financial performance, thereby ensuring that the conclusions are grounded in both subjective and objective data.

To address these challenges, the authors exclude from estimations Sales, Earnings per Share due to insufficient data for accurate estimation and Gross Profit was approximated as net profit, assuming a linear dependency between the two parameters. The Return on Assets (ROA) is a profitability metric that measures how

efficiently a company uses its assets to generate profit. Using the data, it can be calculated as

$$\text{ROA} = \text{Net Profit} / (\text{Fixed assets} + \text{Circular Assets}).$$

The Rate of Profit, also referred to as the Profitability Ratio, is calculated by comparing a company's profit to its sales (turnover). This ratio measures how efficiently a company generates profit relative to its total sales or revenue. The most common form of the Rate of Profit is the Net Profit Margin, which is expressed as

$$\text{Rate of Profit} = \text{Net Profit} / \text{Turnover}.$$

From the analysis of the data, the estimates for each of the parameters are closely aligned, allowing us to select one integral characteristic for the quantitative analysis. To obtain a more precise measure of Gross Profit, the following formula can be used:

$$\begin{aligned} \text{Real Profit} = & \text{Turnover} + \text{Net Profit} - \text{Liabilities} + \\ & \text{Fixed Assets} + \text{Current Assets} - \text{Capital}. \end{aligned}$$

Next, these characteristics will be calculated from the database and divide them by the number of employees to obtain average values. To eliminate outliers and ensure the results fall within a reasonable range, replace any negative data in the calculations. Next, to map the calculated financial performance to a 1–5 scale, a novel ranking system was proposed as the usual uniform division of the data in the range from 0 to maximum value, is not effective within the data. The authors suggest to calculate the average value A of them, and consider it as the average mark - 3. Thus, the authors divide the calculated data by A and multiply by 3. The resulting scores were adjusted to fall within the range [0.5, 5.5] and rounded to the nearest integer. This way, the authors calculate the 1-5 range integer values for the financial performances and investigate the correlation between them and the corresponding values for the questionnaire.

The Table 1 presents the results of applying the same approach, including Pearson correlation coefficients with their p-values, Spearman correlation coefficients, and Kendall's Tau, to the data.

Table 1. Correlation coefficients between subjective and objective financial performances.

	Profit	ROA	Sales	EPS	Rate
Pearson correlation	0.313253	0.274114	0.313253	0.2813134	0.282349
Spearman correlation	0.343914	0.308546	0.308546	0.344184	0.329625
p-value	6.61556e-05	0.000748	0.000106	0.000533	0.000507

Source: Own calculations

The data reveal a weak linear relationship between the real profit estimations and managers' assessments, suggesting that while the managers' perceptions are not directly aligned with the actual financial state of their businesses, there is a slight correspondence. In other words, when a business performs well, managers tend to assess it positively, and when performance is poor, their evaluations reflect that as well. Additionally, the analysis shows a low correlation between real financial performance and proactive orientation parameters, indicating that proactive orientation is more influenced by managers' subjective perceptions of financial performance than by the actual financial results of the companies.

To test all sub-items of H1 hypothesis, the authors conducted a correlation analysis to examine the relationship between green performance and financial performance. This was done by creating histograms, dependency graphs for selected variable pairs, and testing the statistical significance of these relationships. Scatter plots were used to visually assess the connection between green performance (Y-data) and financial performance, innovation activities, and proactive orientations (X-data), revealing potential patterns in the data. A software solution generated scatter plots for each variable pair. Following the visual analysis, mathematical methods were applied to assess the impact of the variables and verify statistical significance at a 95% confidence level. These methods included Pearson Correlation for linear relationships, p-values for testing hypotheses without correlation, and pair and individual statistics to compare means of X and Y arrays and measure confidence intervals.

3.1.1 Managerial satisfaction:

The p-values for all parameters are nearly zero (with a maximum of 6.681962e-08), leading to the rejection of the null hypothesis, indicating a correlation in the data. To further analyze the relationships, Kendall's Tau, Pearson correlation coefficients, and Spearman's Rank Correlation Coefficients were calculated. The Pearson correlation coefficients for finance vs. ecological parameters are presented in Table 2, showing moderate correlations between financial performance parameters and ecological performance.

Table 2. Pearson correlation coefficients between financial and ecological parameters.

Finance parameter	Investment	Superiority	Reputation	Advantage
Brut	0.475009	0.451672	0.457395	0.426107
Profit	0.475009	0.451672	0.457395	0.426107
ROA	0.534273	0.50931	0.501177	0.441552
Sales	0.492854	0.456346	0.475342	0.43801
EPS	0.513717	0.499747	0.503604	0.462833
ROI	0.563941	0.532551	0.572841	0.516004
Rate	0.496409	0.485327	0.476414	0.458953

Source: Own calculations

Based on the analysis, there are no strong linear positive relationships between every pair of the parameters. To evaluate the relationship between ecological and financial performance, the mean values of both sets were found to be closely aligned (see Table 3). A paired t-test confirmed that the differences are normally distributed with a mean of one, suggesting a similar perception of financial and ecological performance on a 1-5 scale. Following a similar approach to analyze the relationships between financial perception and proactive orientation parameters (such as the use, anticipation, and implementation of new technologies, and R&D quality), the Pearson correlation coefficients are shown in Table 3.

Table 3. Pearson correlation coefficients between financial and ecological parameters.

Finance parameter	Usage	Anticipation	Implementation	R&D
Brut	0.3147	0.3166	0.3619	0.1380
Profit	0.3147	0.3166	0.3619	0.1380
ROA	0.3939	0.3865	0.4390	0.2139
Sales	0.3352	0.3194	0.3653	0.1973
EPS	0.5137	0.325	0.5036	0.4628
ROI	0.3557	0.3576	0.4064	0.2036
Rate	0.3101	0.3005	0.374	0.1862

Source: Own calculations

The p-value for all proactive parameters (usage, anticipation, and implementation) is below 0.002, indicating a positive influence of financial success on proactive orientation, though the effect is weaker compared to its impact on ecological performance. A weak correlation was found for the R&D parameter, with p-values ranging from 0.04 to 0.23, suggesting insufficient statistical significance. As a result, it is identified as an independent variable in the model. Paired t-statistics, performed to check the standard means of financial perception and proactive orientation parameters, further confirm that the proactive orientation parameters (anticipation, usage, and implementation of the latest technologies, as well as the R&D parameter) are statistically similar.

3.1.2 Proactivity:

Using the same analytical approach to assess the dependency between the proactive orientation of companies and their ecological orientation is presented in Table 4

Table 4. Pearson correlation coefficients between proactivity and ecological parameters.

Proactivity parameter	Investment	Superiority	Reputation	Advantage
Usage	0.486759	0.458815	0.462047	0.491229
Anticipation	0.479994	0.472283	0.476528	0.484429
Implementation	0.49239	0.50591	0.510216	0.527903
R&D	0.527903	0.477587	0.48248	0.507144

Source: Own calculations

The p-values for all parameters are almost zero (with a maximum value of $9.795415e-07$), leading to the rejection of the hypothesis that there is no correlation in the data. The results for Kendall's Tau and Spearman's Rank Correlation Coefficients further support this conclusion. The hypothesis that the means of the Proactivity and Ecological parameters are equal was tested using paired and individual t-statistics, which confirmed the equality. Therefore, proactive orientation parameters influence innovation and eco-logical performance parameters. Specifically, proactive orientation closely aligns with innovation orientation and impacts ecological policies within a company.

3.1.2 Managerial innovation

By applying the same analytical method to evaluate the relationship between companies' Innovation and their ecological orientation is shown in Table 5.

Table 5. Pearson correlation coefficients between innovation and ecological parameters.

Innovation parameter	Investment	Superiority	Reputation	Advantage
Activity	0.518528	0.41129	0.4376	0.373892
Novelty	0.526478	0.492545	0.495252	0.440965
Latest	0.515422	0.499071	0.449267	0.420069
Speed	0.476235	0.44546	0.438668	0.389703
Share	0.475906	0.434086	0.423374	0.390624

Source: Own calculations

The values of corresponding Spearman rates and Kendal's Tau are close to the above values. The p-values for all of the parameters are almost equal to zero (with maximum value is $9.795415e-07$), therefore, the hypothesis that the data have no correlation is rejected. Also, paired t-statistics shows the clear correspondence between all innovation parameters and ecological performance.

3.2 Statistical analysis of transport sector differences (H2)

3.2.2 Sectoral differences:

In the first part of the analysis, the authors assessed the state of Romania's cargo transport by examining statistics on vehicle age, including data from both the survey participants and the vehicle registration systems in Romania. The analysis reveals a significant portion of the fleet is outdated. The authors then explored whether the eco-logical performance reported by the companies correlates with the age of their vehicles and whether their fleet ages align with the national average.

Data from the vehicle registration systems were used to generate a histogram depicting the age distribution of the transport fleet as shown on Figure 3.

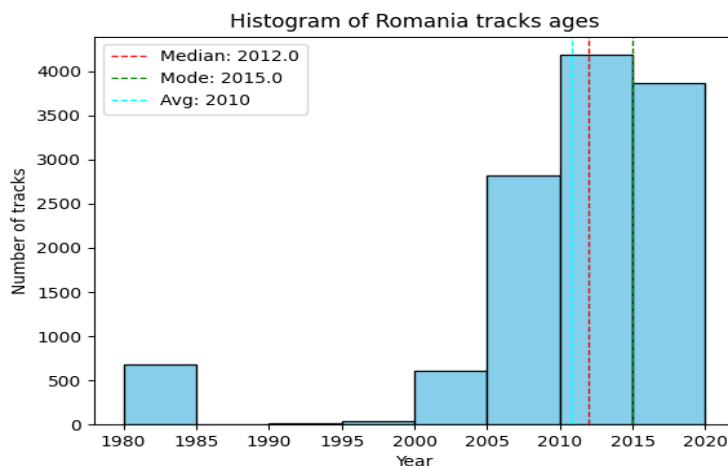


Figure 3. Histogram of tracks ages by years.

Source: created by the author based on information received from private GPS monitoring companies in Romania.

This graph analyzes a dataset of 12,861 vehicles used for road freight transport in Romania, focusing on the age distribution of the fleet. Most vehicles were manufactured in 2015, making them 9 years old in 2024. The fleet is divided between older vehicles (2000-2012) and newer models (2012-2024), with a significant number of older vehicles still in operation. This raises concerns about the fleet's efficiency, environmental impact, and maintenance requirements. Building on this, Figure 4 presents an analysis of the average vehicle ages for the companies included in the study.

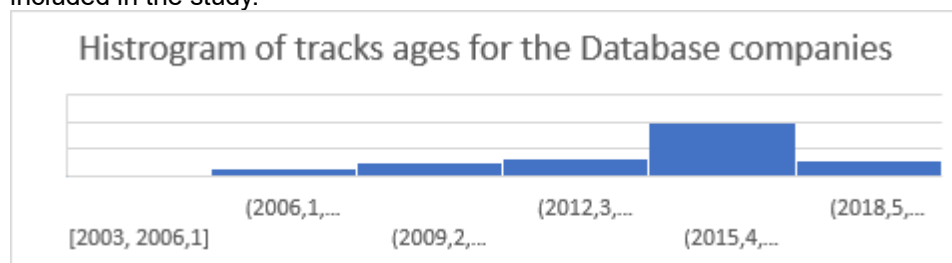


Figure 4. Histogram of average vehicle ages for the analyzed transport companies by year.

Source: created by the author based on information received from private GPS monitoring companies in Romania.

As observed, the companies in the study operate much newer vehicles compared to the broader Romanian transport fleet. This indicates that the sample

is comprised of more modern and ecologically oriented companies, with an average vehicle production year of 2015 or later, and the earliest production year being 2003. Several factors may explain this trend. As a result, it is not possible to precisely estimate the dependency between vehicle age and ecological performance. However, the analysis reveals weak linear relationships between the age of the vehicles and the estimated ecological performance.

Finally, the authors apply Mann-Whitney U Test to compare the distributions of transport and non-transport ecology parameters and to determine whether Transport samples tend to have lower values of ecological parameters than the corresponding values from the other sectors.

Table 6. Mann-Whitney U test results comparing transport and non-transport companies.

Ecology performance	Investment	Superiority	Reputation	Advantage	
	9.534347e-06	1.560169e-06	6.478530e-06	1.289193e-06	
Proactivity	Usage	Anticipation	Implementatio n	R&D	
	0.00013265	1.38587526e-05	5.7783234e-06	5.812045e-05-06	
Innovation	Activity	Novelty	Latest	Speed	Share
	3.9046e-05	0.000182	0.000275	4.07349e-05	2.74668e-05

Source: Own calculations

The results indicate that the p-values for these tests are very low, suggesting that transport companies exhibit significantly lower ecological performance compared to non-transport companies. Additionally, the proactive orientation and innovation parameters for transport companies are notably lower than the corresponding parameters observed in non-transport companies.

3.3 Maturity:

To test hypothesis H3, the authors grouped the data into six age categories, and calculated the Pearson correlation coefficients along with their p-values, Spearman correlation coefficients, and Kendall's Tau. The confidence level for rejecting the hypothesis was set to 0.95. The results are presented in Table 7:

Table 7. Correlation coefficients between ecological parameters and company ages.

Type of statistics	Investment	Superiority	Reputation	Advantage
Pearson correlation coefficients	0.072107	0.035746	0.049634	0.0274550
Spearmen correlation	0.112537	0.085722	0.080322	0.0655316
Kendal's Tau	0.043435	0.0201592	0.016800	0.0027484

Source: Own calculations

The authors applied the same analysis to assess the relationship between the age of the company and the proactive and innovation parameters. The hypothesis that the age of company has no correlation with the Ecology group parameters must be rejected, indicating that the age of the company plays a significant role in ecological factors. The same analysis was conducted for the dependencies between the ages of companies and the Proactive Orientation parameters as shown in Table 8:

Table 8. Correlation coefficients between proactive orientation parameters and company ages.

Type of statistics	Usage	Anticipation	Implementation	R&D
Pearson correlation coefficients	-0.0663866	-0.01465	-0.0375657	-0.021184
Spearmen correlation	-0.017912	0.0330267	-0.00837167	0.0366675
Kendal's Tau	-0.0771497	-0.032507	-0.06887420	-0.028766

Source: Own calculations

The authors conducted the same analysis for the Innovation Orientation parameters, with the results presented in the Table 9:

Table 9. Correlation coefficients between innovation parameters and company ages.

Type of statistics	Activity	Novelty	Latest	Speed	Share
Pearson correlation coefficients	-0.042306	-0.0827225	-0.05232	-0.10398	-0.065416
Spearmen correlation	-0.007806	-0.0265467	0.020768	-0.05757	0.000303
Kendal's Tau	-0.050520	-0.0857069	-0.044099	-0.114359	-0.06193

Source: Own calculations

Based on the above tables, the hypothesis that the age of the company parameter has correlation with not only the Ecology group parameters but also the proactive orientation and innovation parameters is rejected. This indicates that the age of the company does not play a significant role in influencing the proactive and innovation parameters.

4. Discussion

Sustainability strategies play a crucial role in enhancing economic performance in Romanian companies, as this study demonstrates. Green policies, influenced by managerial satisfaction with financial performance, innovation, and proactive business practices, positively impact both ecological and economic outcomes. Companies that integrate sustainability through innovation and proactivity achieve improved financial performance by increasing efficiency, reducing costs, and enhancing their reputation. However, sector-specific challenges, particularly in the

transport industry, hinder the adoption of green policies, underscoring the need for tailored interventions.

Managerial satisfaction significantly influences green policy adoption. Companies with robust financial performance are more likely to invest in ecological initiatives, including green technologies and sustainability-driven reputation building. This aligns with findings by Menne et al. [22] and Makloufi et al. [24], which highlight the role of financial health in supporting innovation and long-term sustainability investments.

Managers who perceive themselves as innovative and proactive are instrumental in driving green policies. The study identifies significant correlations between proactive business strategies – such as R&D, early adoption of green technologies, and anticipating sustainability challenges – and improved ecological outcomes. These findings reinforce the interconnectedness of innovation, sustainability, and financial performance, consistent with previous studies [22,32]. Sector-specific barriers, particularly in transport, impede green policy adoption. Transport companies exhibit lower proactive orientation and ecological performance due to infrastructure and technological limitations. This finding supports the hypothesis that sectoral challenges significantly influence sustainability efforts, emphasizing the need for targeted investments and regulatory support in high-barrier industries.

Contrary to expectations, company age did not significantly affect sustainability adoption. Both younger and older companies were equally engaged in green practices, challenging the assumption that younger firms are more agile in sustainability efforts. Additionally, while a weak relationship was observed between managers' subjective financial health perceptions and objective financial outcomes, the former played a stronger role in driving proactive orientations, as noted by Zhong [33].

The results underline the importance of managerial attitudes, innovation, and sectorial support in advancing sustainability strategies. They demonstrate that integrating green practices into core business strategies fosters long-term economic and ecological benefits. For policymakers, the findings highlight the need for sector-specific measures, particularly for industries like transport, to overcome barriers to green technology adoption. For businesses, the emphasis on proactive and innovative managerial practices offers a roadmap to achieving sustainability while enhancing financial performance.

5. Conclusions

This study highlights the critical interplay between financial performance, proactive orientation, innovation, and ecological performance within Romanian companies. It finds that proactive orientation and innovation are key drivers of green policies, while financial performance plays an indirect supportive role. Companies with proactive strategies and innovative leadership are more successful in implementing sustainability practices, resulting in both ecological and economic benefits.

Despite progress in modernizing fleets, transport companies in Romania lag behind other industries in ecological performance, innovation, and proactive orientation, underscoring persistent challenges in adopting green practices. The study also reveals no significant link between company age and sustainability efforts, indicating that both younger and older companies can effectively embrace green policies.

Managerial perceptions of financial health generally align with actual financial performance, though these perceptions are influenced by subjective factors. Notably, proactive managerial strategies are shaped more by subjective financial perceptions than by objective financial data, highlighting the role of managerial bias in strategic decision-making.

The findings emphasize the importance of financial stability, innovation, and proactive strategies in driving corporate sustainability. While the study provides valuable insights, its focus on Romania limits broader applicability, calling for future research across different regions and industries. Ultimately, the research deepens understanding of corporate sustainability drivers and offers practical guidance for enhancing green policy adoption.

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POVERTY DYNAMICS IN ROMANIA

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Abstract: *The article focuses on the poverty dynamics in post-communist Romania. In the first part it has been analyzed the current economic and sociological literature regarding poverty. In the second part which is empirically oriented there has been analyzed few relevant statistical data on poverty using both the World Bank data and the World Value Survey data.*

Key words: *Romania, Poverty, Central and Eastern Europe, World Bank, World Value Survey.*

JEL Classification: *I3: Welfare, Well-Being and Poverty*

1. Introduction

Economists seem to have very little useful to say about why some countries grow and others do not. It is always possible to construct a rationale for what happened in each place. But the truth is that the specialists are largely incapable to understand very well why things suddenly fire up (Banerjee and Duflo, 2011).

Given that economic growth requires manpower and brainpower, believes Banerjee and Duflo, it seems plausible, however that whenever spark occurs, it is more likely to catch fire if women and men are properly educated, well fed, and healthy, and if citizens feel secure and confident enough to invest in their children, and let them leave home to get the new jobs in the city (Banerjee and Duflo, 2011). If sociologists are focused to understand the causes of the urban and rural poverty and to propose social policies capable to fight against it, the economists are focused on issues related to development aid for poor countries.

On the left side of the political spectrum, Jeffrey Sachs wants to spend more on aid, and generally believes that things like fertilizers, bed nets, computers in schools should be given away and that poor people should be enticed to do what Sachs (the UN and WHO) think is good for them. For example, children should be given meals at school to encourage their parents to send them to school regularly.

On the right side of the political spectrum, William Easterley, along with Moyo, the American Enterprise Institute, and many others, oppose aid, not only because it corrupts governments but also because at a more basic level, they believe that we should respect people's freedom. If they don't want something, there is no point in forcing it upon them. If children do not want to go to school it must be because there is no point in getting educated (Banerjee and Duflo, 2011).

The difference between Sachs and Easterly's points of view stem from a different answer to an economic question. Is it possible to get trapped in poverty? Sachs believes that some countries, because of geography or bad luck, are trapped in poverty. They are poor because they are poor. Easterly, by contrast points out that

many countries that used to be poor are now rich, and vice versa. If the condition of poverty is not permanent, he argues, then the idea of poverty trap that inexorably ensnares poor countries is bogus (Banerjee and Duflo, 2011).

2. The definition of the poverty

Before going into the deep empirical analyses of the poverty there is a need to define the phenomenon.

The most common meaning of poverty is “a state of permanent lack of necessary resources for ensures a way of life considered both decent and acceptable on the level of a community” (Zamfir, 1995). But in a much-quoted book, the British economist Amartya Sen considers that “we need to look at the poverty rather from the perspective of basic capabilities deprivation than from the view of income as standard criterion for identifying poverty. The poverty viewed from the perspective of capabilities does not imply a denial of the sensitive vision that low income is clearly one of the major causes of poverty because the lack of income could be a main reason for one’s depriving by his/her capabilities” (Sen, 2004).

The first argument used by the British economist for poverty as deprivation of capabilities is that deprivation has an intrinsic importance when the poverty viewed from the perspective of low income has an instrumental importance. Secondly there are influences on deprivations others than low income. Thirdly, the instrumental relationship between low income and low capabilities varies between communities and even between different families and persons.

Sen considers that the relationship between income and capability is highly affected by age, gender, place and epidemiological environment. The age, the invalidity and illness could reduce the capability of a person to produce income. The real poverty (that one caused by capabilities deprivation) could be more intense than that produced in the space of income (Sen, 2004).

3. The absolute and the relative poverty

The distinction between absolute and relative poverty has been central to post-war debates to define poverty. Charles Booth and Seebohm Rowntree, the pioneers of modern poverty research, consider that the absolute poverty is the lack of sufficient money to meet basic physical needs. “As its most basic, considers the British researcher Ruth Lister, absolute poverty is defined in terms of survival; more commonly it refers to subsistence, linked to a basic standard of physical capacity necessary for production (paid work) and reproduction (the bearing and nurturing of children). Nutrition is central to such definitions...A family is poor if it cannot afford to eat” (Lister, 2004).

Rowntree tried firstly to measure the minimum living standard. He used the same indicators in three surveys done in York, United Kingdom, in 1899, 1936 and 1950. He discovered in 1899 that 1/3 of the households was in absolute poverty, but in 1950 he found that only 1.5% of the households were in absolute poverty. His conclusion was that poverty decreased substantially in England (Pop, 2005).

The measurement of absolute poverty implies the elaboration of a poverty threshold which is a formal reference point which considers the consumption as the necessary minimum for a person, household or family.

The definition of poverty in the absolute meaning implies arbitrary suppositions. It is difficult to offer accurate definitions of the nutritional minimum of every person because it depends on psychological factors or on the level of physical activity. But we must add that the organizations which fight against starvation as Red Cross and Oxfam use the absolute poverty in their operational plans (Hardwick, Longmead, Khan, 2002).

Townsend developed a relative definition of poverty in his monumental work *Poverty in United Kingdom* where he criticizes the narrow subsistence notion of needs separated from their social context, upon which absolute definitions of poverty were based. Townsend considers that "individuals, families, and groups in the population can be said to be in poverty when they lack the resources to obtain the types of diet, participate in the activities and have the living conditions and amenities which are customary, or at least widely encouraged or approved in the societies to which they belong." (Townsend, 1979).

The European Commission's definition, adopted in 1984, is similar in tone: "The poor shall be taken to mean persons, families and groups of persons whose resources (material, cultural and social) are so limited as to exclude them from the minimum acceptable way of life in the Member State which they live". Unlike Townsend, it does not spell out explicitly the dimension of social participation, which is key to the concept of relative deprivation upon which the definition of poverty is built (Lister, 2004).

Townsend suggested a deprivation index, calculated as a sum of different indicators concerning 60 activities/problems of a household (diet, clothes, health, entertainment, transportation). Each household gets a score for the deprivation index. Then he related the deprivation index with the income level. The poverty threshold is that income level below which the degree of deprivation decreases dramatically (Pop, 2005).

We must add that in the current research on poverty, the relative poverty threshold is calculated as a percentage (50%, 60%, and 70%) of the mean of consumption expenditures of a society. For instance, in United Kingdom, the official threshold of poverty is at 60% of the median consumption (Pop, 2005).

An alternative to the methodologies of poverty calculations based on the suppositions of the researchers on minimum needs and consumption is to ask people to estimate the income which would ensure them a decent minimum standard of living. This type of threshold has been used by a group of Dutch researchers from the University of Leyden under the leadership of Van Praag. The advantage of this methodology is that it expresses more directly the needs and aspirations of the people as it is crystallized on the community level (Zamfir, 1995). But using the scale of subjective poverty has some risks. Those with higher incomes tend to underestimate themselves concerning poverty degree, while the individuals with lower income tend to overestimation. There is a lack of correlation between someone's monetary income and its own appreciation of the poverty. That is why using subjective poverty scale is not very useful when the researcher does not know the real income of the subjects (Pop, 2005).

4. Poverty in the Central and Eastern Europe

Poverty is not distributed evenly around the world. Specific regions suffer its worst effects. In Sub-Saharan Africa, South Asia, and Latin America, hundreds of millions of poor people struggle for survival. Periodic disasters, such as the 2004 tsunami that devastated regions on the Indian Ocean, continued to kill hundreds of thousands of poor and vulnerable people. The divide between the global North and South, between the world's richest and the rest has widened (Yunus, 2007). But the focus of this article is Romania, a former socialist country located in Central and Eastern Europe. That is why there should be added few things about the poverty from this region.

The social and economic changes of the Central and Eastern Europe in the last three decades have as consequences that few got rich and others became poorer. Of course, there must add that the last three decades is also a period when a new middle class raised. But the focus is on the poor people and the very rich people. The former are the losers and the latter are the winners of the period of transition from planned economy to capitalism and market economy. Could it be said that at the start of this transition period all the actors had the opportunity to get rich? The answer of this analysis is rather negative. Apparently, all actors had chances. But the enrichment is a process which depends on few factors as cultural capital and social capital.

During socialism, the differences between salaries were very small. The party-state offered jobs for almost everybody. The unemployment was officially zero but probably that realistic is to say that the unemployment rate was fewer than 5%. In the last three decades the economy of the former communist countries restructured and that is why many people lost their jobs. Few areas which depended on an industry or a factory were damaged by the power of these transformations. In those areas unemployment and poverty are unfortunately the new socio-economic realities.

The time of socialism was an age when people had salaries but the offer of services and products was much reduced. Now in the market economy there is the opportunity to choose from a very large offer of products and services but just few actors have the amount of money which allow them to buy everything they want. Of course, there are many who cannot afford to buy new clothes or even go hungry in their beds many times a week.

A team of social scientists coordinated by Ivan Szelenyi conducted comparative research based on surveys in six post-communist countries (Hungary, Poland, Slovakia, Romania, Bulgaria and Russia) between 1999 and 2000. The quantitative data included samples of sub-populations, including the poor and the Roma. In addition to survey data, they conducted ethnographic studies in all these countries in the same period.

Analyzing poverty based on the data of the mentioned research, the Hungarian sociologist Ivan Szelenyi said that: "Both the extent and the character of poverty in Eastern Europe appear to have changed with the transition from socialism to a market economy. There has been not only a substantial increase in the proportion of the population living in extreme poverty, but according to some commentators, the actual character of poverty has changed as well. The conventional wisdom

among social scientists is that during socialism poverty was mainly a life-cycle phenomenon. Thus, families with large numbers of young children, the temporarily or permanently disabled people, as well as the elderly tended to be poor. Today, however, social classes, ethnicity and/or gender appear to play a more significant role than in the past in terms of predicting or explaining poverty.” (Szelenyi, 2002). Analyzing statistical data, the researchers discovered that in all countries in 1993, people experienced a similar deterioration of their living standards compared to 1988. But by 2000, the trend is reversed in countries where more rigorous liberal reforms were implemented, as Poland and Hungary, and in countries with a much slower progression towards liberal mode of capitalism as Bulgaria, Romania and Russia.

An interesting distinction made by the researchers is between biological poverty (not enough money for food) and social poverty (not enough money for clothes). The difference between the financial situations of the least and the most educated is at the level of biological poverty in Romania, Russia and Bulgaria and at the level of social poverty in Hungary, Poland and Slovakia.

Concerning the same research, the Bulgarian sociologist Petar Mitev considers that “the social-biological risk factors (age, gender, and children) are not pushed away but are rather transformed by the new poverty paradigm. The emerging social-economic context reinforces the effects of such factors, particularly in certain countries. A new and unexpected phenomenon is emerging: the formation of an age-based underclass in Southeast Europe and Russia. Except for Poland, all countries exhibit symptoms of feminized poverty, but the strongest poverty risk is ethnicity. The poverty of Roma in Southeast Europe is reaching catastrophic levels, and we are currently witnessing the formation of an ethnic underclass” (Szelenyi, 2002).

Analyzing the birth of the underclass in Central and Eastern Europe, Henrik Domanski, one of the researchers involved in the study of poverty coordinated by Szelenyi notices that “the distinctive culture of America’s black underclass is hardly comparable to the enclaves of material deprivation found in Moscow. Previous research carried out in local communities in Poland reveals a good picture about what is referred to as systemic context. What such studies show is a much higher incidence of poverty in rural areas contrary to the Western countries, where poverty predominates in the inner city...we also found little evidence of an association between poverty and long-term unemployment, which was predicted to produce high rates of marginality and economic deprivation...the underclass debate in America and Britain has been plagued by the ambiguity of the concept, stemming from multiple definitions of the term. Not surprisingly, we found that the poor are deeply embedded in the social stratification structure of Eastern European societies. This fact justified our attempts to uncover whether an underclass was in formation in these countries...If one holds that intergenerational transmission of poverty is the sine qua non of an underclass, the applicability of this term to the case of Eastern Europe must be ruled out” (Szelenyi, 2002, p.57).

The sociologists in the team of Szelenyi noticed some anomalies in the post-communist countries. Firstly, poverty is linked to property ownership. For instance, 79 percent of residence owners in Bulgaria and 32 percent of owners in Hungary do not have enough money for food and for clothes. They found such discrepancies in

Romania and Russia (like in Bulgaria) and in Poland and Slovakia (like in Hungary). There is no linkage between driving an automobile, having a telephone or a refrigerator and poverty. The researchers notice that “the prevalence of residence, car, telephone, TV sets and refrigerator ownership distinguishes poverty in former Second World from poverty in the Third World. Real estate ownership is not in itself a stratification distinction. To the contrary, widespread ownership reflects the degree of social homogeneity achieved in former socialist countries...A contradiction emerges between ownership and income, a contradiction that materializes in the empty fridge, the parked car, and the unheated dwelling” (Szelenyi, 2002).

Another anomaly is that high social status does not ensure money for food. If a university professor in any normal country has enough money to shop for potatoes or mushrooms, in transitional societies a professor must plant potatoes in his or her garden or go mushrooming in the forest. Also, urban residents commonly raised domestic animals and poultry in their dwellings. The researchers conclude that “in cities and villages alike, people grow or breed agriculture products at home, and such practices are nearly as typical among the most educated as among the least educated. A process of de-intellectualization of an individual’s everyday activities parallels whereby cities are becoming countrified, or agrarian, on a global and social scale. Our findings suggest a strange type of poverty that is combined with property ownership, as well as a unique status of people who lack access to even most elementary items” (Szelenyi, 2002, p.21).

5. Poverty Dynamics in Romania

The main objective of this article is to understand the evolution of the poverty in post-communist Romania. After the Revolution of December 1989 there have been created conditions for a market economy and a liberal democracy.

Robert Kaplan, an American journalist who visited Romania both in 1981 and 2013 described the essence of the country in his book “In Europe’s Shadow”. For him Romania constitutes one of those ethnic nations like Georgia and Armenia that have miraculously survived in the millennia despite being oppressed, overrun and vanquished.

Between his visits during Ceausescu’s period and after Ceausescu’s regime fall, Romania had seen several evolutions. In 1990 Kaplan noticed how Romania which denied religion during socialism time, had been transformed into an open-air church, with roses, tulips and beeswax candles at sacrificial payment offerings in honor of the revolutionaries who had died fighting Ceausescu. But by the late 1990s downtown Bucharest would boast casinos, topless clubs, and Italian fashions in boutique windows that in one instance featured live models. As added a former Romanian diplomat quoted by Kaplan, the Romanians are resourceful, adaptable, exaggerated, pseudo cosmopolitan emigres in a new, global world (Kaplan, 2016).

For Kaplan's point of view Romania in 2013 is a totally different country than 1981's Romania. Between his 1981 and 2013 visits Romania joined NATO and the European Union. Using few suggestive graphs, it could be noticed how market economy and the economic growth transformed the society after the fall of the Communism. For the building of the following graphs there have been used data from the World Bank (www.theglobaleconomy.com) and the World Value Survey, the 7th wave.

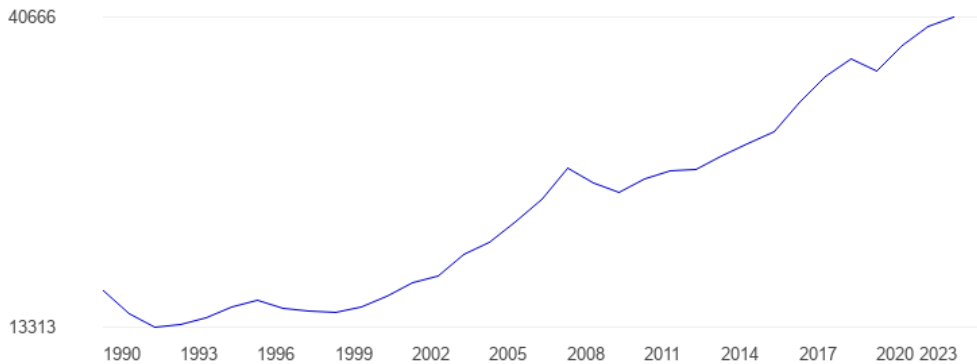


Figure 1. The GDP per capita evolution in Romania (1990-2023).

Source: www.theglobaleconomy.com

From this first figure it could be noticed that with the exception of the first years after December 1989 Revolution when GDP per capita decreased because of the structural transformation of the Romanian economy the indicator increased and it could be noticed a much higher increase after 2007 when Romania joined the EU.

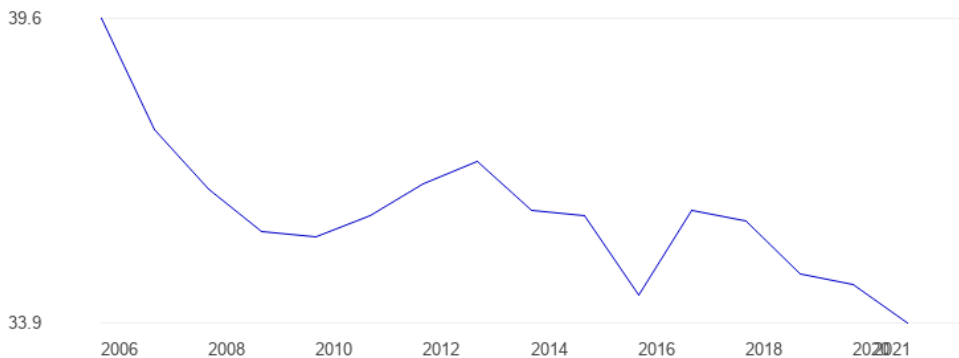


Figure2. The Gini index evolution in Romania (2006-2021).

Source: www.theglobaleconomy.com

The Gini index which expresses that the inequality level decreased from 39.6 to 33.9 which means that in this period there have been created the conditions for the raising of the new middle class.

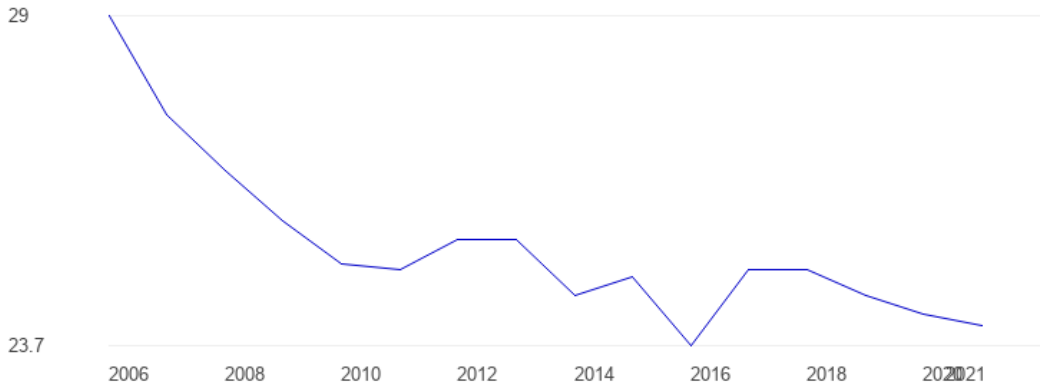


Figure3.Top ten earners. Romania.

Source: www.theglobaleconomy.com

In the same time the percentage of the top ten earners (first decile) decreased from 29% to 23.7%.

But what about the poverty level?

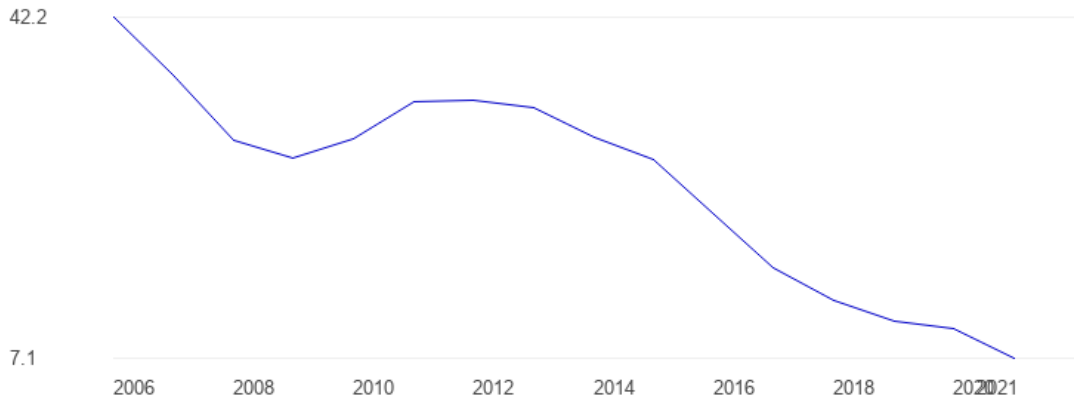


Figure4.Poverty evolution (the 5.50USD per day as a poverty line).

Source: www.theglobaleconomy.com

From this very suggestive figure it could be noticed that the poverty decreased from 42.2% in 2006 to 7.1% in 2021.

From all these graphs there should be concluded that the poverty decreased and

in the same time the inequality level did the same. The main factor for these evolutions is the economic growth of Romania which has few causes. First the development of the market economy, the increasing of the investments, the technological change, the development of the economic freedom and the joining of the European Union. The same evolution happened in the former socialist countries of the Central and Eastern Europe that joined the EU such as Hungary, Slovakia, Poland, or Bulgaria (the graphs that illustrate these evolutions are in the Annex).

In this case it is difficult to understand the political discourse of the enemies of the EU from the Central and Eastern Europe. Many populist politicians tried to speak in their discourse about the troubles caused by the European Union to their countries, the huge Brussels' bureaucracy, and the huge authority of the European Institutions that suppressed the national authority of the countries. All these economies experienced an increase in the GDP per capita and a decrease in the level of the absolute poverty.

Another objective of the article is the understanding of the poverty and prosperity of the different development regions of Romania.

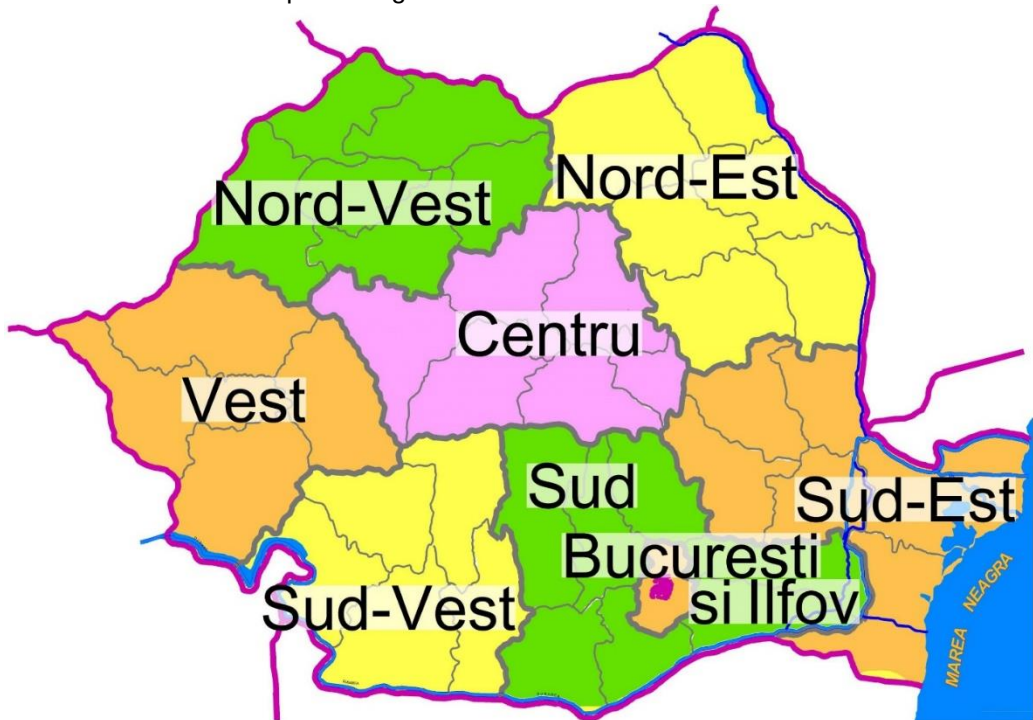


Figure5. The development regions of Romania.

Source:

https://ro.wikipedia.org/wiki/Regiunile_de_dezvoltare_ale_Rom%C3%A2niei/

From the figure 5 it could be noticed that Romania has 8 development regions. The most developed regions are the Bucharest-Ilfov region, West, North-West and Center and the less developed are North-East, South-East, South Muntenia and South West as graph 6 and 7 point out. In 2018 the GDP per capita of the Bucharest – Ilfov region was 3 times higher than that from North East, South East and South Muntenia and South West (Oltenia). Also, in the graphs 6 and 7 there could be noticed that the percentage of the active people is higher in Banat, Transylvania and the capital region, but in Moldova, Dobrogea and Oltenia the percentage is lower. The unemployment rate is higher in Muntenia and Oltenia but much smaller in Banat, Transylvania and Bucharest. There are also differences between salaries. The highest average salary is in the capital region and the smallest in South Muntenia.

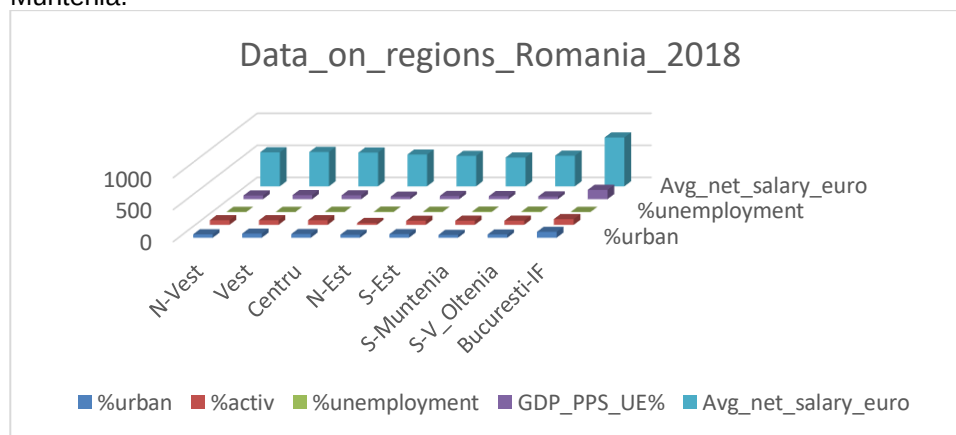


Figure 6. The development regions data. The case of Romania (2018).

Source: author's own calculations

Region	North-West	West	Center	North-East	South-East	South-Muntenia	Oltenia	Bucharest-Ilfov
%urban	52.4	63.1	57.38	45.52	55.6	43	49.8	90.8
%active	72.7	72.1	72.3	28.59	63.8	65	64.6	89.4
%unemployment	2.3	1.8	2.9	4.8	4.6	6	5.9	1.2
GDP per capita (PPS) reported to the mean of UE's GDP per capita (PPS)	57	63	60	39	50	47	42	145
Average net salary in Euro	531	536	527.13	496	475	450	478	763

Figure 7. The development regions data. The case of Romania in 2018.

Source: author's own calculations

Another two figures could add few details between the regional disparities of Romania.

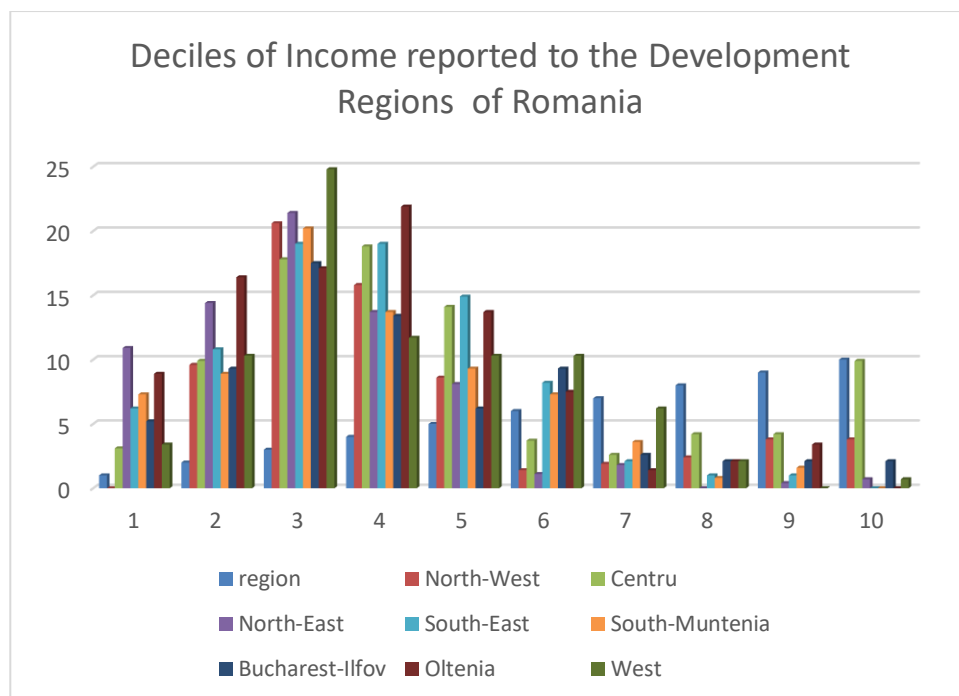


Figure8. Deciles of Income. The Development regions of Romania (2018). **Source:** author's own calculations using the World Value Survey data (wave7)

region	NR	1	2	3	4	5	6	7	8	9	10
North-West	27.8	4.3.	9.6	20.6	15.8	8.6	1.4	1.9	2.4	3.8	3.8
Centru	11.5	3.1	9.9	17.8	18.8	14.1	3.7	2.6	4.2	4.2	9.9
North-East	27.7	10.9	14.4	21.4	13.7	8.1	1.1	1.8	0	0.4	0.7
South-East	17.9	6.2	10.8	19	19	14.9	8.2	2.1	1	1	0
South-Muntenia	27.4	7.3	8.9	20.2	13.7	9.3	7.3	3.6	0.8	1.6	0
Bucharest-Ilfov	30.4	5.2	9.3	17.5	13.4	6.2	9.3	2.6	2.1	2.1	2.1
Oltenia	7.5	8.9	16.4	17.1	21.9	13.7	7.5	1.4	2.1	3.4	0
West	20	3.4	10.3	24.8	11.7	10.3	10.3	6.2	2.1	0	0.7

Figure9. Deciles of Income. The Development regions of Romania (2018).

Source: author's own calculations using the World Value Survey data (wave7)

From the figures 8 and 9 there could be noticed that the poverty is spread not only in North East, South West, South East and South Muntenia but in all regions of Romania, but the richest Romanians seem to live in the South East, Center, North West and Bucharest-Ilfov regions.

But where live the less educated and the higher educated Romanians?

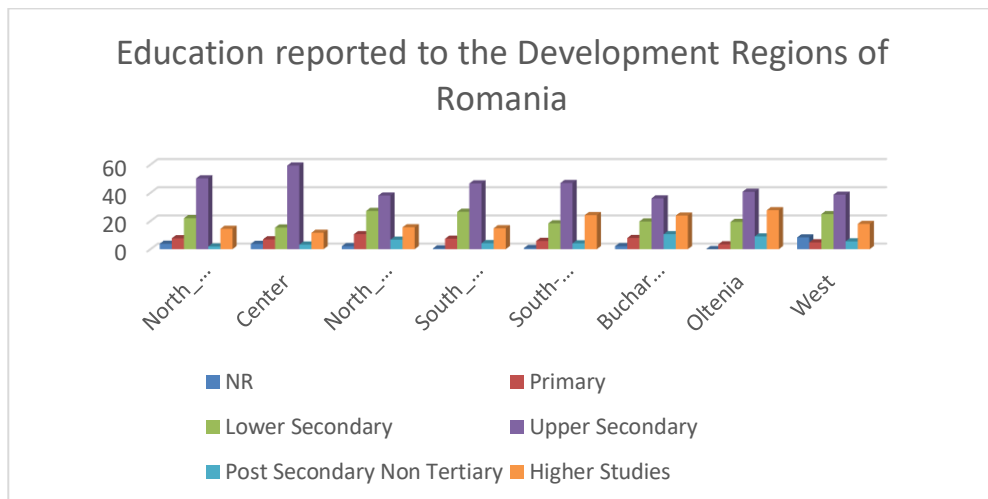


Figure10. Education. The Development regions of Romania (2018).
Source: author's own calculations using the World Value Survey data (wave7)

	NR	Primary	Lower Secondary	Upper Secondary	Post-Secondary Non-Tertiary	Higher Studies
North_West	3.8	7.7	22	50.2	1.9	14.4
Center	3.7	6.9	15.3	59.3	3.2	11.6
North_East	2.1	10.6	27.1	38	6.7	15.5
South_East	0.5	7.4	26.5	46.6	4.2	14.8
South-Muntenia	0.8	5.8	18.3	46.9	4.1	24.1
Bucharest-Ilfov	2.1	7.9	19.6	36	10.6	23.8
Oltenia	0	3.4	19.3	40.7	9	27.6
West	8.3	4.8	24.8	38.6	5.5	17.9

Figure11. Education. The Development regions of Romania (2018).
Source: author's own calculations using the World Value Survey data (wave7)

It is rather a paradoxical situation that in the North-East and South West (Oltenia) the percentage of the Romanians with higher education is higher than those from the North West and Center. But the percentage of those with higher education from Bucharest-Ilfov is one of the highest in the national context. It could also be noticed that the percentage of the Romanians with upper education (those who graduated the high school) is higher in the counties of Transylvania and Banat-Crisana (North West and Center regions).

6. Conclusions.

The poverty in Romania, a former socialist country from the Central and Eastern Europe, has similar evolutions as the other countries from this region such as Hungary, Slovakia, Poland or Bulgaria. The poverty in the Central and Eastern Europe is linked to social class, gender, age and ethnicity. As graphs used in the empirical part of the article proved there was a dramatic decrease of the poverty after 1989 but this decrease was much more noticeable after Romania joined the European Union in 2007.

The main causes of this interesting phenomenon are the powerful economic growth linked to big investments, the technological change and the market economy, the increase of the economic freedom, the belonging to the free economic space of the European Union and the social policies performed by the Romanian governments after 1989. Also, the migration of few millions of Romanians in Western Europe had an impact on the favorable evolution.

But not only poverty decreased because social inequality decreased, too. Especially after 2007 it could be noticeable the raising of the new middle class. Behind the statistical figures it is obvious that in the last decade Romanians traveled more abroad and more people spent vacations abroad.

Even all these facts Romania is still one of the poorest countries in the European Union. But the social and economic difference between Romania and the rich countries from the West side of the continent decreased in the last three decades. If someone focuses on the difference between the developments regions of Romania it could notice that there are relatively big economic differences between the Transylvania and Banat regions and the capital region of Bucharest that are richer in comparison to Moldova, Oltenia, Dobrogea and the south part of Muntenia. Bucharest region is one of the top ten regions of Europe in terms of GDP per capita today. It could be noticed that in Transylvania and Banat-Crișana there are more high school graduates than in the other Romanian regions but in Oltenia, Moldova and Bucharest the number of the higher studies graduates is higher than in Transylvania and Banat counties.

Behind all these good things the future evolution of the poverty in Romania depends on the speed of the economic growth, the investments, and the development of the education, the evolution of the global economy and the economic and social policies of the Romanian governments.

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ANNEX

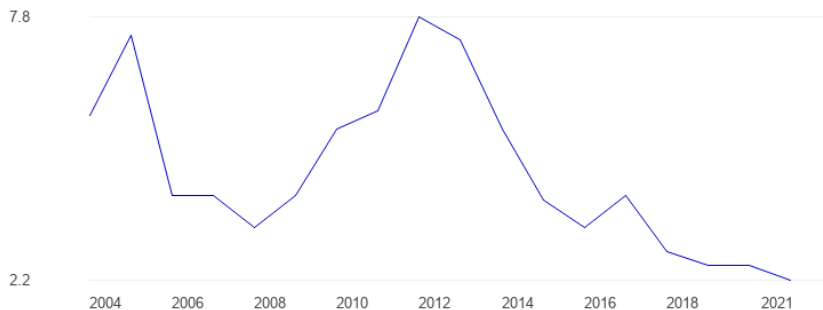


Figure12. Poverty evolution in Hungary (the 5.50USD per day as a poverty line).

Source: www.theglobaleconomy.com

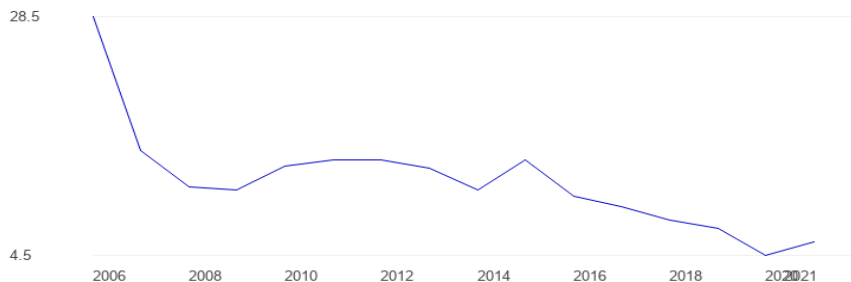


Figure13. Poverty evolution in Bulgaria (the 5.50USD per day as a poverty line).

Source: www.theglobaleconomy.com

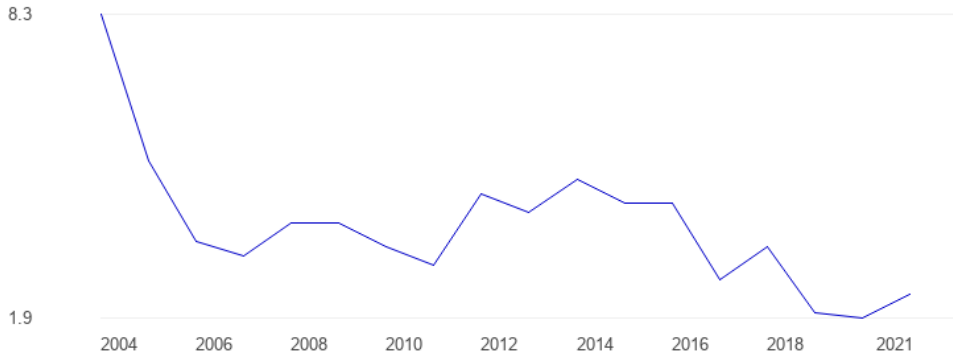


Figure14. Poverty evolution in Slovakia (the 5.50USD per day as a poverty line).
Source: www.theglobaleconomy.com

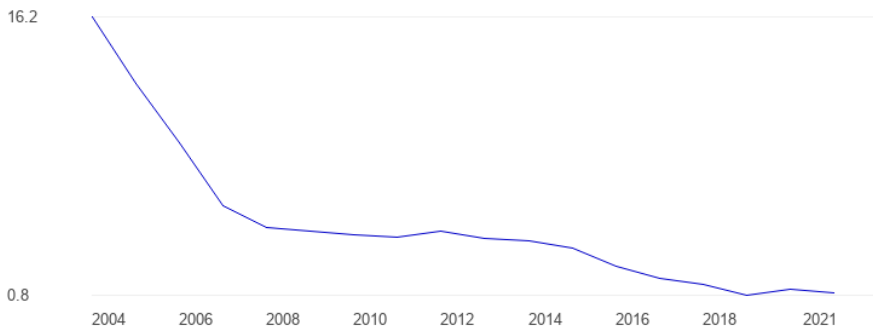


Figure15. Poverty evolution in Poland (the 5.50USD per day as a poverty line).
Source: www.theglobaleconomy.com

DIGITAL NOTARIAL LEGAL ACTS

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Abstract: *Notarial legal acts drawn up in electronic form will be a challenge for legal professionals, especially for notaries public. In our country, there has already been an attempt to digitize notarial legal acts through the adoption of Law No. 589/2004 on the legal regime of electronic notarial activity, a law that has not been implemented. The rapid pace at which technology is being adopted creates a need to merge notarial services with the new expectations and needs of society, and this progress can be achieved safely through the intelligent use of digital solutions and tools. In this context, the digitization of notarial activities represents a new orientation and response to social reality, and notarial legal acts drawn up in electronic form will be used by notaries public through the TOP-NOT IT/electronic platform. As a model, the Top-Not platform will be inspired by Italian law, whose PNI-Italian Notary Platform is administered by NOTARTEL.*

Keywords: *notarial legal acts, Top-Not, digital*

JEL Classification: K20

1. Introduction

As far as digitization is concerned, there is a draft law on electronic notarial activity which is in public debate and is to be adopted in the Parliament. This law will regulate the legal regime of performing notarial acts and procedures in electronic form through the Top-not electronic platform.

2. The regulation of notarial documents in electronic form in Romania

The draft law on electronic notarial activity L593/2024 was adopted by the Senate on 17.02.2015 and is co-sponsored by the Ministry of Research, Innovation and Digitalization and the Ministry of Justice.

The fast pace at which technology is being adopted gives rise to the need to merge notarial services with society's new expectations and needs, and this progress can only take place safely through the intelligent use of digital tools, while taking into account the principles governing notarial activity and the profession, as well as the safety of the civil legal circuit.

As a result, the digitization of notarial activity and the drafting of notarial legal acts in electronic form is a new stage in social reality but also a natural consequence of the continuous growth in the capacity and flexibility of new technologies and cybersecurity solutions.

Electronic contracts, on the other hand, are not new. Developments in information technology have also influenced the way contracts are concluded. By electronic means, professionals and consumers have access not only to a market limited by national borders but also to the global market. The use of electronic means to conclude contracts has great advantages: professionals can advertise their products and services nationally and worldwide, communicate information on prices and terms of delivery, using minimal financial resources for this purpose and with maximum speed, and interested parties, whether consumers or professionals, can choose from a multitude of offers and accept terms and conditions, all electronically.

Contracts concluded by electronic means have been referred to in the legal literature as "electronic contract", "contract concluded by electronic means", "contract in electronic form".

The draft law regulates the legal regime for the performance of notarial acts and procedures in electronic form through the TOP-NOT IT/electronic platform. The TOP-NOT platform will be developed and managed by the National Union of Notaries Public in Romania and aims at managing and storing notarial acts, as well as the documents on which they are based. At the same time, this platform ensures the security, confidentiality, traceability and integrity of data exchange.

As a model, the TOP-NOT platform is inspired by Italian law, whose PNI platform - Platform of Italian Notaries is managed by NOTARTEL.

The Italians are in the 5th stage of digitization, having been using electronic notarial activity and digital legal acts since 1997.

According to the regulation that will enter into force in the near future, all notarial acts and procedures in electronic form are carried out by the notary public only through the Top-Not IT/electronic platform. The notarial document in electronic form, bearing the qualified electronic signature of the notary public, as well as the qualified electronic seal of the National Union of Notaries Public in Romania, hereinafter referred to as the Union, applied by the Top-not platform, is of public authority, produces the same legal effects as the same legal document in letter form.

The notarial act or procedure is drawn up by the notary public either on paper or in electronic form.

The electronic form is never mandatory, unlike Italian law, where in some cases the electronic form of notarial documents is mandatory, such as public procurement contracts.

To draw up a notarial document in electronic form, a written request signed with a qualified electronic signature is required.

Notaries public shall have the possibility to opt for the performance of notarial acts and procedures in electronic form and, if they do so, they shall be obliged to apply to the Union in advance for authorization to carry out their activity in this manner, as well as for access to the Top-not electronic platform and to the single computer program for the notary's office registers.

The notary public may perform in electronic form, without the physical presence of the parties, the following notarial acts and procedures:

- a) written notarial legal consultations;
- b) receiving and storing documents in electronic form in the electronic notarial archive;
- c) the authentication of documents in electronic form;

d) legalizing the signature of the authorized interpreter and translator on translations in electronic form.

The conclusion may also be accomplished in electronic form, without the physical presence of the parties, and the conclusion may also be accomplished in electronic form, without the physical presence of the parties, for the correction of clerical errors and, where appropriate, the making of corrections to obvious omissions in the documents and procedures referred to in points. (c) and (d).

The notary public may also authenticate the signature of the translator of documents in electronic form in paper form, after comparing the paper copy with the document in electronic form.

The following operations may be carried out by electronic means, without the physical presence of the parties, in the notarial probate procedure and in the procedure for authentication of documents:

- a) transmitting the request for the opening of the proceedings, accompanied by the death certificate in electronic form and the request for the authentication procedure to be carried out;
- b) transmission of the request for postponement and notification of the new time-limit set;
- c) forwarding requests for the reinstatement of a succession file;
- d) forwarding requests for the suspension of succession proceedings;
- e) forwarding requests for the inventory of property belonging to the deceased and requests for the affixing of seals;
- f) forwarding requests for the rectification or completion of documents in respect of which material errors or obvious omissions have been made;
- g) verifications and communications to/from public registers, where appropriate;
- h) transmission of the required documents in electronic form;
- i) transmitting to the National Commercial Register Office the documents concerning companies;
- j) transmission by the notary public of other requests, accompanied, where appropriate, by the related documentation, in order to fulfill this procedure.

Notarial documents in electronic form may not be drawn up for the purpose of rectifying material errors or filling in obvious omissions in a notarial document drawn up on paper.

In the exercise of notarial activity, the notary public may carry out the following operations by electronic means, without the physical presence of the parties:

- a) transmission of requests addressed to public institutions and authorities;
- b) communication of applications and any other documents for the performance of real estate advertising operations;
- c) requesting the tax registration of taxpayers, at their request, following the fulfillment of any notarial acts and procedures requiring this operation;
- d) carrying out the formalities, at the request of the party, in order to exercise the right of pre-emption, in the cases provided for by law;
- e) obtaining any writs, certificates, opinions and authorizations necessary for the drawing up of notarial acts and procedures.

Notarial acts or procedures may be carried out in electronic form only at the professional premises of the notary public, if the parties are physically present and sign the act with a qualified electronic signature.

The completion of notarial acts in electronic form shall be evidenced by a conclusion drawn up in electronic form.

At the request of any of the parties, their successors, their legal or contractual representative or any person having a legitimate right or interest, the notary public may issue an electronic duplicate of an original notarial instrument in paper form in his archives, referred to as an E-duplicate, or a paper duplicate of an original notarial instrument in electronic form in Top-not's archives, referred to as an A- duplicate.

Once the content of the instrument has been faithfully reproduced, including, where appropriate, the content of the notarial conclusion, the duplicate conclusion shall be drawn up, specifying the form in which the original instrument was issued. The A-duplicate shall bear the holograph signature and seal of the notary public and the E-duplicate shall bear the qualified electronic signature of the notary public and the qualified electronic seal of the Union applied by the Top-not platform.

3. The regulation of notarial documents in electronic form in France

In France, the digitization of notarial activity began in the first years after 2000, with the construction of a platform for the exchange of information between notaries and various partners such as the Ministry of the Economy and Financial Affairs, the Ministry of Justice and commercial banks. The electronic registration of notarial acts on the basis of a protocol called *Tele@ctes is done on the Planete platform*. The electronic notarial act was introduced in 2008, the first act was signed on October 28th 2008, the signatures being affixed on an electronic device. Electronic signatures and the electronic notary's seal are currently applied and managed according to the European E-iDAS Regulation.

It has also been made possible to authenticate documents remotely, but with each of the parties being in the presence of a notary public, each notary being responsible for taking the consent of the party he or she is assisting. The "meeting" of the parties assisted by the notaries took place by videoconferencing, in a space for which a high level of security is imposed to ensure confidentiality .

During the exceptional period linked to the health crisis, all notarial acts could be temporarily signed remotely, as the presence of notaries in their offices was made impossible (Decree No. 2020-395 of April 3rd 2020 on the authorization of remote notarial acts during the health emergency period). This Decree amended the notarial regulation and allowed consent to be taken without the presence of the beneficiary in front of the notary but had a temporary applicability, until the expiry of one month after the end of the health emergency. Subsequently, a normative act came into force allowing remote consent to be taken, but only in the case of powers of attorney - Decree No. 2020-1422 of November 20th 2020 on the regulation of the notarial power of attorney at a distance.

The Higher Council of the French Notariat has adopted internal rules to ensure that the legal rules are applied under maximum security conditions for communication between the notary and the principal, while respecting confidentiality and the protection of personal data.

In conclusion, powers of attorney can now also be signed remotely, in electronic form, with a qualified electronic signature, via a secure platform.

4. The regulation of notarial documents in electronic form in Italy

The Italian legislation is one of the most advanced in the field of digitization, with the process starting in 1997.

The digital notarial documents in Italy is regulated by the following normative acts: -Digital Administration Code - Legislative Decree No. 82 of March 7th 2005 (in Ordinary Supplement No. 93 to Official Gazette No. 112 of May 16th 2005) Legislative Decree No. 110 of July 2nd 2010 (in Official Gazette No. 166 of July 19th 2010) - Provisions on the electronic public deed drawn up by a notary public Law No 89/16.02.1913 on the organization of notaries and notarial archives Royal Decree No. 1326 of 10 September 1914-Approving the Regulation for the execution of Law No. 89 of 16 February 1913 on the organization of the notary and notarial archives.

According to these regulations, all notarial acts can be done in electronic form, there are some limitations related to inheritance upon death.

The parties may indicate to the notary the electronic or paper form of the notarial acts, but the notary has the possibility to choose between the two forms, even against the parties' request.

Unlike in our country, where the use of the Top-Not platform is mandatory, in Italy the use of the PNI (PiattaformadelNotariatoItaliano) is not mandatory.

The use of this PNI platform is mandatory for documents with graphometric signatures and for documents with remote parties.

As a procedure, the parties, trustees, interpreter and witnesses personally sign the digital public document in the presence of the notary with digital signature or electronic signature. The notary personally applies his digital signature after the parties, interpreter and witnesses and in their presence.

Signing with the participation of the parties by videoconference is allowed only in one case: the document of incorporation of simplified limited liability companies established in Italy with capital paid up in cash.

Present parties can sign in several ways:

- Remote digital signature issued by Namirial, Aruba or Infocert
- One Shot for Act signature issued by Notartel
- Smart card or token for digital signature
- Presence only: graphometric signature with tablet

The Italian Notary has developed an application PNI (PiattaformadelNotariatoItaliano) for the conclusion of digital documents and also for the online incorporation of limited liability companies. It is a cloud-oriented solution which, thanks to its open component architecture, offers an ecosystem of functionalities that can be extended through third-party services.

5. In conclusion

Digitalization is one of the priorities of the notary profession and the signing of digital legal acts is a current challenge for the notary profession.

The draft law brings multiple benefits for the profession of notary public, by modernizing and streamlining the work of this profession, and for the national and

international business environment, by allowing simplified and fast access to notarial services, eliminating the obstacles of physical distance and providing a secure way of storing and managing notarial documents.

At the same time, demonstrating an astonishing strength of adaptation and modernization, the contemporary notary public has understood how to make intensive use of new technologies, making the notarial act easily accessible and useful through fast and secure procedures.

The conclusion of notarial documents in dematerialized electronic form and the creation of the possibility of taking the consent of the parties remotely by electronic means are only some of the current challenges generated by the modernization of notarial activity.

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THE OFFENCE-CONSTITUTIONAL CHALLENGES OR CONTROVERSIES. ECONOMIC IMPLICATIONS

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Abstract: *The legal assessment 11 years after the entry into force of the new Criminal Code allows us to argue that the current regulation has posed important challenges for legal theorists and practitioners, with some regulations being declared unconstitutional, others being modified and supplemented to meet the demands imposed by the new realities.*

The outlined evolution of Romanian criminal law in the new Criminal Code from the initial moment of its adoption until this date creates the impression of a slightly cracked base for a lasting reform, even if the legislator's intention was to abandon the traditional influence and to follow a normal and natural path of assimilation of European criminal law, in order to actively contribute to the homogenization of the criminal justice system at the level of the European Union.

Within the framework of this theoretical approach that we have proposed, we intend to make a brief analysis of the concept of offence, as a fundamental institution of criminal law, which polarizes all the regulations in criminal law.

The current Criminal Code defines the concept of offence differently from the previous regulation, abandoning social danger as an essential feature of the offence. The new approach transposed into the provisions of art.15 of the Criminal Code, which we wish to develop, including from the perspective of comparative criminal law, is not immune to criticism, as in judicial practice situations have been identified in which the unconstitutionality of the legal text was invoked, since the content of the typical elements of an offence does not refer to the social danger of the committed act. In relation to these aspects, we propose to demonstrate that the current regulation complies with constitutional and European requirements, even if, from the perspective of the accuracy of the norm, we have objections.

Keywords: *Criminal Code, offence, social danger*

JEL Classification: *K14*

1. Introduction

The offence represents a fundamental institution of criminal law and is regulated in the current Criminal Code, in Title II, Chapter I "General Provisions", the legislator intending to provide a formal definition of the offense, unlike the old regulation which had adopted a substantial definition.

The comparative analysis of the provisions of art.15 of the current Criminal Code and art.17 of the 1968 Criminal Code regarding the concept of offense allows us to highlight that both general criminal laws define the essential features of the offense.

An offence is nothing more than a concrete human act that endangers one or more social values protected by the criminal norm, for which the perpetrator will be subject to a criminal sanction. The concrete act committed in reality is an offence only to the extent that the perpetrator adopted a conduct prohibited by the criminal law or remained passive, although he had the obligation to act, an act that produces a certain consequence not permitted by the state legal order and which can be attributed to the natural or legal person who committed it, it being necessary for there to be a correspondence between the concrete act committed by the perpetrator and the objective and subjective elements established by the legislator in the abstract model provided for by the incrimination norm.

Within our theoretical approach, we will analyze the evolution of the regulation regarding the concept of offence, the legal definition and the essential features of the offence, trying to demonstrate that the elimination of social danger as an essential feature of the offence does not violate the provisions of art. 21 of the Constitution and the *ultimo ratio* rule, since for offences that present a low degree of social danger and that do not justify, in relation to the concrete elements of the case, the continuation of the criminal trial, the prosecutor may waive the exercise of criminal action, in relation to the provisions of art. 7 paragraph 2 of the Criminal Procedure Code combined with art. 318 of the Criminal Procedure Code, and the court may order the waiver of the application of the penalty, according to art. 80 of the Criminal Procedure Code.

2. Brief introductory considerations regarding legislative developments

The fundamental institutions of criminal law - the general part are: offence (art.15- 52 Criminal Code.), criminal liability (art.113-171 Criminal Code and criminal sanctions (art.53-112/1 Criminal Code).

Offence with its definition, essential features, unity and plurality of offences and plurality of criminals polarize the whole of the regulations in the criminal law, and the coherence and accuracy of the norm are strictly required for the understanding and correct application of the provisions of the general and special parts of the Criminal Code.

Defining the notion of offence and its essential features, directly and completely are requirements imposed by the principle of the legality of incrimination. A general definition of the concept of offence is not found in the Criminal Codes adopted until the first half of the 20th century, motivated by the fact that the task of defining it falls to the doctrine.

In Romania, the Criminal Code of 1864, with a strong French influence, but also the one of 1936, of French and Italian inspiration, approached a formal conception of the notion of offence, art. 1 referring to "an act incriminated by law and sanctioned by punishment", and through the amendment made by Decree no. 187/1948, the offence was defined indirectly, in relation to specifying the purpose of the criminal law, without however including all of its essential features in its content. Another vision of the legislator is found in the 1968 Criminal Code, in art. 17, giving a substantial definition of the notion of offence, which is "an act that poses a social danger, committed with guilt and provided for by the criminal law". Therefore, the

aforementioned legal text provided that only an act incriminated by the criminal law that poses a danger to social values protected by law, a danger that cannot be removed by other means than by applying a criminal sanction, constitutes an offence.

It is necessary to mention that the offence was defined in the same manner in art. 7 of the Criminal Code of the USSR, art. 3 of the Bulgarian and Hungarian Criminal Codes, art. 4 of the Czechoslovak Criminal Code, art. 14 of the Greek Criminal Code.

The French Criminal Code of 1994 provides, in art. 111-1, that offences are classified, "depending on their seriousness, into offences, misdemeanors and contraventions."

The Romanian legislator, through the new regulation, has reconsidered the institution of the offence, in art.15 paragraph 1 of the Criminal Code, providing for a formal conception of the offence, by including its essential features and renouncing the inclusion of the feature of social danger in its content.

The institution of the offence, as developed in the Criminal Code in force, is based on definitions given to this notion in the European Criminal Codes and revives the traditional conception of the interwar Romanian criminal law in this segment.

3. Comparative law aspects

European criminal codes contain formal definitions of offence, as a fundamental institution of criminal law.

Although we do not propose an exhaustive analysis from the perspective of comparative law, we will give some references in the sense of what was stated previously.

The Italian criminal code, in Title IV regarding the perpetrator and the victim of the offence, does not expressly clarify the notion of criminal act, in legal doctrine emphasizing that "the action with criminal relevance must appear as an effective work of a determined subject, to belong to the subject". Art.85 of the Italian Criminal Code, provides that "no one can be punished if he did not commit an act with conscience and will", in the sphere of conscious and willful acts being included "both those that have their origin in a conscious impulse, and those that derive from an inertia of the will and which could have been prevented".

European criminal codes contain formal definitions of offence, as a fundamental institution of criminal law.

The German Criminal Code, in Title II, General Part, defines the offence of commission and omission (section 13) and regulates the liability of the person acting through another person (section 14), the guilt (sections 15, 18) etc., without containing an explicit provision regarding the meaning of the action or inaction with criminal relevance, which would define the action as an act of the subject's free will. In German legal doctrine, it was stated that the offence requires that the act be willed, therefore it must belong to the subject and be oriented in a certain direction, based on a mental process that imprints a certain finality, and the intention was defined as the knowledge and will to achieve the objective features of the

incriminating norms. At the same time, in German criminal law it is argued that the existence of social danger is the core of the offence.

The Spanish Criminal Code does not define the concept of offence, but regulates in the Title "Offence" the action and inaction committed intentionally and through negligence (art.10-12), classifies and defines offences into serious, less serious and minor ones (art.13), etc., using the concept of criminal responsibility regarding the invincible error of fact or law.

With an overwhelming pragmatism, American legislation and legal doctrine have focused on identifying the necessary solutions to resolve the problems that have arisen in judicial practice regarding offence, especially on identifying the realities that can constitute convincing defenses, capable of removing the accusation that a person has committed a specific offence, arguing that meeting the content of the offence in the concrete act is only an appearance. Article 2.01 of Chapter II of the American Model Criminal Code provides that "a person cannot be held criminally liable unless he committed a voluntary act or a voluntary omission to perform an act that he was capable of performing."

We note that, in the legislation of the aforementioned states, the institution of the offence is inextricably linked to that of criminal liability, and the latter with the institution of criminal sanctions, which can only be applied if an offence has been committed and the perpetrator is criminally liable.

Moreover, from this perspective, the situation is similar in the national regulation, where the provisions of art.15 paragraph 2 of the Criminal Code provide that "the offence is the only basis for criminal liability", an aspect that derives directly from the principles of the legality of incrimination and punishment provided for in art.1 and 2 of the Criminal Code.

4. Analysis of the text of art. 15 paragraph 1 of the Criminal Code

According to the provisions of art. 15 paragraph 1 of the Criminal Code, "A offence is an act provided for by criminal law, committed with guilt, unjustified and attributable to the person who committed it."

As we have previously highlighted, the old legislator, but also the current one, define the notion of offence in the Criminal Code - general part, specifying that the current definition allows the introduction of a clear demarcation line between offences and misdemeanors, in order to comply with the standards imposed by the principle of legality provided for in art. 1 and 2 of the Criminal Code. The Constitutional Court, by decision no. 405/2016, ruled that "the criminalization of an act as a offence must intervene as a last resort in the protection of social values", and the task of applying the *ultimo ratio* principle belongs not only to the legislator, but also to the judicial body called upon to apply the law, in order to comply with the principle of legality of criminalization and punishment, of the provisions of art. 23 paragraph 12 of the Constitution of Romania. At the same time, the constitutional court emphasized that the mere existence of an active criminal norm is not sufficient, its quality is also relevant, since the law must provide in an accessible, predictable, unitary and uniform manner the content of the offence and the conditions under which criminal liability arises, and the doctrine has embraced this thesis.

The concept of offence in the current general criminal law is the expression of the principle of legality of incrimination (*nullum offencen sine lege*) and the principle of legality of criminal sanctions (*nulla poena sine lege*). Regarding these principles, by decision no. 4/2015, the High Court of Cassation and Justice - Panel for resolving legal issues, emphasized that no act can be considered an offence if there is no law that provides for this and no criminal sanction can be applied if it is not provided for by the criminal law for the respective act.

Returning to the definition given in the Criminal Code to the notion of offence, it is necessary to emphasize that it highlights the essential and common features of all offences - typicality, illegality, imputability and guilt.

The act committed by the perpetrator through an action or inaction must be provided for by the criminal law, respectively, to be criminally illicit. This essential feature of the offense is the expression of the principle of legality of incrimination and presupposes the existence of the incrimination norm, the commission of the concrete act and the existence of a correspondence between the concrete act committed by the perpetrator with the form of guilt provided for by the law and the elements of an objective and subjective nature established in the abstract model provided for by the incrimination norm. The act by which a legal value protected by the criminal norm is affected is a typical act, between it and the injured legal value it is necessary to have an indissoluble link, *per a contrario* it would end up as typicality consecrating disobedience to the law and, implicitly, to recognize apparent typicality. Even though the legislator does not use the notion of typicality in the content of the norm provided for by art.15 paragraph 1 of the Criminal Code, but the phrase "the act provided for by the criminal law", the legal doctrine unanimously accepts the expression of typicality, which reveals the objective concordance between the concrete act and the legal model provided for by the incrimination norm. Typicality highlights the high social danger of the act described in the criminal norm, but does not always lead to a punishment, since criminal liability is subjective, which is why it is necessary for the act to be committed with the form of guilt provided for by the law.

The ambiguities regarding this essential feature of the offence - the act must be provided for by the criminal law - have been clarified in legal doctrine, correctly opining that, when the law uses the notion of act generically, we must speak of a concrete act, since only this can relate to the incrimination norm and can constitute an offence. In this sense, we agree with the opinion expressed that, in the content of the provisions of art.15 paragraph 1 of the Criminal Code, it should have been mentioned that the offence is the concrete act provided for by the criminal law or the typical concrete act, committed with guilt, unjustified and attributable to the person who committed it, in relation to the previously highlighted aspects and the need to ensure the rigor of the regulation.

The second autonomous feature of the offence, illegality, refers to the unjustified nature of the act provided for by the criminal law, namely that the act is in conflict or is not permitted by the legal order. In addition to typicality, criminal wrongdoing also implies the lack of a justifiable cause. Consequently, we are in the presence of an offence if "the act is in accordance with the legal typical and if it is assessed as affecting values protected by the criminal law, and only if there is no superior social

value in the name of which the commission of the respective act is permitted". In the hypothesis in which we are talking about a typical act, it must be verified whether it is not permitted by a legal norm, unjustified, since if it is justified, by the existence of a justifiable cause from those provided for in art.18-22 of the Criminal Code, it does not constitute criminal wrongdoing. The analysis of illegality involves proving that the specific act complies with the incriminating norm and that there is no justifiable cause that prevents the initiation and exercise of criminal action.

It is important to emphasize that in the 1968 Criminal Code, illegality was not an essential feature of the offence, yet, correctly, it was emphasized in the doctrine that the notion seemed to result from the very way in which the concept of social danger was used, "which only apparently replaced that of illegality, since the notion of social danger completed and explained that of typicality".

The third essential feature of the offence is imputability, which is presumed from the existence of typicality or illegality and assumes that the specific act provided for by the criminal law can be imputable to the person who committed it. The notion of imputability has been defined as the attribute of the act to be objectively and subjectively attributed to the author, so we are talking about two components - objective imputability and subjective imputability -, the first emphasizing the causal link between the acts and the author, and the second, the psychophysical capacity of the author of the act to understand and desire the criminal act. The doctrine has shown that "the notion of imputation of an act committed with guilt as an essential feature of the offence appears as a tautology, since guilt is an essential feature of the offence and, consequently, cannot appear twice as an essential feature of the offence". In the opinion of other authors, guilt, despite the fact that it is inserted in the content of art.15 paragraph 1 of the Criminal Code as an essential feature of the offence, "does not in fact constitute a distinct essential feature, but an element of subjective nature within the scope of the incrimination norm. We cannot agree with these opinions, because it is necessary to establish a clear line of demarcation between subjective imputability and guilt: both are essential features of the offence, but guilt refers to the existence of the subjective element in the constitutive content of the offence and we find it in the form of intention, fault and premeditation (art.16 paragraphs 2-5 of the Criminal Code). Additionally, we argue that the provisions of art.15 paragraph 1 sentence II of the Criminal Code. must be corroborated with the provisions of art. 16 paragraph 5 of the Penal Code, according to which "the act consisting of an action or inaction constitutes an offence when committed intentionally. The act committed through negligence constitutes an offence only when the law expressly provides for it".

The fourth essential feature of the offence refers to guilt. This reaffirms the principle of subjective criminal liability (*nulla poena sine culpa*), since the foundation of criminal liability is guilt. Although we have proposed to analyze only the provisions relating to the concept of offence, provided for in art. 15 of the Criminal Code, in order to explain this feature of the offence we will also refer to the provisions of art. 16 paragraph 1 of the Criminal Code, according to which "the act constitutes an offence only if it was committed with the form of guilt required by the criminal law", which demonstrates that guilt is an autonomous feature of the offence. Since in the previous paragraph we have shown which are the forms of guilt with which the act must be committed in order to constitute an offence and which are the rules for

determining the form of guilt from the content of the incrimination norm (art. 16 paragraphs 3-5 and 6), we will not return with developments on this segment.

5. Observations on offence. Constitutional challenges or controversies. Economic implications

In judicial practice, the unconstitutionality of the provisions of art.15 paragraph 1 of the Criminal Code has been invoked, arguing that the removal by definition of social danger as the essential feature for an act to be considered an offence violates the right to a fair trial and the principle of proportionality, provided for in art.21 paragraph 3 and art.53 of the Romanian Constitution. It has been shown that according to the current definition of the offence, if in practice there has been a very small infringement of the social values protected by the criminal law, we are still talking about a offence, which implies important consequences for the defendant, which would not have happened in relation to the provisions of art.17 of the Criminal Code from 1968, according to which, the defining element of the offence was the existence of social danger, as an essential feature of the offence, and in the event that an act did not present the degree of social danger of a offence, the provisions of art. 18/1 of the 1968 Penal Code with the marginal name "act that does not present the degree of social danger of a offence", allowed the application of an administrative sanction.

To identify these aspects, first of all, we must refer to the fact that any legal definition that specifies the content of a notion is a legitimate means of legislative technique. The Constitutional Court, by decision no. 650/2018, emphasized that the norms of legislative technique impose mandatory criteria for the adoption of normative acts, in order to meet the requirements imposed by the principle of security of legal relations regarding clarity and accessibility, which is why, in our opinion, a balance must be found between the law and its interpretation, between the principle of legality and the need for clarity and accessibility of legal norms.

In the old regulation, a substantial definition of the notion of offence was introduced in order to more easily differentiate the field of criminal law from the sphere of contravention, civil law offenses and disciplinary law offenses.

According to art.17 of the 1968 Criminal Code, an offence was defined as an act that poses a social danger, committed with guilt provided for by the criminal law. In this definition, we distinguish three essential characteristic features of an offence - the act must pose a social danger, the act must be committed with guilt, the act must be provided for by the criminal law. In art. 18 of the 1968 Criminal Code, the act presenting a social danger was defined as the action or inaction by which a value mentioned in art. 1 of the Criminal Code is violated, and art. 18/1 of the 1968 Criminal Code stipulated that the act provided for by the criminal law did not constitute an offence if, by the minimal violation brought to one of the values protected by the law and by its concrete content, being clearly lacking in importance, it did not present the degree of social danger of an offence.

Regarding the social danger of the act as an autonomous feature of the notion of offence, it is necessary to specify that this concept is characteristic of the former socialist criminal law systems, in Romania being sketched at the beginning of the

20th century and explained by V. Dongoroz. In the conception of the old legislator, the act had social danger when there was an action or inaction that presented a danger to social values, requiring the application of a punishment. Therefore, it was talking about the material aspect of the act, the social aspect and, not in the last resort, the legal aspect of the offence. In doctrine and jurisprudence, it had been emphasized that socially dangerous acts must be analyzed not only *in abstracto*, but also *in concreto*, the first category referring to special incriminations, generically defined by the Criminal Code, and the second, considering the concrete act, the danger of which had to be assessed by the court, in a broad process of judicial individualization of the punishment.

Art.18 of the 1968 Criminal Code referred to the social danger of the act without distinguishing between abstract and concrete social danger, explaining the content of social danger as an attribute of the act that harms not only the social values listed in art.1 (Romania, sovereignty, independence, unity and indivisibility of the state, the person, their rights and freedoms, property, as well as the entire legal order), but also the other protected social values not explicitly mentioned, for which a punishment was necessary. Therefore, it was correctly emphasized in the doctrine that, as a whole, the concept of social danger was related to the criterion of the values harmed and that of the punishment. V. Dongoroz emphasized that, in order to delimit the criminal illicit from the extra-criminal illicit, it is necessary to use an objective qualitative criterion, in the content of which two elements should be included: "the criminal act with a certain social resonance and the provoking of a state of anxiety and insecurity among the members of the social group". However, it was assessed that an appropriate conclusion could not be reached and that is why the Romanian legislator added the criterion of punishment, in order to delimit contraventions from offences. Social danger was considered to have the character of a concrete social danger, with a role in defining social danger as an essential feature of the offence. After the adoption of the incrimination norm, in which the act is described and the sanction corresponding to its gravity is established, in relation to the manner of assessing the concrete social danger by the judicial body, it was assessed that the concrete social danger has a function of individualizing the sanction within the minimum and maximum special limits established by the incrimination norm and corresponding to the value of the abstract danger of the act, but also a function equivalent to that of the abstract social danger of selecting acts susceptible to being incriminated or not.

The legislator, through the provisions of art.17 of the 1968 Criminal Code, regarding the concept of offence, indicating the social danger defined in art.18, as one of the essential features, took into account the function of the social danger of individualizing the concrete sanction, which was regulated in the chapter on punishment. For these reasons, taking into account the provisions of art.18/1 of the 1968 Criminal Code, it can be easily seen that in the legislator's vision, an act could not constitute an offence only when its danger was at the level of the abstract danger assessed by incriminating the act, which determined that when the degree of concrete social danger was reduced, the concrete act did not constitute a criminal offense.

At the same time, the assessment of the concrete social danger did not fulfill, according to the old Criminal Code, only a function equivalent to that of the abstract

social danger, but also a complementary function, through which certain activities, permitted by law, were legitimized.

It has been judiciously emphasized in the doctrine that this concept of social danger contains multiple contradictions and represents an anachronism, the application of this theory only harming the certainty of the legal norms. Additionally, the concept contains an ambiguity, since the social danger of the act overlaps with the social danger of the offender and does not contribute to the clarity of the norm, a requirement imposed by the principle of the legality of incrimination and affirmed by decision no. 732/2014 by the Constitutional Court. At the same time, social danger cannot replace illegality, as an essential feature of the offence.

The concept of social danger contains multiple contradictions, which have determined the current legislator to abandon a substantial definition of the offence and to adopt the formal definition of the offence.

Returning to the issue of constitutionality of the current regulation regarding the concept of offence, we emphasize that the normative provision, even in the absence of the accuracy we spoke about previously (*Infra.3*), is, in our opinion, able to pass the constitutionality test. We do not intend to enter into a controversy with the supporters of the exception of unconstitutionality, judiciously argued, and we will not expand the field of discussion by correlating the legal norm regarding the institution of the offence with criminal procedural norms, but we will try to demonstrate that the provisions of art.15 of the Criminal Code comply with constitutional and European requirements.

Criminal law defends the social values of the community, by prohibiting those actions that could harm them or by requiring a certain conduct to protect them and, for this purpose, establishes criminal sanctions.

Offence, as a fundamental institution of criminal law, is the most serious form of legal wrongdoing and must be interpreted restrictively, so as to comply with the requirements imposed by the principle of legality and subsidiarity.

The principle of legality of incrimination is a general principle of law and requires that the law clearly define offences and punishments so that any person can know, starting from the text of the norm and, if applicable, with the help of the interpretation given to this text, what are the actions and omissions that could entail his criminal liability.

As regards the requirements of the principle of legality, it is necessary to specify that the normative provision included in the content of art.1 paragraph 2 of the Criminal Code is enshrined in the provisions of art.1 paragraph 5 of the Romanian Constitution and is in full agreement with the provisions of art.49 paragraph 1 of the Charter of Fundamental Rights of the European Union and art.7 of the ECHR.

The Court of Justice of the European Union (CJEU) has established through its case law that the legal norm in order to comply with the requirements imposed by the principle of legality, which is a specific expression of the general principle of legal certainty and implies that the law clearly defines offences and penalties, must be foreseeable and precise.

Regarding interpretation, the Strasbourg Court, in the *Plechkov/Romania* case, by its judgment of 16.09.2014, ruled that, no matter how clear a legal provision may be, in any legal system, including in the field of criminal law, there is inevitably an element of judicial interpretation, since, often, requirements arise for elucidating

doubtful aspects and adapting to changes in the situation, which is why the provisions of art. 7 of the ECHR Convention need to be interpreted in the sense that they do not prohibit the progressive clarification of the norm relating to criminal liability, with judges proceeding to the judicial interpretation of each case, but which must be subject to the condition that the result is consistent with the substance of the offence and reasonably foreseeable.

Returning to the issue under discussion, we consider that the text of art. 15 paragraph 1 of the Criminal Code which defines the offence in terms of the essential features mentioned in section 3 of this paper, corresponds to the requirements imposed by the principle of legality, the regulation being fully in accordance with the requirements of European criminal law in this segment.

The traditionalist conception found in the provisions of the old Criminal Code, including the mention of social danger as an autonomous feature of the offence, was interrupted and replaced with one of European inspiration in order to ensure the homogenization of the criminal justice system at European level.

Regarding this last aspect, it is worth mentioning that the Union's criminal policy is based on the respect for subsidiarity, a basic principle, provided for in Article 5 of the Treaty on European Union (TEU), given that at this level the Union only has shared competences, according to Article 2(2) combined with Article 67(3) and (4) of the Treaty on the Functioning of the European Union (TFEU), as well as the principle of necessity and proportionality (*ultimo ratio*), but also of some special principles, among which we mention the principle of the offence, proportionality, punishment worthiness principle, culpability principle, retroactive application of the milder criminal law (*mitior lex*), etc.

The principle of necessity and proportionality, which we referred to in a previous section, including through case law, is a basic principle at European level and lies in the fact that criminal law is used only as a last resort, namely when there is no other, less harmful way to protect fundamental interests, fundamental rights being necessary to be "indexed" in international standards. The principle has its origin in the principle of the legality of incrimination and regarding this, the constitutional court ruled that incriminating an act as an offence must intervene as a last resort, when there is a criminal norm adopted by the competent legislator and the incriminated act harms protected social values, respectively presents a certain gravity. The Court noted that, in principle, the extraordinary remedy of cassation appeal, provided for by the provisions of art. 433 et seq. Criminal Procedure Code, since through this extraordinary remedy it is not possible to reassess the factual elements, but only to verify the existence of the result of the offence, as a requirement of the objective content, not of the extent or concrete seriousness of the result.

If we analyze the concept of offence through the prism of the *ultimo ratio* rule, it is necessary to mention that the criminal norm provided for by art.15 of the Criminal Code is active and clear, since it regulates the offence in an accessible, predictable, unitary and uniform manner. The fact that, through the provisions of art.15 of the Criminal Code, the traditionalist conception regarding social danger, as an essential feature of the offence, was abandoned does not equate to disregarding social danger, as it is valued, because in the complex structure of the offence we have, among other things, as an element, the existence of an act provided for by the

criminal law, committed by a person, or it is not about any act committed by a person, but only the one sanctioned as an offence and considered by the legislator as presenting a high social danger. Additionally, it is necessary to mention that social danger is embedded in the concept of typicality, the high social danger of the act described in the incrimination norm being presumed by the legislator to exist in relation to any concrete act committed that fits the abstract model of the incrimination norm. Consequently, it cannot be argued that social danger was disregarded in the legislator's new vision of the concept of offence, even if it no longer constitutes an autonomous feature of the offence.

The principle of the offence (*nullumnulluminiuria sine*), which provides that, since criminal law aims to protect relevant social interests, a certain type of behavior should be punished only if it results in a risk to the legally protected good, is inextricably linked to the principle of necessity and proportionality. Only in the event that these requirements are missing can we speak of the ineffectiveness of the norm, which can be found by the constitutional court and sanctioned as such.

Regarding the principle of equality of citizens before the law, provided for in the provisions of art. 20 of the CFREU, art. 6 of the TEU and art. 16 of the Romanian Constitution, a general principle of criminal law, we must mention that it refers to equality before the law, in other words to the absence of discrimination for those in identical or similar situations, but does not exclude the different judicial individualization of the criminal sanction, in relation to the concrete social danger of the act and the perpetrator, taking into account the provisions of art. 74 of the Criminal Code.

Consequently, we consider that the legislator, through the manner in which it regulated the notion of offence in the content of art. 15 paragraph 1 of the Criminal Code, complied with the European provisions, all the principles analyzed above and which we also find in the domestic constitutional provisions - art. 1 paragraph 5, art. 11, 16 paragraphs 1-2, art. 23, art. 53 (in interdependence with the provisions of art. 52 of the CFREU).

5. In conclusion

The legal assessment 11 years after the entry into force of the new Criminal Code allows us to claim that the current regulation has come with important challenges for legal theorists and practitioners, some regulations being declared unconstitutional, others modified and supplemented to meet the demands imposed by the new realities.

The outlined evolution of Romanian criminal law in the new Criminal Code from the initial moment of its adoption, until this date, the legislative inconsistency in certain segments, creates the impression of a slightly cracked base for a lasting reform, even if the legislator's intention was to abandon the traditional influence and to follow a normal and natural path of assimilation of European criminal law, in order to actively contribute to the homogenization of the criminal justice system at the level of the European Union.

As previously mentioned, the current Criminal Code defines the concept of offence differently from the regulation in the 1968 Criminal Code, abandoning social danger as an essential feature of the offence.

The new approach transposed into the provisions of art.15 of the Criminal Code is not immune to criticism, as in judicial practice there have been situations identified, as we specified in the last section, in which the unconstitutionality of the legal text was invoked, since the content of the typical elements of an offence does not refer to the social danger of the act committed. In relation to these aspects, we have tried to demonstrate that the current regulation complies with constitutional and European requirements, but from the perspective of the accuracy of the norm we have objections.

In this regard, the content of the provisions of art.15 paragraph 1 of the Criminal Code should have mentioned that the offence is the specific act provided for by the criminal law or the specific act typical, committed with guilt, unjustified and attributable to the person who committed it.

The notion of offence does not contain vague and imprecise provisions that would be incompatible with the requirements imposed by the principle of legality, since persons who disregard the criminal law may know the extent to which their acts engage criminal liability. The criminalization of acts as offences allows the legislator to adopt sanctions appropriate in nature and degree of severity, against perpetrators who, regardless of the nature of their motives, acted in full knowledge of the facts.

Criticisms aimed at the accuracy of these normative provisions, without depriving them of their predictable and accessible character, cannot lead to the unconstitutionality of the text in question, it being essential to take into account the nature of the text whose validity is questioned and the competence of the legislator to adopt a definition, even a formal one, as is the case with regard to the provisions of art.15 of the Criminal Code, regarding the notion of offence.

We propose *delege ferenda*, the intervention of the legislator in the sense of modifying the content of art.15 paragraph 1 of the Criminal Code, by modifying the legal text in the sense that the offence is the concrete act provided for by the criminal law, committed with guilt, unjustified and attributable to the person who committed it.

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SECTION: FINANCE, BANKING, ACCOUNTING AND AUDIT

A BIBLIOMETRIC ANALYSIS ON THE IMPACT OF TAXATION ON DIGITAL GOODS AND SERVICES

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Abstract: *The global debate on the digital economy focuses with increasing frequency and urgency on the imminent arrival of a fourth industrial revolution that is said to create a new digital economy powered by advanced cyber-physical systems covering advanced manufacturing, transportation, services, and even biological systems. Analyzing the accelerated development of the digital economy globally, it is not bold to say that the digital economy is becoming more and more the economy itself; in this context, it becomes difficult to delineate the digital economy from the rest of the economy in terms of taxation. The aim of this paper is to determine the impact of the taxation of the digital goods and services in the development of digital economy and also in the traditional economy. This paper reviews these prior studies about digitalization along with a systematic review of recent articles in top public administration journals, to begin to identify and compare key characteristics of these academic communities, including their core researchers, theories, topics, and methods. In this sense, we used the method of bibliometric analysis. The data needed to carry out the scientific approach were extracted from the Web of Science Core Collection database, one of the most popular platforms in the field of scientific research.*

Keywords: *bibliometrics; digital economy; digital goods; digital services; digital technologies; taxation*

JEL classification: *H20*

1. Introduction

The digitalization of the economy has created a number of complex problems in the field of taxation. Most of these problems relate to the issue of the distribution of taxing rights between states in the context of the taxation of income obtained as a result of cross-border activities. The following main problem with the taxation of the digital economy is highlighted: tax systems established in the 1920s traditionally take into account the principles of source of income and residence. In the new world of globalization and the digital economy, these principles have become significant

obstacles to international trade. It is for this reason that the aspects of the new nexus should be established, as well as the new model for the allocation of taxing rights. This paper presents a critical overview of the political and legal debate surrounding the challenges posed by the digitalization of the economy for the international tax regime. The paper addresses some key challenges inherent in the reform proposals currently under discussion. This paper should serve as a literature review of the similar research conducted in other competence areas in order to provide insight and a basis for this new topic research which is the digital economy.

2. Literature review

The digital economy is an economic sector that includes goods and services, the development, production, commercialization and supply of which depend on critical digital technologies (Aguila et al, 2003).

Recent literature (e.g., Abendin and Duan 2021; Niyazbekova et al., 2021) has suggested that developing the digital economy is a key measure that countries should consider to promote rapid economic recovery in the face of global economic uncertainties.

Most of the existing literature on the digital economy has identified strong links between the digital economy, the ICT sector and development, with general support for a positive impact of ICT sector growth on the economy (Venturini et al, 2015). The main drivers of economic growth related to the emergence and consolidation of the digital economy are productivity gains, externalities associated with knowledge and innovation diffusion, cheaper services for consumers and greater economic competitiveness (Domazet et al., 2020). Perhaps one of the best evidences in favor of the positive impact of the digital economy on economic growth is the emergence of the fourth industrial revolution (or the Industry 4.0 concept), which refers to cyber-physical systems used in production and business connectivity (Schwab, 2017; Schwab and Davis, 2018). Moreover, governments from all continents have already included this concept in their strategic development programs (Neamțu et al., 2019), recognizing the capacity (sometimes) to disrupt, technology being a source of competitiveness for some industries, as well as a necessity for survival for others (Ogrean and Herciu, 2020).

It is clear that international income and corporate tax regimes have not changed in line with these developments. Moreover, the increasing tax inequality between traditional and digital business models, as well as the threat of declining tax revenues, both loom with a sense of great urgency (Ciortin Gangoș R., 2024). Current statistical data support these claims: within the territory of the European Union (EU), traditional international business models are burdened with an average effective tax rate of 23.2%, while international digital businesses are taxed at an average rate of only 10.1% (B2C models) and 8.9% (B2B models). In recent years, the Organization for Economic Cooperation and Development (OECD) and the EU have made several attempts to rebalance the relationship between digitalized and traditional businesses. However, none have managed to come up with proposals that can be recognized by a broad consensus. The ineffectiveness of the ongoing discussions has led European policymakers to unilaterally introduce national

measures primarily aimed at leveling the playing field and obtaining a fair share of the tax revenue pie. Consequently, these unilateral measures need to be carefully analyzed and validated to ensure that they achieve their intended goals (Geringer S., 2021).

The digital revolution is fundamentally changing business strategies, structures and evolution, consumer behavior and regulatory approaches. More than ever, the Covid 19 pandemic has intensified the role of the Information and Communications Technology (ICT) sector in economic and social survival and resilience and has profiled it as a winner compared to other sectors and industries.

The eventual shape and impact of the digital economy are unknown and likely unimaginable, and will depend largely on the pace of change. A gradual rollout of advanced digital technologies can allow time for adjustment and adaptation, while sudden and profound changes will cause more disruption and displacement. Because the digital economy is not monolithic, there will undoubtedly be a wide range of experiences, but we know from history that technology adoption is not a simple, continuous, unchallenged or automatic process. Technologies tend to develop at uneven and unpredictable rates, and implementation can suffer in the face of fragmented and competing standards, especially when there are high demands for connectivity, interoperability and integration across organizations and jurisdictions.

At the heart of the digital single market are digital goods, a term that is constantly expanding and redefining itself, given the variety of goods effectively covered by this name, referring in principle to all goods that are stored, delivered and used in electronic format, such as smartphones, applications, digital music and books, computer-generated design files for 3D printed products, etc. As such, digital goods can be distinguished from physical (or analogue) goods that refer to material things with physical dimensions, but also from services that were traditionally considered to be something that cannot be stored or owned.

The literature describes the term digital goods as any goods that are stored, delivered and used in electronic format. Digital goods are sent electronically to the consumer via email or download from the Internet. The 2011 EU Consumer Rights Directive uses the term digital content, which is defined as data that is produced and supplied in digital form. Its preamble provides the following examples: Digital content means data that is produced and supplied in digital form, such as computer programs, applications, games, music, videos or texts, whether accessed by downloading or streaming, from a tangible medium or by any other means.

In this respect, the specialist literature normally makes a distinction between digital products supplied in physical form and those supplied entirely digitally, for example via the Internet. Situations can vary greatly: the online purchase of a book is a digital transaction, which does not involve the supply of a digital product; on the other hand, downloading the book to be read as an e-book involves the digital contracting for the digital delivery of a digital product. Finally, we are currently witnessing the development of the “cloud computing” which, instead of providing the consumer with a copy of the program, involves the software provider allowing the consumer to access the software provider’s server via the Internet in order to obtain the product. Thus, this new process is more like the provision of a service than a contract for the supply of goods (Hojnik, 2016).

The dominant factor in the growth of digitalization is the improvement of the quantity and quality of digital services. As early as 2008, Williams, Chatterjee and Rossi were trying to enunciate a more precise definition of digital services and goods, arguing that a digital service is an activity or benefit for that party that can provide another with a service or activity through a digital transaction. A digital service provider is an entity that provides a service or activity through a digital transaction. A digital service user is an entity that receives a service or activity of a digital nature.

According to another interpretation presented in the work "Information Security Concerns in Digital Services: Literature Review and a Multi-Stakeholder Approach", Kar and Singhal (2015) consider digital services to be services that are fully automated and controlled by the end user or customer of the service.

In another specialized article entitled "Digital Economy and Digitalization in Historical Retrospective Digital Economy" published by Kozyrev (2019), he provides clarifications on the differences between digital services and electronic services: The initial adjective "digital" refers to the form (or format) of information presentation. This format is not directly related to the material support of the information. And the adjective "electronic" refers to the material form of the signal materialization, that is, the real-time determination of the material carrier of the information. In any case, he believes that it is more convenient to perceive electronic services as an integral part of digital services.

Taking a different approach, Saveliev (2019) studied the issue of security in the provision of digital services and argued that there is a large number of algorithms, methods and methods of analyzing potential IT risks, thanks to which it is possible to protect the business of legal entities in the field of the digital economy. Assessment of crimes during the provision of digital services, preparation for their prevention, all this should be priorities in the conduct of digital activities and should be carried out at regular intervals.

According to the article "Digital services: concept, types, features. Theoretical economics" Nesterenko (2019) argues that during the provision of a digital service, electronic data is exchanged instead of the physical movement of goods. However, this does not mean that the digital service is provided entirely only in digital form and is carried out only through the transfer of digital goods. For example, the digital services provided by the Amazon.com website are able to offer books not only in digital form but can also include the delivery of a physical product.

A digital service is a specialized type of service, i.e. delivered using the Internet. According to Agrawal and Fox (2021), a digital service is an automated online activity that one party can offer to the other party through a digital transaction to improve the quality of life of society with minimal human intervention.

3. Methodology and research methods

This study aims to analyze the relevance of literature in the field of digital goods and services, to highlight its implications of the taxation of these digital goods and services for the economy in general. In this sense, we used the method of bibliometric analysis. The data needed to carry out the scientific approach were

extracted from the Web of Science Core Collection database, one of the most popular platforms in the field of scientific research. We used the key terms: digital goods, digital services and digital economy. Next, the bibliometric analysis carried out on the terms, digital products and services, presents the main information about the authors, focusing on identifying the most relevant authors, affiliations, as well as the way the authors collaborate. The first step in performing this bibliometric analysis was to filter the titles, abstracts and keywords of the authors separately, searching for the group of words “digital goods or services”, returning as a result of the search a total of 315 works. The second filter was applied on the language of the works, keeping only the documents written in English, thus decreasing the dimensionality of the database by 6, resulting in a total of 309 works. The last filter applied to the database excluded the data recorded for the year 2025, since this year is not over, thus resulting in a final number of 302 works. The analysis of the authors is a crucial step in a bibliometric approach. It involves extracting the most influential researchers on a given topic together with their annual productivity and how they helped the field to evolve.

By using this bibliometric approach on the main concepts described in this section of the paper, the aim was to identify the main factors that facilitate the evolution of the adoption of a fiscal policy appropriate to new digital products and services, aiming to answer the following scientific questions:

- SQ1: Considering the works published in the field of digitization, who are the authors with the most significant impact?
- SQ2: Which are the most relevant universities?
- SQ3: What does the collaboration network between authors for the field of digital products and services look like?

Table no. 1 explores the productivity of authors as a whole, presenting the top 10 authors with the most publications.

Autor	Number of articles	% of Number of articles
Ponomareva KA	9	2.913%
Mpofu FY	4	1.294%
Ahmad M	3	0.971%
Brauner Y	3	0.971%
Greil S	3	0.971%
Kim YR	3	0.971%
Pokrovskaia N	3	0.971%
Victorova N	3	0.971%
Afonso JRR	2	0.647%
Belozyorov S	2	0.647%

Table 1: Top 10 most important authors.

Source: Own editing based on data obtained from Web of Science, Analysis of results

We observe that there is one author with the highest number of papers, namely Ponomareva KA. who has a fractional author value of 2.31. It should be noted that

the fractional author value describes the contribution of an individual author to a series of published papers. Mpofu FY has four papers, with a fractional author value of 1.29. Next, there are six authors with three papers published in the field of digital assets.

The most relevant university is the University of Florida Levin College of Law, which has published 3 papers, followed by City University of Hong Kong School of Law with 2 publications. Indian Institute of Technology Delhi Department of Management Studies and The University of Sydney Business School are in third and fourth place, with two papers published each. By analyzing the countries of origin of the universities mentioned above, we have observed that half of them is from the USA, the rest from Russia, Europe, India and China.

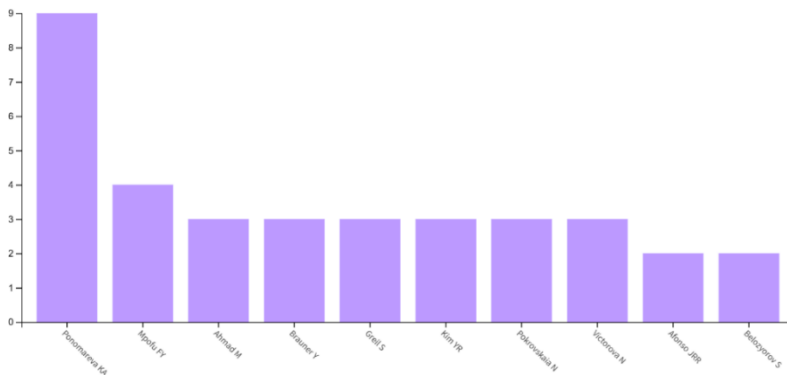


Figure 1: Scientific production of the top 10 authors

Source: Data obtained from Web of Science, Analysis of results

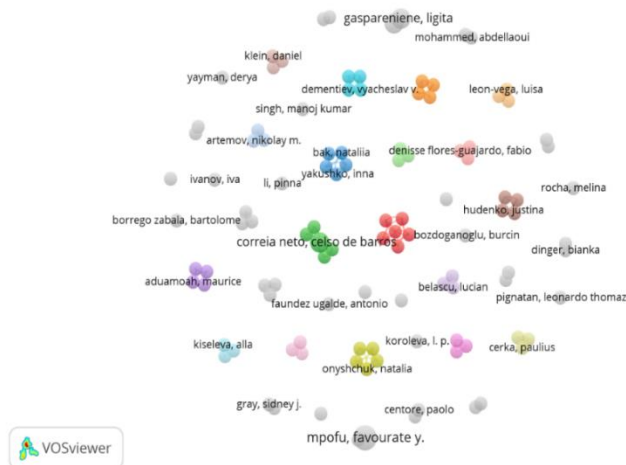


Figure 2: Network map of authors

Sursa: VosViewer, version 1.6.20

Using the VOSviewer program, we created a network map, in which the elements (authors) are represented by labels and circles. The size of the label and the circle is determined by the importance of the element (author) - the higher the importance of an author, the larger the label and the circle. The distance between two authors in Figure 2 indicates the links between them in terms of co-citations. In other words, authors located closer to each other in the network are those who present a higher number of co-citations in the analyzed publications.

4. Conclusion

This study deals with the relationship between the taxation of digital goods and services and the digital economy in general, by conducting a bibliometric analysis based on the evolution of relevant publications, the most important authors of key terms and number of publications.

The results obtained from the literature review validate the research hypothesis regarding the existence of a strong link between the concept of digital economy and digital goods and services. Certainly, the digital economy is intertwined with the traditional economy, but the digital revolution fundamentally changes business strategy, their structure and evolution, consumer behavior and regulatory approaches. This paper proposes systematization of the current knowledge in the area of digital economy, focusing mainly on the concept of taxation of digital goods and services, in order to provide the basis for a completely new study area. The best strategic approach is to find “niches” that reveal and strengthen its long-term comparative advantages and to position itself as a trendsetter in emerging areas. This involves harnessing the political commitment of all states so that different national interests can be brought together into a single global interest – something that has already been achieved when it comes to digital development, regulation and addressing societal challenges.

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LIQUIDATION OF COMPANIES: ACCOUNTING, LEGAL AND FISCAL IMPLICATIONS IN THE CURRENT CONTEXT

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Abstract: This article analyzes the corporate liquidation process in Romania, highlighting its legal, fiscal, and accounting dimensions. Triggered by rising insolvency rates following financial crises and economic instability, liquidation in Romania is governed by Law no. 31/1990 and Law no. 85/2014, aligned with EU Directive 2019/1023. The process unfolds through three stages: dissolution, liquidation, and deregistration. Special-purpose financial statements, regulated by Accounting Law no. 82/1991 and the MFP Ordinance 897/2015, must reflect the realizable value of assets and liabilities, moving away from the going concern principle. From a fiscal standpoint, liquidation imposes strict rules regarding the reintegration of reserves and provisions, taxation of asset distributions, and final corporate income tax obligations. Shareholder distributions are treated as investment income, subject to withholding tax for individuals. VAT adjustments are required for distributed assets if input VAT was initially deducted, ensuring neutrality in the tax system. The study also highlights macroeconomic factors influencing corporate failures, with a notable increase in insolvencies among both SMEs and larger companies in 2024. Official data reveal sectoral vulnerabilities in construction, retail, and manufacturing, and regional disparities with Bucharest and major counties registering the highest case numbers. Although preventive concordat procedures gained traction, their low success rate underlines persistent systemic weaknesses. The article emphasizes that liquidation accounting demands meticulous revaluation and classification of all patrimonial elements, careful recognition of revenues and expenses, and accurate distribution of net assets to shareholders. In bankruptcy scenarios, proceeds are distributed proportionally among creditors, with uncovered claims reflected as extraordinary accounting results. Romania's corporate liquidation system presents a unique blend of transitional legal frameworks, emerging market characteristics, and ongoing EU harmonization. The growing use of digital tools in liquidation procedures suggests modernization trends, but fiscal and regulatory compliance remains critical. This multidimensional analysis offers insights for improving business closure mechanisms, strengthening financial system resilience, and aligning national practices with European standards.

Keywords: Corporate insolvency; Fiscal implications, Accounting for liquidation.

JEL Classification: G33, M41, H25.

1. Introduction

The process of corporate liquidation has garnered increasing attention in both academic and professional domains, particularly in the wake of recurring financial crises, the COVID-19 pandemic, and the resulting instability in global markets. The liquidation of companies—especially in emerging and post-transition economies such as Romania—presents a complex intersection of legal, accounting, and fiscal challenges. As insolvency and dissolution rates continue to rise, particularly among small and medium-sized enterprises (SMEs), a multidimensional understanding of liquidation becomes crucial for scholars, policymakers, and practitioners alike (Iuga, Cioca, & Hada, 2023).

In Romanian law, the liquidation of a company is generally structured in three formal stages: dissolution, liquidation, and deregistration (Nancu & Dănilă, 2022). The legal procedures governing these stages are delineated under Law no. 31/1990 on companies and Law no. 85/2014 on insolvency and pre-insolvency measures. The reasons for company dissolution may include expiration of the term of incorporation, fulfillment or impossibility of achieving the corporate purpose, judicial declaration of nullity, or insolvency as ruled by the competent court (Telicenu, 2019). In addition, the EU Directive 2019/1023 on preventive restructuring frameworks has introduced a more harmonized legal standard across member states. This directive emphasizes early intervention mechanisms and proposes streamlined processes for liquidation and debt restructuring (European Commission, 2019). Romania's legislative efforts in aligning with these standards offer valuable case studies in the ongoing harmonization of commercial law within the European Union (European Commission, 2019).

The accounting implications of corporate liquidation are governed primarily by Accounting Law no. 82/1991, which stipulates that companies must prepare special-purpose financial statements when initiating dissolution or liquidation. These statements are further regulated by the MFP Ordinance 897/2015, which lays out the methodological norms for mergers, splits, and liquidations. Companies may apply either the net asset method or the valuation method, depending on whether asset values are taken at book value or reassessed by certified evaluators (The Ministry of Public Finance, 2015).

Furthermore, IFRS regulations pose an added layer of complexity. Companies listed on regulated markets are required to conform to International Financial Reporting Standards (IFRS) as adopted by the EU. These standards impose stringent requirements regarding asset valuation, impairment recognition, and disclosure of contingent liabilities during liquidation, particularly when preparing consolidated financial statements.

A key distinction emphasized in the literature is between going concern and liquidation value. The latter often reflects a marked devaluation of corporate assets, especially under distress sale conditions.

Olabarrieta et al. (2021) provide empirical evidence showing how asset values tend to deteriorate once the liquidation decision is made, due to the disassociation of assets from their productive context.

From a fiscal perspective, liquidation often intersects with issues of tax deferral, loss transfer, and deductible restructuring costs. According to Dragos (2015),

Romanian fiscal regulations—now consolidated under Law no. 227/2015 on the Fiscal Code—permit certain tax reliefs during corporate liquidation or restructuring, such as the transfer of accumulated losses, tax deferrals, and asset revaluation advantages. These benefits are conditioned on strict procedural compliance and reporting.

The MFP Ordinance 897/2015 also outlines that liquidation-related financial reports must be submitted both to the Ministry of Finance and the Commercial Register, reinforcing the link between fiscal reporting and legal compliance.

Corporate liquidation is not merely a firm-level phenomenon—it holds significant macroeconomic consequences. Anghel et al. (2020) identify interest rates and consumer demand as key predictors of corporate failure in both Romania and Spain. Their regression-based model demonstrates how macroeconomic volatility directly affects corporate solvency and long-term viability. In the Romanian case, industries such as construction, retail, and transport show particularly high vulnerability.

Startups present an additional layer of complexity. Bethlendi et al. (2024) emphasize that failure among early-stage firms is often caused by non-financial factors, such as flawed product-market fit, limited strategic foresight, and management inexperience. Their research, based on Central European data, underlines the fact that liquidation among startups is frequently not the result of poor financials but of fundamental strategic misalignments.

Compared to its European peers, Romania exhibits a higher rate of voluntary liquidations, often driven by shareholders' decisions rather than judicial procedures (Nancu & Dănilă, 2022). This trend contrasts with Western European systems, where insolvency courts play a more active role. The Romanian legal and economic environment thus presents a unique mix of transitional legal frameworks and emerging market vulnerabilities.

Moreover, the use of electronic platforms in commercial law, including the submission of liquidation documents via digital registers, suggests a trend toward modernization. These developments may help streamline processes and increase legal transparency, particularly if integrated with EU-wide regulatory initiatives.

According to official data published by the National Trade Register Office (ONRC), the year 2024 marked a substantial increase in the number of companies entering insolvency, reflecting ongoing economic challenges and structural pressures on the business environment. Between January 1 and December 31, 2024, a total of 7,274 insolvency proceedings were registered—an increase of over 9% compared to the same period in 2023 (Figure 1).

A particularly significant aspect is the 58% increase in the number of high-impact companies—defined as entities with assets exceeding one million euros—that entered insolvency: 141 such companies were recorded in 2024, up from 90 in the previous year (Ziarul Financiar, 2025). This trend highlights the growing exposure not only of SMEs but also of larger firms to systemic and cyclical risks.

Sectoral distribution shows upward trends in key economic branches: wholesale and retail trade recorded 1,902 insolvencies (+6.79%), construction registered 1,499 cases (+13.39%), and the manufacturing industry saw 852 cases (+7.17%). These data point to a concentration of vulnerabilities in sectors with significant contributions to GDP and employment.

At the regional level, the highest number of insolvency cases was reported in Bucharest (1,375), followed by Bihor (581), Cluj (529), and Timiș (424). The counties of Brașov (+46.39%), Botoșani (+36.84%), and Bacău (+35.78%) stood out with the most substantial percentage increases, signaling a marked deterioration in local economic conditions.

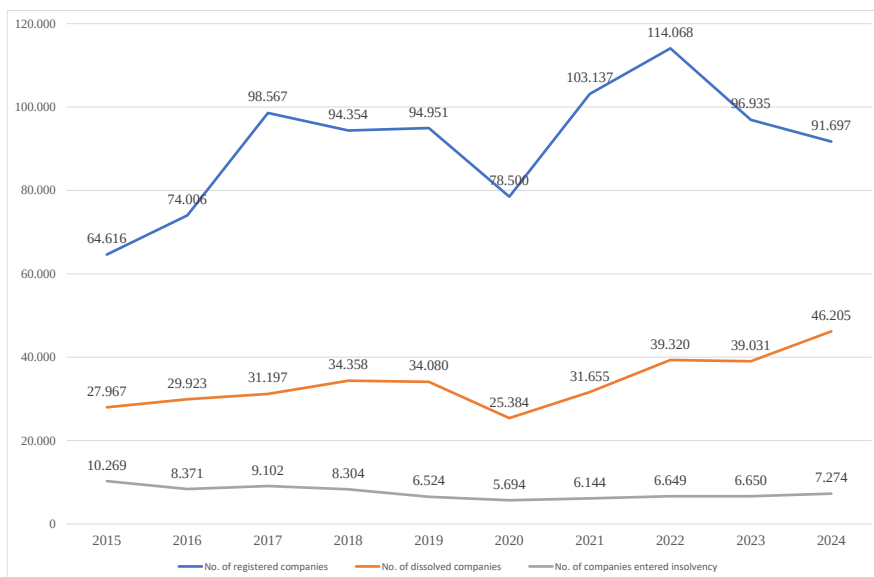


Figure 1. Evolution of the Number of Registered, Dissolved, and Insolvent Companies in Romania (2015–2024)

Source: Own processing according to www.onrc.ro.

Moreover, the preventive concordat procedure—regulated by Directive (EU) 2019/1023 and transposed into national legislation—has gained traction. In 2024, a total of 197 applications were filed, compared to 90 in 2023, representing a 118% increase. However, the low approval rate of these requests indicates persistent challenges in the timely and effective application of voluntary restructuring mechanisms.

These developments depict a context in which the financial fragility of Romanian companies—both large and small—requires strategic, integrated interventions aimed at strengthening preventive capacities, digitizing restructuring processes, and aligning legal tools with European best practices.

The literature on company liquidation reflects a multidisciplinary convergence of legal norms, accounting protocols, and fiscal policies. Romania offers a compelling case study due to its blend of national regulation, EU harmonization, and evolving business culture. Future research could focus on the long-term economic impacts of liquidation, especially its influence on entrepreneurship, employment, and financial system stability.

2. Fiscal Considerations Regarding the Liquidation of Legal Entities in Romania

The liquidation of a legal entity represents a complex process that encompasses legal and accounting dimensions, along with numerous fiscal implications. In Romania, the tax treatment applicable to such procedures is strictly regulated and characterized by specific rules regarding corporate income taxation, asset distribution, treatment of reserves and provisions, VAT, as well as investment income taxation for individuals involved.

Fiscal Year Duration in the Context of Liquidation. In the case of liquidation, the time span between the beginning of the calendar year following the initiation of the procedure and the actual closing of liquidation is considered a single fiscal year. This principle applies uniformly to the calculation of tax obligations and to the recovery of any fiscal losses carried forward from previous years. The objective of this provision is to ensure tax consistency and a coherent fiscal record throughout the liquidation period.

Reserves and Provisions. For entities undergoing liquidation, all previously established reserves and provisions that were previously treated as tax-deductible must be reintegrated into the taxable base at the time of liquidation. This reintegration is mandatory regardless of their original purpose and is treated as taxable income, except in cases where these elements are entirely transferred to another entity during a merger or demerger process. This rule aims to prevent artificial tax optimizations during liquidation by eliminating preferential treatments.

Tax Treatment of Liquidation-Derived Income. Income obtained from the liquidation of other entities may be considered non-taxable, provided certain conditions are met—most notably, that the beneficiary held a significant ownership stake in the liquidated entity for a minimum period of one year. This exemption applies irrespective of whether the liquidated entity was a Romanian resident or a resident of a country with which Romania has a double taxation treaty.

For individual shareholders, any cash or in-kind distributions received as a result of liquidation are treated as investment income. The portion exceeding the initial capital contribution is subject to final withholding tax, which must be retained and remitted by the liquidated entity. The taxable amount is calculated as the difference between the total distribution and the fiscal value of the shareholding.

Corporate Income Tax and Microenterprise Tax Obligations. Entities subject to the corporate income tax regime or the microenterprise tax regime have specific reporting and payment obligations during liquidation. Typically, such entities are exempted from the standard quarterly payment system and must instead compute and remit a one-time final tax payment corresponding to the liquidation period, before the deadline for submitting the final financial statements.

If liquidation is finalized within the same year it was initiated, the final tax return must be filed prior to the submission of the liquidation balance sheet, which marks the termination of the entity's fiscal existence. This approach ensures procedural clarity and consistency in fiscal closure.

Asset Distribution and VAT Implications. The distribution of assets to shareholders or associates during the liquidation process is treated, from a VAT perspective, as a taxable supply, insofar as VAT was initially deducted upon

acquisition. This interpretation supports the principle of VAT neutrality and prevents the extraction of goods from the tax system without adjusting the initially claimed input VAT.

An important exception is the universal transfer of assets in the context of reorganizations such as mergers or demergers, where the legal successor inherits the fiscal rights and obligations of the dissolved entity and the transaction is outside the VAT scope.

Exclusion from Preferential Tax Regimes. Entities undergoing dissolution or liquidation procedures are excluded from benefiting from certain preferential tax regimes, such as fiscal consolidation for corporate income tax or payment deferrals. The rationale behind this restriction is to protect the integrity of the tax system and to prevent abuse while ensuring procedural transparency in dealings with tax authorities.

The Romanian tax regime applicable to entities under liquidation is characterized by rigor, equity, and normative clarity. The regulatory framework ensures the elimination of preferential treatments and promotes a coherent and consistent tax environment until the legal and economic extinction of the entity. Moreover, the current legal provisions protect the general fiscal interest and encourage compliant behavior in the business closure process.

3. Accounting Considerations in the Liquidation of Legal Entities

The liquidation of a legal entity marks a fundamental transition in financial reporting, shifting from the presumption of going concern to the recognition of an imminent termination of patrimonial existence. This transformation requires a distinct accounting approach, regulated separately from the entity's normal course of business. Within this context, an in-depth analysis of the accounting aspects of liquidation becomes essential for fostering a rigorous professional conduct among accounting and auditing practitioners.

Conceptual Foundations of Liquidation Reporting. Once the decision to dissolve and liquidate an entity is formalized, financial reporting must depart from the going concern assumption. Financial statements prepared under these circumstances are classified as special-purpose reports, designed solely to reflect liquidation-related operations. At this stage, all patrimonial elements, regardless of their nature, must be revalued to reflect their realizable value, and assets and liabilities must be reclassified as current based on their maturity profile.

The reference date for preparing liquidation financial statements is established according to the dissolution resolutions adopted by the general meeting of shareholders or by the competent courts in cases of bankruptcy. These statements must subsequently be approved by the shareholders or associates and submitted to the fiscal authorities within the legally prescribed deadlines.

Accounting Treatment of the Liquidation Process. From an accounting perspective, the liquidation process encompasses a series of complex operations, including asset valuation and realization, settlement of liabilities, and final determination of financial results. The liquidator, acting as a temporary administrator of the entity's assets, bears the responsibility for organizing the accounting

operations and ensuring the integrity of financial reporting, including the preparation of trial balances and supporting documents reflecting all transactions during the liquidation period.

Assets must be realized at fair value, which should approximate market prices or estimated realizable values. Differences between the book value and the sale proceeds are recognized as revenues or expenses in the profit and loss account. Concurrently, necessary adjustments to provisions, inventories, and impaired receivables must be performed, with the corresponding accounts closed where appropriate.

Receipts from receivables and payments of financial obligations must be meticulously recorded, together with the recognition of ancillary revenues and expenses such as commercial discounts or early payment rebates. VAT adjustments are carried out for all supplies made during liquidation, and corporate income tax is calculated based on the financial results at the closure of the process.

Recognition and Distribution of Net Assets. Following the settlement of all liabilities and adjustments, the accounting records must reflect the net assets available for distribution to shareholders. These assets include reimbursed share capital, unallocated legal reserves, and any net profit resulting from liquidation. Distribution is carried out according to the company's bylaws and the shareholders' respective equity participation.

From an accounting standpoint, amounts distributed to shareholders must be separately recorded from gross amounts, with the applicable tax withheld when beneficiaries are individuals. This stage involves the final transfer of patrimonial rights and the closure of equity and temporary liability accounts.

Liquidation in the Context of Bankruptcy. When an entity's assets are insufficient to satisfy all admitted claims, liquidation is conducted under the specific rules governing insolvency proceedings. In such cases, proceeds from asset realization are distributed proportionally among creditors, while uncovered amounts are recognized as irreversible losses, either for creditors or shareholders, depending on the entity's legal structure.

These differences are recorded in accounting as extraordinary income resulting from the cancellation of outstanding debts when the court orders the closure of proceedings without full recovery. Conversely, if creditors opt for voluntary closure through additional capital contributions by shareholders, such amounts are recorded as temporary equity injections and subsequently settled according to the statutory priorities.

Accounting for the liquidation of a legal entity requires a procedural approach distinct from routine operations, characterized by specific journal entries, patrimonial revaluations, and reporting tailored to the final closure of activities. In this framework, accounting professionals are entrusted with ensuring transparency and accuracy in financial communication, to the benefit of all stakeholders—shareholders, creditors, tax authorities, and judicial bodies alike. Thus, accounting rigor becomes a vital instrument in guaranteeing a fair and legally compliant liquidation process, upholding the regulatory and ethical standards of the profession.

4. Conclusions

The liquidation of companies in Romania presents a complex interplay of legal, fiscal, and accounting elements, reflecting both national specificities and European harmonization trends. The analysis confirms that the liquidation process requires a clear departure from the going concern assumption, both in financial reporting and fiscal management. Legal regulations such as Law no. 31/1990, Law no. 85/2014, and the transposition of Directive (EU) 2019/1023 establish a structured, formal framework aimed at increasing transparency, creditor protection, and economic predictability.

From an accounting perspective, the preparation of special-purpose financial statements, the revaluation of assets at realizable values, and the settlement of liabilities are essential steps to ensure procedural rigor and stakeholder trust. Fiscal regulations emphasize the reintegration of reserves, the taxation of asset distributions, and the consistent treatment of VAT, contributing to a fair and transparent closure of fiscal obligations.

Macroeconomic data from 2024, showing a notable increase in insolvencies among SMEs and high-impact companies, underline the need for improved preventive mechanisms and the modernization of restructuring procedures. Sectoral and regional disparities suggest that structural economic vulnerabilities continue to influence business survival rates in Romania.

The trend towards digitalization in legal and fiscal reporting processes, while promising, still requires further integration to fully match best European practices. In this context, ensuring strict compliance with accounting and fiscal requirements remains critical for a smooth liquidation process.

Overall, this study highlights that liquidation is not merely an administrative procedure, but a multidimensional event with significant economic, legal, and financial implications. Strengthening institutional capacity, improving early intervention frameworks, and aligning national practices with EU standards are essential for enhancing business resilience and financial system stability in Romania.

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ANALYSIS OF THE TYPE OF COMPANIES INVOLVED IN TAX FRAUD

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Abstract: *Due to the constant increase in taxpayers' tax obligations, increasingly varied methods have emerged to evade the tax provisions that establish these categories of obligations. Thus, the method of evading the payment of taxes and fees to the state budget essentially represents the evasion phenomenon.*

In 2024, tax evasion represents approximately 10% of the gross domestic product, respectively 32-33 billion euros. The causes of the tax evasion phenomenon consist in the existence of an incomplete and interpretable legislative framework with gaps and many ambiguities to the lack of education of taxpayers.

The activity by which the evading commercial company evades the payment of tax obligations related to the income obtained consists of registering unreal operations, through "buffer" or "phantom (missing traders)" type companies, operations whose value is artificially undersized or oversized, depending on the position/price practiced in the market and the extent and necessity of obtaining illicit advantages by the real final beneficiary company.

A generally accepted truth is that, although this type of phenomena can be identified by legal institutions and by applying criminal, contravention or disciplinary penalties the offender can be eliminated, the phenomenon itself cannot be eradicated, on the contrary, this type of phenomena is being improved with legislative amendments.

This article highlights and analyzes a set of cases regarding tax evasion committed by various companies through different modes of operation that outline similar fraudulent behaviors, which mainly aimed at evading the payment of tax obligations owed to the general consolidated budget of the state.

Keywords: *fraud, corruption, public procurement, contracts, public institutions, anti-corruption measures*

JEL classification: D73

1. Introduction

Following the analysis carried out on an extensive set of cases regarding tax evasion committed by various Romanian companies, a series of recurring patterns and similar fraudulent behaviors are emerging, which mainly aimed at evading the payment of tax obligations owed to the general consolidated state budget.

According to the European Commission, around €1 trillion is lost annually in the European Union through tax fraud and evasion. As a result, Member States are experiencing serious losses in budget revenues and a weakening of their tax

systems, with the damage to state budgets caused by tax fraud and evasion reaching worrying levels.

Value Added Tax (VAT) is one of the main sources of tax revenue for governments in the European Union, and generates the largest share of the losses due to tax fraud and evasion. This is also confirmed by the European Commission's study, which shows that the losses generated by the shortfall in VAT collection have reached billions of euros.

Thus, according to the latest data published by the European Commission, significant amounts of VAT revenue have been lost due to non-compliance with VAT legislation or non-collection of VAT.

According to the study by the Institute of Economic Affairs, more than half of Romania's illicit economy is fueled by tax evasion. Thus, the budget suffers annual losses of EUR 22 billion as a result of non-payment of taxes, social security contributions and income tax, with the difference of up to EUR 40 billion representing the phenomenon of "undeclared work".

In Romania in recent years, in a precarious economic context, budgetary pressures, coupled with a reactive fiscal policy and fluctuating tax legislation, have favored the worrying increase in tax evasion, which represents a risk to national security.

The purpose of registering commercial operations consisting of deliveries/purchases of goods or services from several commercial companies is to disguise the real circuit of goods/services and to place the tax obligations due to the state budget on the shoulders of "ghost companies - missing traders - bidon".

2. Analysis of an extensive set of cases of tax evasion committed by various Romanian companies

The majority of the companies involved, more than 65 in number, resorted to recording fictitious purchases in their accounting records, materialized by tax invoices issued without real economic justification. The purpose of these documents was to falsely certify the provision of services or the supply of goods which did not actually take place, with the aim of illegally deducting VAT and reducing corporation tax. Frequently, such purchases were attributed to companies with "ghost" type behavior, and the total amount of damages declared in some cases exceeded 30,000,000 lei.

Another phenomenon identified is the creation of fictitious commercial and financial circuits, involving networks of shell companies, used to disguise real transactions and transfer tax liability to "buffer" or "expendable" entities. At least 15 companies appear to have been part of such networks, some of which acted exclusively as fictitious invoice providers, actively contributing to the evasion scheme of the real beneficiaries.

Also, in around 20 cases, the companies intentionally failed to register their actual income and business operations. They carried out business activities - whether wholesale, retail, transportation or services - without recording the transactions in their accounting records, thus evading tax. This behavior was also

encountered in the case of some individuals who carried out economic activities (e.g. resale of car parts or clothing) without declaring them.

In other cases, some companies intentionally issued fictitious invoices to other companies, helping them to reduce their tax base. Their role was that of "invoice providers", without actually providing the services or delivering the goods mentioned in the documents.

A particular sector targeted by the fraud was construction services, where several companies recorded fictitious invoices for landscaping, mechanized works or purchases of car parts, based on formal contracts but without any real economic activity.

In one isolated case, a medical fraud was identified, involving fictitious billing of medicines on the basis of false prescriptions issued by a pharmacy.

In conclusion, the most common types of fraud identified are fictitious purchases recorded in the accounts, found in more than 65 cases, failure to record real income, found in around 15-20 cases, issuing invoices without real coverage, found in 10-15 cases, involvement in ghost networks or buffer/missing trader schemes, involving at least 15 companies, and the adoption of recurrent and organized evasion practices, in some cases carried out on the basis of the same criminal resolution.

All these practices were aimed at reducing the tax obligations owed to the state and generated significant damage, in some cases exceeding millions of lei. Thus, it is necessary to closely monitor fictitious commercial circuits and strengthen tax controls, especially on companies with indicators of ghost-like behavior.

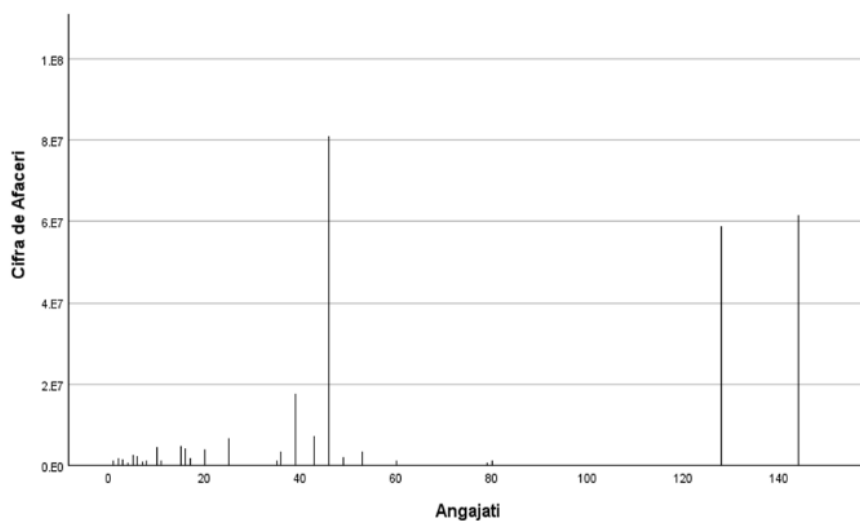
The statistical analysis of companies and institutions involved in economic criminal activities, in particular tax evasion and abuse of office, provides a clear picture of their economic profile as well as of the degree of dispersion and intensity of fraudulent behavior. The dataset examined includes relevant financial and structural indicators: turnover, net profit, debts, number of employees, VAT, corporate income tax and the amount of losses found. Summary results are presented below, accompanied by a contextualized interpretation.

3. Descriptive Statistics

Distribution of Key Indicators Reported to the Number of Employees: A Graphical Approach

	Observation	Minimum	Maximum	Average	Standard Deviation	Asymmetry	Bolters
Turnover	66	21,551	81,007,691	5,216,158.39	14,067,961.114	4.359	18.950
Profits	59	-1,086,463	2,726,281	157,140.80	492,716.833	2.899	13.426
Debts	61	33,652	73,758,671	3,915,758.36	12,177,466.864	5.193	26.886
Employees	61	1	144	19.38	29.929	2.496	6.664
TVA	61	1,658	5,806,452	456,655.51	902,432.803	4.075	20.743
Profit tax	41	0	4,137,931	182,806.46	646,834.572	6.015	37.387
Damage	68	0	9,944,383	523,132.53	1308,965.118	5.921	41.026

Figure 1 Distribution of Average Turnover by Number of Employees



Source: Author

Figure 1 shows a highly skewed distribution between the size of human resources (employees) and average turnover. Most firms are concentrated in the range 0-50 employees and have a relatively low average turnover, with a few notable exceptions that record disproportionately high values. There are three extreme values (around 40, 130 and 140 employees), which indicate firms with very

high average turnover, in some cases exceeding 80,000,000 lei. These entities can be considered as key firms in evasion networks or companies involved in large-scale fictitious operations, used for massive VAT deductions or for artificially lowering the tax base. There is also no evidence of a linear relationship between the number of employees and turnover, which means that a firm with many employees does not necessarily have higher turnover. Conversely, some firms with a very small number of employees report high turnover, which may indicate an unrealistic economic activity, typical of shell firms or fictitious trading vehicles. This dissociation between a low number of employees and high financial turnover is a typical feature of organized tax evasion and an important statistical clue in the identification of fraudulent networks.

The visual representation analyzing the average turnover as a function of the number of employees shows a clear dissociation between the actual working capacity and the volume of reported economic transactions. The presence of firms with a small number of employees but very high turnover suggests the existence of shell entities used exclusively for running fictitious operations. The lack of a direct correlation between human resources and turnover reinforces the hypothesis of a non-conforming economic operation, typical of organized tax evasion structures.

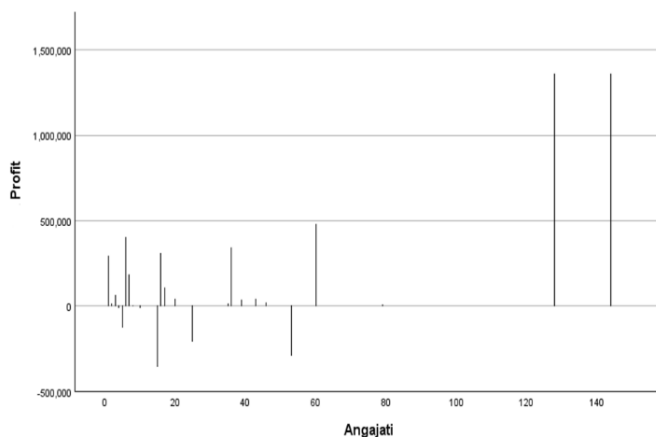


Figure 2 Distribution of Average Profit by Number of Employees
Source: Author

Figure 2 reveals a fluctuating average profit, including frequent negative values, especially for firms with fewer than 60 employees. These low or sub-zero profits may indicate the simulation of accounting losses, a common practice among companies that use fictitious invoices to artificially lower the tax base. There is also no proportional relationship between firm size and profitability. Although firms with more than 120 employees report considerably higher average profits, exceeding 1,500,000 lei, there is no clear progressive trend in profits according to the number of employees. This suggests atypical economic behavior, lacking the consistency expected in a normal fiscal context. Extreme values appear in the upper part of the

distribution, where high profit is associated with a high number of employees, which could indicate the existence of firms that have combined real economic activity with tax avoidance schemes or have been involved in high turnover and carefully manipulated profit schemes.

The graph analyzing the average profit by number of employees highlights the lack of a natural economic correlation between the size of the firm and the financial result obtained. A number of small-staffed entities record either minimal profits or significant accounting losses, indicating the use of fictitious accounting mechanisms to avoid paying corporate income tax. On the other hand, the presence of firms with a large number of employees and disproportionately high average profits in the context analyzed may reflect involvement in large-scale tax avoidance schemes or economic operations with illegal profits. These results support the hypothesis of strategic economic behavior tailored to avoid tax liabilities by artificially shaping accounting indicators.

Distribution of Turnover Among the Investigated Companies

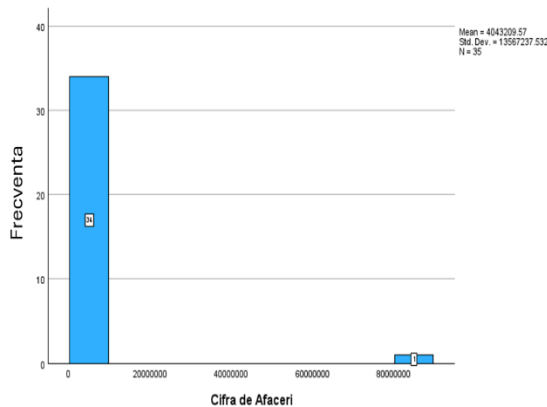


Figure 3 Distribution of Turnover Among the Investigated Companies

Source: Author

The histogram shown in Figure 3 illustrates the distribution of turnover for a sample of 35 companies investigated for tax evasion. The horizontal axis shows the variable "Turnover" (in monetary units) and the vertical axis shows the frequency (number of companies falling in each range).

The distribution is strongly positively skewed (with a long tail to the right), signaling the presence of extreme values (outliers). The majority of companies (34 out of 35) have relatively low turnovers, concentrated in a narrow range, while only one company has a significantly higher turnover, exceeding 80 million. This value considerably influences the arithmetic mean of the sample, which is about 4,043,210, while the standard deviation is very high (13,567,237) suggesting a high variability between observations.

This discrepancy indicates that the distribution is not normal and that extreme values may distort the statistical interpretation of general trends. In the context of

the analysis of tax evasion, this observation is relevant because it suggests that, although the vast majority of the companies involved are entities with modest turnovers, there are isolated cases of large companies committing large-scale acts. It is therefore recommended to use more robust central tendency indicators (such as the median) and possibly apply log transformations or robust analysis methods to mitigate the influence of outliers in further analysis.

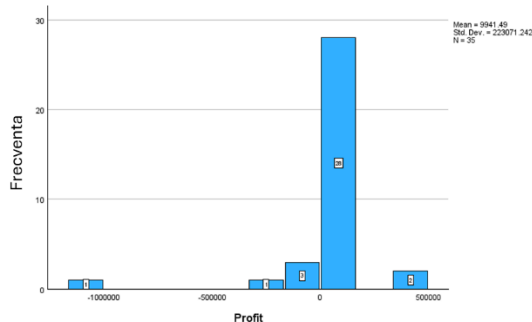


Figure 4 Profit Distribution Among the Investigated Companies

Source: Author

The histogram shown in Figure 4 reflects the distribution of profit values (expressed in monetary units) for a sample of 35 companies involved in tax evasion cases. The X-axis shows the profit, and the Y-axis the frequency, i.e. the number of companies falling in each value range.

The data show a significant concentration around values close to zero: 28 of the 35 companies ($\approx 80\%$) reported very low profits or negative/marginally positive values. There are also isolated cases of companies with large losses (below -1.000.000) or significant profits (up to 500.000), which denotes an asymmetric distribution, with outliers in both extremes.

The arithmetic mean profit is about 9.941, but this is of little relevance in the context of a highly dispersed distribution, given also the high value of the standard deviation (223.071). These results suggest that although most companies operate close to break-even, there are also entities that have made significant profits or losses, possibly as a result of accounting manipulations associated with tax evasion activities.

Thus, the distribution confirms the hypothesis that many of the companies involved in such acts operate with either very low margins or artificially negative or positive margins, indicating potential tax avoidance mechanisms through distorted reporting of financial results.

4. In conclusion

Strict monitoring, increased transparency, staff training and investment in cybersecurity are essential to reduce the risks of fraud in e-procurement. Creating a clearer and more effective legislative framework can also help fight fraud.

The phenomena of corruption and fraud affect and violate the duties of public officials and create imbalances among communities, disrupt social relations both at the personal and institutional levels, influencing the discrediting of the prestige and authority of public institutions with an impact in the sphere of administration and justice.

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PRINCIPAL METHODS OF PREVENTION CORRUPTION AND FRAUD IN PUBLIC PROCUREMENT

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Abstract: *In this article, we will analyze the mechanisms for combating corruption and fraud in Romania, taking into account the assessment of best practices, including operational capacities, efficiency of integrity mechanisms, control and sanctions. The phenomena of corruption and fraud in public procurement in Romania as well as the existence of these phenomena in more developed countries. The analysis was based on general literature on the phenomena of fraud and corruption, including the legal framework regulating these phenomena, taking into account the assessment of best practices, including operational capacities, effectiveness of integrity, control and sanction mechanisms. Bribery in public procurement is “embedded” in a general system of corruptible behaviors covering all categories of business, public and private. This report therefore attempts to provide - in part two - an assessment of the risks of corruption in public procurement. EU, World Bank and Transparency International data and reports have been taken for documentation. The main warning indicators can be listed as follows: bribery and illegal commissions; conflicts of interest; bid rigging; bid rigging; fictitious companies; disclosure of bid information; unbalanced bidding; bid rigging; manipulation of the bidding procedure; unjustified single-source and differentiated procurement; rigged specifications; exclusion of qualified bidders; unnecessary procurement and procurement fraud in contract implementation. In Romania, the development of corruption and fraud phenomena in the field of public procurement has a negative impact on the absorption of European funds and their existence is due to the inefficiency of the control system in the field of public procurement, which does not ensure effective monitoring and has a negative influence on the budgets of public entities.*

Keywords: *fraud, corruption, public procurement, contracts, public institutions, anti-corruption measures*

JEL classification: D73

1. Introduction

Public procurement is an important aspect of public investment that stimulates economic development, accounting for approximately 14-19% of the European Union's GDP (https://single-market-economy.ec.europa.eu/single-market/public_procurement_en). As central/local public authorities procure goods, services and

works from the public budget for the good functioning of the community, this must be done in the most efficient, effective, economical and fair way possible.

2. The main methods of fraud in the field of public procurement

Public procurement is one of the most attractive avenues for fraud and corruption because public procurement uses money from the public budget, money from taxpayers, to provide goods and services.

The organization Transparency International estimates that losses in public contracts due to corruption account for between 20% and 25% of the contract value and up to 50% in some cases (Volosin 2015).

Among public administration, public procurement is the process containing the highest risks of illegality, which can occur at virtually any stage of the procurement process of goods, services or construction works (Rustiarini et al. 2019). Offenses in this context are elaborate and refined, involving schemes such as abuse of power, corruption, speculation, bribery, favoritism, nepotism and embezzlement (Padhi & Mohapatra 2011). In this sense, these offenses are difficult to detect and measure (Mufutau & Mojisola 2016), especially after the award of public procurement contracts. As such, well-defined legislation is not sufficient to circumvent public procurement crime, and mechanisms to prevent it are often inadequate (Wensink & Vet 2013).

The implementation of e-procurement in the last decade has allowed and theoretically led to greater transparency of the public procurement process, as information is accessible to all interested parties. Another benefit of the electronic use of public procurement procedures is the decrease in the costs of conducting procurement procedures.

However, the fraud of public procurement procedures in tandem with corruption has adapted to the electronic process of public procurement, and mechanisms of fraud of the public budget have been identified at all stages of the public procurement process through simulation, circumvention/disguise of the procurement process by members of the "organization" (e.g. public institution belonging to local public administration (town halls, county councils, institutions subordinated to them, etc.). The institution represents the location of the corrupt act.

The main members who play a key role in the fraudulent procurement process, while at the same time being involved in acts of corruption, are:

- the public official who usually holds a decision-making position (ex. Head - elected or appointed, responsible for budget management - economic director, etc);
- the public institution or contracting authority where the fraudulent activity is taking place the process of procurement fraud and at the same time the act of corruption by offering bribes or other tangible benefits offered to corrupt the recipient.

Public procurement is one of the sectors most vulnerable to fraud and corruption. According to a study conducted by the World Economic Forum (<https://www.oecd.org/gov/ethics/48994520.pdf>), bribery in public procurement

alone accounts for 10-20% of total contract costs, which unjustifiably and illegally increases the public administration's expenditure by the value of the bribe offered. Thus, the public administration in this case spends 10-20% more of taxpayers' money, without any added value for the citizens (the amounts represent an illegal enrichment of the representatives with public duties who are guilty of bribery). "Because governments around the world spend about 4 trillion dollars each year to purchase goods, services and works, a minimum of 400 billion dollars a year is lost to bribery" (Peter Eigen, 2002, <https://www.transparency.org/en/cpi/2002>).

Given the poor management of these archaic phenomena in public procurement, the price paid by government for goods, services and works is unduly increased, impacting on the size of public expenditure and therefore affecting taxpayers' resources. Equally important is also the fairness and transparency of the entire procurement process which otherwise leads to poverty and inequality among the population (Gupta, S. et al., 2002).

Efforts have been made to implement good governance principles in the public procurement process at both national and international levels, with a particular focus on developing criteria for the design and award of procurement contracts.

As it follows from international practice, Directive 2014/24/EU, refers to the introduction of new monitoring and reporting requirements (the obligations covered in Art.83-85). The new obligations refer to " Each Member State shall transmit to the Commission, by April 2017, and every three years thereafter, a monitoring report including information on the prevention, detection and adequate reporting of cases of fraud, corruption, conflicts of interest and other serious irregularities in public procurement. On the basis of the reports received from the Member States, the Commission regularly publishes a report on the implementation and best practices on national public procurement policies in the internal market". In relation to public procurement, Member State governments are obliged to implement additional measures to combat corruption, including in relation to public procurement procedures.

Measures to prevent corruption Law no. 98/2016 on public procurement provides for the importance of preventing, identifying and combating situations related to conflicts of interest, aspects stipulated in art. 58 which obliges the contracting authority thus "to take all necessary measures to prevent, identify and remedy situations of conflict of interest, in order to avoid distortion of competition and ensure equal treatment for all economic operators".

However, public procurement procedures tend to be rigged in order to obtain unjustified and illegal advantages. The underlying elements of public procurement fraud are opportunity, financial pressure and justification.

For example, as a form of fraud in public procurement is the conflict of interest that arises when the public official responsible for public procurement procedures makes advantageous decisions for personal gain.

It should be noted that the provisions of the European directives transposed and legislated in the national legal framework combat fraud, in particular conflict of interest, so that the European Commission is proposing clear recommendations on conflict of interest. At the same time public procurement is a breeding ground for corrupt activities and other practices such as favoritism and bribery. Corrupt activities could be exemplified by bribery, illegal commissions, discrepant bids,

influencing an official act by offering/receiving benefits, officials with responsibilities in the procedure providing confidential information only to certain participants, information unavailable to other participants, manipulation of bids by selecting/canceling/modifying bids on false grounds, etc.

In general, conflict of interest is defined as any situation in which a person exploits his or her professional or service capacity for personal gain.

According to European Union legislation on conflict of interest situations, the Financial Regulation (Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council of October 25, 2012 on the financial rules applicable to the general budget of the Union and repealing Regulation (EC, EURATOM) No 1605/2002, OJ L 298, 26.10.2012) with its implementing rules (Regulation (EU) No 1268/2012 on the implementing rules for Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council on the financial rules applicable to the general budget of the Union, OJ L 362, 31.12. 2012) Articles 57 and 32 respectively stipulate the following "Financial actors and other persons involved in the management and implementation of the budget, including preparatory acts, audit and control of the budget, shall not take any measures which may bring their own interests into conflict with those of the Union. (...) 2. For the purposes of paragraph 1, there is a conflict of interest where the impartiality and objective exercise of the functions of a financial actor or other person as referred to in paragraph 1 is compromised for reasons involving family, emotional life, political life or national affinity, economic interest, or any other interest shared with a recipient."

For the purposes of Article 57 of EU Regulation 966/2012, acts that could constitute conflicts of interest may take the following forms:

- Giving to oneself or to another person undue direct or indirect advantages;
- Refusing to grant a beneficiary rights/advantages to which he/she is legally entitled;
- committing abusive acts or failing to comply with mandatory acts.

According to ANAP Strategy (<http://anap.gov.ro/web/wpcontent/uploads/2015/12/Strategia-Nationala-Achizitii-Publice-final.pdf>) in order to prevent and remedy conflicts of interest, contracting authorities have the following obligations:

- Inclusion of the entire procurement process and contract management;
- Compliance with EU directives as well as national public procurement legislation;
- inclusion of a dedicated chapter for conflict-of-interest declarations;
- Inclusion of a paragraph on bribes/invitations etc. which could be a means of influencing the procurement process (these could occur both during and after the procedure);
- Recording all cases of conflict of interest and how to deal with them;
- Including sanctions to discourage conflicts of interest;
- Dealing with Pantouflage (situations where employees leave a public sector organization, in particular from a position in government or local government).

In terms of preventing and combating corruption in public procurement procedures, we can list the following ways to achieve this:

- Review of the national legislative framework after prior consultation with the authorities competent in the detection and sanctioning of fraud and corruption in public procurement;

- Transparency of the public procurement file by making the file easily accessible to the general public, which requires clear mentions in the national public procurement legislation establishing;
- Transparency of the public procurement contract by eliminating clauses such as "confidentiality of the contract" even when it is not the case prohibiting the publication of the contract. This *modus operandi* has been used to hide extremely damaging deals for the public budget. Access to these contracts has often resulted in media scandals due to unfair treatment of the public interest, often resulting in criminal cases for those involved.
- A public register of all public procurement, covering all public procurement files carried out by the entity, including framework contracts. By giving the general public access to these files, it would be easy to cross-check existing data from the Trade Register in order to identify the real beneficiaries of the deals that have seriously damaged the state budget. The business environment complains that major tenders are won by companies owned by party members or their interlocutors or companies which make substantial contributions to electoral campaigns, which clearly shows that the objective of transparency in public procurement in Romania by ensuring free competition on the market for all competitors is not being achieved. The justification used by the authorities for directing major contracts to 'home-grown' firms is usually the trust placed in the company by the head of the contracting authority. In fact, public procurement procedures are directed only to "pet" (party-friendly) companies, which leads to the destruction of the economic environment.
- Professionalization of civil servants in public procurement by creating a body of experts in this field.
- Making purchases by the principal authorizing officer - and then passing them on to third parties. For this option to be put into practice, it is not enough to amend the law on public procurement, but also the law on local public finance, which would allow transfers between public entities in order to carry out procurement in a centralized system. As far as the choice of the most advantageous offer is concerned, the most advantageous offer from a technical and economic point of view should be taken into account when determining the most advantageous offer.
- Implementation of transparent operating regulations and operational procedures and application of effective internal working procedures;
- Training of responsible officials on irregularities, fraud, conflict of interest, etc.;
- Use of contractual models that do not allow the contractor to easily request additional;
- Training of responsible officials on irregularities, fraud, conflict of interest, etc.;

The use of contract models that do not allow the contractor to easily request additional works and the establishment of clauses that allow penalties for non-performance of works/services/goods;

One of the main sources of financing in Romania is the National Local Financing Program, a multiannual financing program with the general objective of equipping administrative-territorial units with the technical and infrastructural facilities

necessary to increase the attractiveness of the investment climate of Romanian localities.

Map of PNDL allocations for the period 2015-2023, respectively PNDL 1 - 2015-2024 or PNDL 2 = 2017-2024. Funding before 2015, when the PNDL became a multi-annual program, is not included.

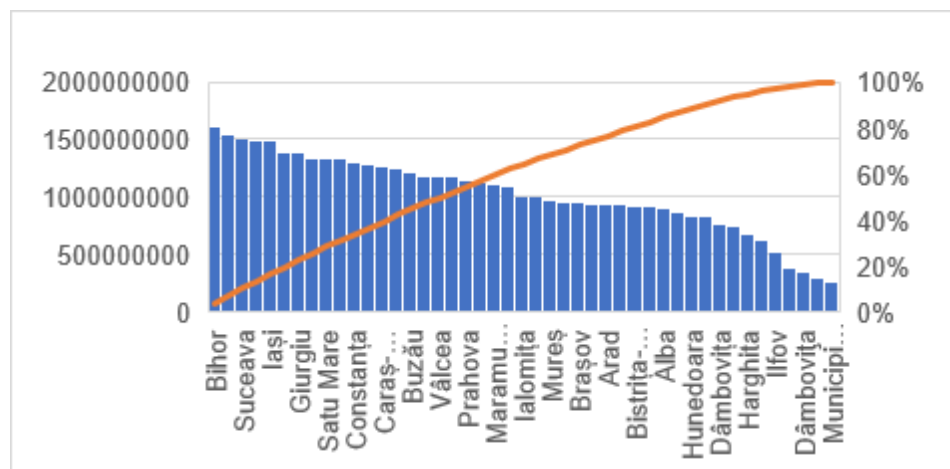


Figure 1. PNDL during 2015-2024

Source: own processing based on data taken from websites: mlpda.ro, data.gov.ro, sicap.ai, e-licitatie.ro

The projects carried out through PNDL 1 and PNDL 2 consist of water supply; other areas; water and sewerage; sewerage; county roads; municipal roads and streets; kindergartens and nurseries; public lighting; public institutions; cultural objectives; bridges and culverts; schools and health facilities.

3. In conclusion

In order to prevent and discourage these phenomena, specialized studies show that anti-corruption measures in public procurement depend on an understanding and analysis of the practices and policies established at the government level by carrying out annual checks and auditing of institutions that carry out a large number of purchases. However, unfortunately, a way to prevent such checks and to block anti-fraud and anti-corruption measures arises from the political environment, given that politicians are “interested” factors in public procurement systems, being directly involved in fraud and corruption regarding public procurement, which is why they legislate to block, diminish and/or reduce the powers of institutions with control responsibilities in combating fraud and corruption (Della Porta and Vannucci, 2007, p. 832) or/and legislate normative acts favorable to the phenomena of fraud and corruption.

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CULTURAL ROOTS OF TAX EVASION: A CROSS-COUNTRY STUDY

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Abstract: *Tax evasion remains a persistent challenge with major implications not only for national budgets but also for the development of a fair and functional society. This paper explores tax evasion through the lens of cultural, psychological, and institutional variables, with a specific focus on post-communist countries. Our research is grounded in the hypothesis that historical context, low trust in public institutions, and a legacy of informal practices visibly influence tax morale and the willingness to comply with fiscal obligations. To test this, we conducted a comparative analysis using one group as representative of post-communist states and another one as non-communist. The study is also supported by an empirical investigation. We analyzed and collected data from participants using a mixed method, combining descriptive statistics and regression models.*

Keywords: *tax compliance behavior, tax evasion, tax morale, history and influences on tax attitudes, tax perception*

JEL Classification: *H26; H71; H30;*

1. Introduction

Taxation serves as a crucial pillar in the structure of an economy. Tax evasion remains a critical issue, as it undermines the efficiency of tax administration and it impacts not only the cost of collecting taxes but also the way that the tax burden is distributed and can be understood as a violation of public trust, where individuals or entities intentionally cheat tax authorities to evade their responsibilities to society (Smith, 1776).

Tax morale—described as the intrinsic motivation to pay taxes—has an important role in the functioning of a taxation system. (Torgler, 2007). In Eastern Europe, historical and institutional legacies from communism—such as state inefficiency and public distrust—continue to impact tax morale and evasion rates. The two essential components of a modern and effective tax system—self-filing and voluntary compliance—were clearly absent after the collapse of socialism (Martinez-Vazquez & McNab, 2000).

This paper investigates tax evasion in post-socialist Eastern European countries, emphasizing how historical and institutional factors continue to shape compliance attitudes in transitional economies.

2. Theoretical Framework

The theoretical foundation draws from new institutional economics theory, which posits that institutional quality fundamentally shapes economic behavior and outcomes. This study builds upon North's (1990) framework of institutional constraints and Acemoglu and Robinson's (2012) distinction between inclusive and extractive institutions. North's framework helps explain why institutional quality is a key determinant of tax behavior. By influencing both the costs and benefits of compliance and evasion, institutions effectively shape the strategic choices taxpayers make—either reinforcing a culture of compliance or enabling a norm of avoidance. Path dependence represents a central concept in understanding post-communist taxation challenges. North's institutional theory emphasizes that historical experiences create lock-in effects that constrain future institutional development. Post-communist societies experienced what Acemoglu and Robinson (2012) characterize as extractive institutional arrangements, where political and economic institutions served elite interests rather than broad-based development. These extractive legacies create persistent effects on citizen attitudes toward state authority and tax obligations. The concept of institutional complementarity explains why multiple institutional weaknesses cluster together in post-communist contexts.

3. Literature Review: Tax Evasion and Compliance Behavior

3.1 The Role of Social Norms, Tax Morale and Fairness

Academic research investigating tax evasion and compliance behaviors has evolved beyond purely economic explanations, now recognizing that social norms and psychological factors play crucial roles in determining whether individuals fulfill their tax obligations. The decision to evade taxes is not only based on a rational calculation of costs and benefits, as suggested by the traditional deterrence model (Allingham, Sandmo, 1972).

Social norms operate as critical mediating mechanisms linking institutional characteristics to individual compliance behavior (Kirchler, 2007). Descriptive norms reflect perceived behavioral prevalence, where beliefs about widespread evasion ("everyone evades taxes") create social validation for non-compliance (Cialdini et al., 1991). Injunctive norms embody moral prescriptions establishing compliance as civic duty (Wenzel, 2004). These norms interact reciprocally: erosion of injunctive norms weakens descriptive compliance, while perceived widespread evasion undermines moral obligations, creating potential downward spirals in compliance cultures.

Tax morale emerges from this normative foundation, reflecting dynamic assessments of institutional reciprocity—the perceived balance between citizen contributions and state provisions (Lomsadze, 2021). This reciprocity principle explains systematic variations across political systems, with post-communist societies often exhibiting lower baseline levels due to historical experiences of state dysfunction. Trust in the state—particularly the belief that taxes are spent efficiently and equitably—strengthens tax morale (Kirchler & Wahl, 2008). If individuals believe that the tax system is just, transparent, and equitable, they are more likely to comply

(Torgler & Schneider, 2009). "Taxpayers will feel cheated if they believe that corruption is widespread and their tax burden is not spent well" (Torgler, 2011, p. 26).

Fairness perceptions function as proximate predictors of tax morale through three interconnected dimensions. Distributive fairness concerns equitable burden allocation, triggering social comparison processes when violated. Procedural fairness encompasses transparency and consistency in tax administration, influencing institutional trust. Interactional fairness involves respectful treatment by authorities, affecting emotional responses to compliance encounters. These forms of unfairness affect individuals differently: distributive injustice can lead to feelings of deprivation, procedural injustice erodes trust in legitimacy, and interactional injustice triggers negative emotions that may foster anti-system sentiments.

3.2 Psychological Mechanisms and Cognitive Biase

Individual compliance decisions occur within institutional contexts but are further shaped by systematic cognitive biases that interact with institutional quality. Prospect Theory, introduces (Kahneman & Tversky, 1979) loss aversion, the idea that people are more motivated to avoid losses than achieve gains. In this context, taxes are perceived as a loss, particularly in countries where citizens distrust government spending and this perception increases the idea of evasion.

Optimism bias leads to systematic underestimation of detection probability. Weinstein (1980) found that individuals consistently underestimate their risk of detection. In countries with historically weak tax enforcement, like many post-communist states, this bias can reinforce non-compliance.

Moral disengagement, a concept developed by Bandura (1999), describes how individuals justify unethical behavior by distancing themselves from moral standards. In the context of taxation, taxpayers may rationalize evasion by blaming government corruption ("They waste public money anyway"), minimizing their own impact ("One person won't make a difference"), or shifting responsibility ("Everyone does it").

These mechanisms interact dynamically: weak institutional legitimacy erodes injunctive norms, increasing descriptive norm perception of evasion, activating optimism bias, and facilitating moral disengagement. Cross-cultural research reveals systematic variations—Nordic countries with high institutional trust maintain strong injunctive norms despite lenient enforcement, while post-communist societies demonstrate particular vulnerability to moral disengagement due to historical legitimacy deficits.

3.3 From Control to Collapse—Historical Legacies and Institutional Transitions

Post-communist countries experienced an unprecedented institutional disruption through abrupt shifts from centralized to market economies, causing economic instability, hyperinflation, and institutional weakness. Romania and Bulgaria, for example, faced inflation rates over 200% in the early 1990s and severe financial crises (Charles, S., 2017). Weak rule of law institutions, characterized by slow judicial processes and normalized corruption across governmental levels, created environments where institutional trust could not develop organically. These historical

conditions established deep-rooted distrust in governmental authority that continues to undermine tax morale decades after initial transition. Trust in government—recognized as foundational for voluntary tax compliance—remains fragile in these societies (Mongelli, 2004). Contemporary challenges reflect these persistent legacies, as illustrated by observations that corruption control represents "the key to everything that is going on now in Romania" (Andreev, 2009, as cited in Torgler, 2011, p. 378).

4. Research Design and Data

4.1 Methodological Framework

This study employs a quantitative comparative case study design examining institutional quality differences between post-communist countries (Romania and Bulgaria) and established Western democracies (France and Ireland). The research utilizes Lijphart's (1971) most different systems design to isolate institutional variables while controlling for confounding effects. This methodological approach is particularly appropriate for investigating how historical institutional legacies influence contemporary governance outcomes and, by extension, tax compliance behaviors. The selection criteria prioritized: (1) sufficient data availability across all institutional indicators, (2) comparable development levels within regional contexts, and (3) representation of distinct historical-institutional trajectories that theoretically influence tax compliance behavior.

4.2 Data Sources and Indicators

Secondary data were obtained from World Bank Worldwide Governance Indicators and The Global Economy Database. Seven institutional indicators were selected based on theoretical relevance to tax compliance: Government Effectiveness, GINI Inequality Index, Corruption Perception, Informal Economy, Rule of Law, Uneven Economic Development, and Public Services. These indicators capture different dimensions of institutional quality relevant to tax compliance. Government Effectiveness measures administrative capacity and policy implementation quality. Corruption Perception reflects institutional integrity and trust. Rule of Law captures legal institutional strength and predictability. Public Services quality measures state capacity for service delivery. The Informal Economy indicator reflects the extent of economic activity outside formal institutional frameworks, serving as a proxy for institutional effectiveness in economic governance. All indicators utilize standardized ranking scales (1 = best performance, 27 = worst performance) enabling direct cross-country comparisons and quantitative analysis.

5. Statistical Methods

5.1 Econometric Model

The analysis employs a random-effects generalized least squares (GLS) regression model to account for unobserved heterogeneity between country groups: $Y_{it} = \alpha + \beta X_{it} + u_i + \varepsilon_{it}$

Where Y_{it} represents institutional quality indicators, X_{it} denotes country group membership, u_i captures country-specific random effects, and ε_{it} represents idiosyncratic error terms.

5.2 Testing Procedures

Statistical analysis incorporates multiple analytical approaches to ensure robust findings. Descriptive statistics and two-sample t-tests assuming unequal variances to test group mean differences, Pearson correlation coefficients to examine relationships among institutional variables. Model diagnostics include F-tests for random effects significance and variance component analysis to assess the proportion of variance attributable to systematic group differences versus random variation.

6. Statistical Results

6.1. Model Diagnostics

The random-effects GLS regression incorporates 14 observations across 2 country groups with strong model performance. Key diagnostic statistics include: correlation between random effects and predicted values ($\text{corr}(u_i, Xb) = 0.67$), overall model significance ($\text{Prob} > F = 0.0000$), variance components ($\sigma_u = 2.11$, $\sigma_e = 3.79$), intraclass correlation coefficient ($\rho = 0.236$), and random effects significance test ($F(6,7) = 5.42$, $\text{Prob} > F = 0.0012$).

6.2 Comparative Institutional Analysis and Statistical Analysis Results

Tabel 1. Institutional Quality Indicators by Country

Indicator	Romania	Bulgaria	France	Ireland
"Government effectiveness"	27	26	10	6
"Gini inequality index"	20	27	11	14
"Corruption perception"	25	26	11	6
"Informal Economy"	20	26	5	4
"Rule of law"	22	27	12	6
"Uneven Econ. Development"	26	27	14	6
"Public Services"	27	24	5	10

Source: Author

Preliminary analysis of these indicators reveals a distinct pattern. Romania and Bulgaria consistently exhibit higher (worse) rankings across most indicators, suggesting lower institutional trust, higher perceived corruption, and weaker public service systems. This aligns with the expectation that legacies of communism and

subsequent transitions impact institutional quality. Conversely, France and Ireland demonstrate more favorable rankings for all indicators.

Table 2. Random-Effects GLS Regression

corr(u_i, Xb) = 0.67 Prob > F = 0.0000

Indicator Std. Dev.2	T	Mean1 P> t	Variance1	Std. Dev.1	Mean2	Variance2
-----+-----						
Govern. effect.	26.5	0.5	0.71	8	8	2.83
GINI index	23.5	24.5	4.95	12.5	4.5	2.12
Corrupt percep.	25.5	0.5	0.71	8.5	12.5	3.54
Informal Econ.	23	18	4.24	4.5	0.5	0.71
Rule of law	24.5	12.5	3.54	9	18	4.24
Uneven Econ.Dev	26.5	0.5	0.71	10	32	5.66
Public Services	25.5	4.5	2.12	7.5	12.5	3.54

Pearson Correlations:

Gov. Eff. / GINI = 0.84577

Corruption / Informal Economy = 0.96940

Public Services / Uneven Econ. = 0.85461

sigma_u | 2.11

sigma_e | 3.79

rho | 0.236 (fraction of variance due to u_i)

F test that all u_i = 0: F(6, 7) = 5.42 Prob > F = 0.0012

Random-effects GLS regression Number of obs = 14

Group variable: country_group Number of groups = 2

**Significant at p < 0.05, -1 (perfect negative correlation) to +1 (perfect positive correlation), with 0 indicating no correlation*

Source: Author

The descriptive statistics reveal consistent patterns of institutional under-performance in post-communist countries across all seven indicators. Mean differences range from 11.0 points (GINI Inequality) to 18.5 points (Informal Economy), representing substantial effect sizes that exceed one standard deviation in most cases. These large effect sizes suggest practically significant institutional gaps beyond statistical significance considerations.

Post-communist countries show higher institutional dysfunction scores, with means scores from 23.0 to 26.5 compared to another group ranging from 4.5 to 12.5. The high differences provide empirical evidence for persistent institutional legacy effects, suggesting that three decades of post-communist transition have not eliminated fundamental institutional gaps.

7. Interpretation and Discussion

7.1 Model Performance and Group Effects

The random-effects GLS model demonstrates strong explanatory power with 67% correlation between composite errors and predicted values. The intraclass correlation coefficient ($\rho = 0.236$) indicates that 23.6% of total variance is attributable to systematic country-group differences, providing empirical support for historical-institutional legacy effects. The significant random effects test ($p = 0.0012$) confirms systematic institutional differences between post-communist and non-communist countries beyond random variation.

7.2 Institutional Legacy Effects

Post-communist countries exhibit consistently inferior institutional performance across all indicators, with effect sizes ranging from 11.0 to 18.5 points. Public Services achieves statistical significance ($p = 0.0400$), while Government Effectiveness ($p = 0.0553$), Corruption Perception ($p = 0.0828$), Informal Economy ($p = 0.0948$), and Rule of Law ($p = 0.0611$) approach marginal significance. The magnitude of observed differences exceeds what might be expected from temporary transition costs or short-term adjustment challenges. These substantial differences persist three decades after communist system collapse, providing strong empirical support for institutional path dependence theories emphasizing the persistence of historical legacies.

7.3 Institutional Clustering and Complementarity Effects

High intercorrelations among institutional variables provide empirical evidence for institutional complementarity theory. The exceptionally strong correlation between corruption perception and informal economy ($r = 0.969$) demonstrates near-perfect association, supporting theoretical predictions linking institutional trust to tax compliance behavior. Government effectiveness strongly correlates with income inequality ($r = 0.846$), while public services correlate with uneven development ($r = 0.855$), indicating that institutional deficiencies cluster systematically rather than occurring independently.

7.4 Supporting Empirical Evidence - Path Dependence

The relevance of this comparative framework receives support from prior empirical studies examining tax morale in Eastern European contexts. Torgler (2011) documents persistently low tax morale in Romania and Bulgaria between 1999 and 2008, with Romania exhibiting the lowest scores among Eastern European countries. Using Wilcoxon rank-sum tests, Torgler identified significant tax morale declines in 7 of 10 examined countries, including Romania, while some countries like Hungary demonstrated improvement over the same period. Despite various reform efforts, Bulgaria similarly lagged behind regional averages.

These empirical findings highlight the critical relationship between corruption control, institutional effectiveness, and citizen attitudes toward taxation. As Uslaner (2007, p. 36, as cited in Torgler, 2011) observes, "There may be less reason for Romanians to have faith in their leaders, who have been unable to control corruption

or to bring its citizens prosperity," illustrating how institutional performance directly affects tax morale and compliance behavior.

The systematic clustering of institutional weaknesses in post-communist countries supports path dependence theory, suggesting that historical legacies create persistent institutional patterns transcending individual country characteristics. The near-perfect correlation between corruption and informal activity particularly supports fiscal psychology theories linking institutional trust to voluntary tax compliance.

These findings suggest that improving tax compliance in post-communist contexts requires comprehensive institutional reforms addressing governance effectiveness, corruption control, and public service quality.

8. Survey Analysis of Tax Morale and Perception

8.1 Methodology

A structured survey captured individual-level perceptions on tax compliance and institutional trust, distributed online between March 15-April 15, 2025, using convenience and snowball sampling. The sample comprised 65 respondents from eight countries: post-communist (Hungary, Romania, Bulgaria, Poland; $n=37$) and non-communist (France, Ireland, USA, Netherlands; $n=28$). The survey employed 5-point Likert scales measuring tax system fairness, government trust, perceived evasion prevalence, compliance attitudes, and hypothetical evasion behavior.

The following hypothesis guided the analysis:

Q₁: Which statement best reflects your view on tax compliance?

Q₂: How common do you think tax evasion is in your country?

Q₃: If you had the opportunity to evade taxes without legal consequences, would you?

8.2 Statistics, Results and Interpretations

Table 3. Descriptive Statistics

Dimension		Post-Communist	Non-Communist
Tax System Fairness		M=4.30 (SD=0.70)	M=2.11 (SD=0.79)
Government Trust		M=2.78 (SD=0.42)	M=1.68 (SD=0.72)
Perceived Evasion		M=3.57 (SD=0.55)	M=1.93 (SD=0.72)

Source: Author; Higher scores indicate more negative perceptions

Post-communist respondents consistently report lower fairness, trust, and higher perceived evasion, with differences exceeding two scale points on fairness measures.

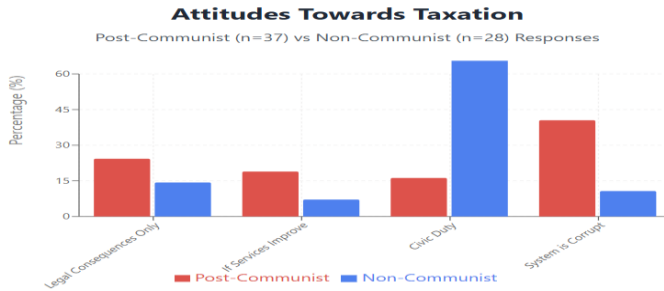


Figure 1. Tax Compliance Attitudes

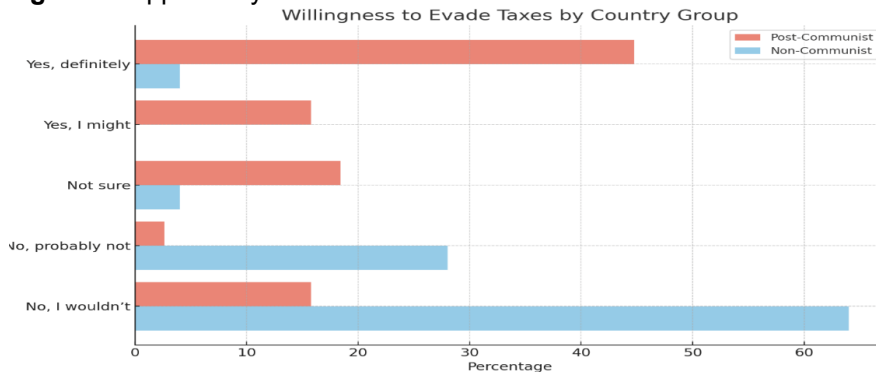
Source: own calculations

Table 4. Partial Results

Civic Duty	Non-communist respondents show much higher rates (67% vs 16% post-communist) of viewing tax payment as a civic duty
Corruption Concerns	40.5% believe system is corrupt (vs 10.7% non-communist) - nearly 4x higher

Source: own calculations

Figure 2. Opportunity to Evade



Source: own calculations

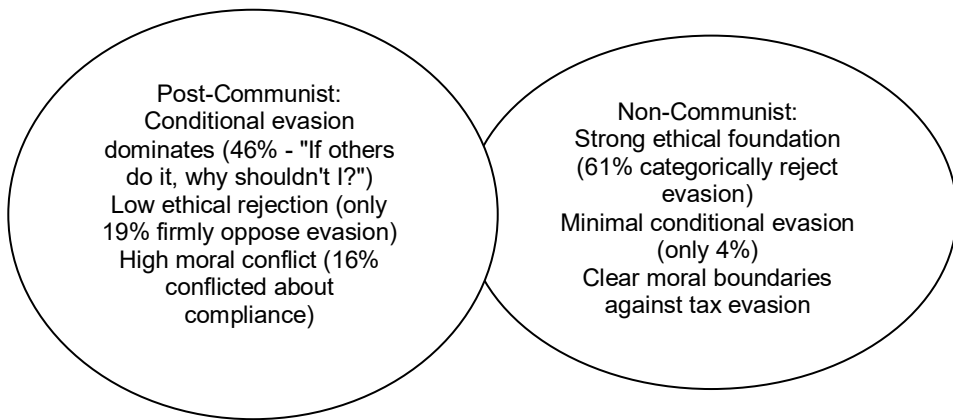


Figure 3. Visualization of clusters

Source: own calculations

The key findings reveal post-communist respondents view compliance instrumentally (corruption, consequences, conditions), while non-communist respondents embrace normative civic duty). Complete attitude reversal - post-communist respondents most likely to conditionally evade (46%) vs. non-communist most likely to categorically reject evasion (61%), and non-communist respondents show much higher rates of viewing tax payment as a civic duty.

Countries with stronger institutions and higher trust elicit higher tax morale. In practical terms, respondents from well-governed, non-communist contexts expressed a strong sense of duty and reported more voluntary compliance, whereas lower-trust environments breed conditional attitudes and reliance on deterrence.

8.3 Integration with Macro-Level Data

Survey findings align remarkably with objective institutional quality indicators. Country-level data reveals systematic differences: post-communist countries (Romania, Bulgaria) consistently exhibit worse institutional rankings across all seven indicators, with Government Effectiveness scores of 26-27 versus 6-10 for non-communist countries (France, Ireland).

Random-effects GLS regression confirms these groups differences are statistically significant ($F=8.974$, $p=0.0553$ for Government Effectiveness; $F=6.174$, $p=0.0400$ for Public Services). The substantial difference in perceived tax fairness (4.30 vs 2.11) directly correlates with objective Government Effectiveness performance ($M=26.5$ vs $M=8.0$). High correlations between corruption perception and informal economy ($r=0.97$) and between government effectiveness and inequality ($r=0.85$) demonstrate institutional coherence within country groups.

This convergence between individual perceptions and institutional quality measures validates both measurement approaches and confirms that citizens' tax morale accurately reflects underlying governance realities, supporting theories linking institutional quality to civic attitudes.

9. Limitations and Future Research

The analysis is constrained by limited sample size ($N = 4$) affecting statistical power, cross-sectional design preventing temporal analysis, and reliance on perception-based indicators potentially introducing cultural biases. The convenience sampling method and small sample size ($n=65$) limit generalization. Future research should employ probability sampling, larger samples, and longitudinal designs to confirm these preliminary findings.

10. Conclusions

Despite certain limitations, the alignment between individual-survey data responses and country-institutional indicators provides confidence in observed trends. The findings highlight effects of historical institutional legacies on tax morale and underscore the critical importance of governance quality and social norms in fostering voluntary tax compliance. Results suggest that post-communist countries require comprehensive institutional reforms addressing trust and legitimacy, not merely enforcement mechanisms, to achieve sustainable improvements in tax compliance. The goal of this research was to assess the relationship between cultural factors, institutional trust, and tax evasion in post-communist and non-communist countries. The results highlight a relevant difference in tax morale and tax compliance between these two groups.

Findings support the hypothesis that the historical legacy of the socialist regime, characterized by high corruption and economic issues from the transition period, continues to affect citizens' trust in government institutions.

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AUDITING THE COUNTRY-LEVEL TAX COMPLIANCE SITUATION: RECENT FINDINGS FOR THE CASE OF ROMANIA

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Abstract: *This paper analyzes the recent state of tax compliance in Romania through a detailed assessment (external public audit) of the specific activities carried out by the National Agency for Fiscal Administration (ANAF). The study is structured into four main sections: an introduction covering key budgetary aspects, an overview of ANAF's organization, functions, and performance, an analysis of the audit conducted by the Romanian Court of Accounts (for the 2022 fiscal year, audited in 2023), and a set of recommended measures to enhance ANAF's efficiency in mitigating tax non-compliance risks. The external public audit identified significant irregularities in tax revenue collection and administration, revealing systemic deficiencies that hinder effective fiscal governance. The audit's key findings include procedural gaps, legislative shortcomings, and ineffective digitalization strategies. Based on these findings, the study proposes legislative and operational improvements, investments in digital infrastructure, and the optimization of risk management. These recommendations aim to strengthen ANAF's capacity to ensure tax compliance, reduce the budget deficit, and develop a transparent and efficient tax system. The conclusions emphasize the importance of proactive reforms in fiscal policy and enhanced institutional oversight for the sustainable management of public finances.*

Keyword: *National Agency for Fiscal Administration (ANAF); tax non-compliance risk; external public audit; Court of Accounts; unmodified/qualified/adverse conclusions*

JEL classification: *H54, H61, H72, H83.*

1. Introductory Budgetary Considerations

Maintaining budgetary balance is a fundamental objective for macroeconomic policymakers in any state (Văcărel, 2007; Rosen, 2002; Ball et al., 1995; Bouvier et al., 1997). In fact, the issue of public budgets and the finances of state authorities has long been a subject of concern for numerous researchers across various regions (Khan, 2019; Rosen, Harvey, and Gayer, 2014; Musgrave and Musgrave, 1984), including Romania (Baciu et al., 2014; Bunescu, 2015; Dascălu, 2008;

Drăcea and Mitu, 2012; Dumitrescu and Dogaru, 2014; Moșteanu, 2008; Văcărel et al., 2006; Tănăsescu and Oliva, 2015; Costaș and Tofan, 2023; Ungureanu et al., 2020; Costea, 2013, 2024). Policies aimed at stimulating domestic demand by increasing government spending or reducing taxes, inspired by Keynesian theory, have over time led to the accumulation of significant budget deficits and a substantial rise in public debt at the global level. The issue of financing these debts and the associated interest costs affects overall economic balance, with the potential to generate inflation and limit governments' capacity to foster economic growth. From this perspective, the modern approach to budgetary balance involves covering deficits through government borrowing, a process known as non-inflationary financing (Dobre, 2019). In Romania, the budgetary situation is particularly complex, influenced both by a geostrategic context marked by multiple challenges, which exerts additional pressure on public finances, and by the urgent need to continue fiscal consolidation. Among the factors exacerbating fiscal difficulties are the energy transition and the impact of climate change, wage increases in numerous public sectors, the costs associated with pension system reform, and other structural elements. Nevertheless, fiscal consolidation remains important for maintaining public debt stability, reducing economic vulnerabilities, protecting the national currency, and ensuring macroeconomic balance. Additionally, Romania's economy, characterized by its emerging market status, faces the issue of "twin deficits" (MF, 2025), reflected in the close correlation between the structural budget deficit, which exceeded 6% of GDP in 2022 and 2023, and the current account deficit, which stood at over 6% of GDP in 2023 and is estimated to surpass 8% in 2024. This interdependence amplifies economic risks and underscores the urgency of implementing sustainable fiscal adjustment measures (Table 1).

Table 1. Budgetary indicators for the period 2022-2024 (% of GDP)

	2021	2022	2023	2024
Consolidated General Budget Revenues (cash)	31.93	33.1	32.4	32.6
Consolidated General Budget Expenditures (cash)	38.65	38.9	38.1	41.2
Consolidated General Budget Balance (cash)	-6.7	-5.8	-5.6	-8.7
Consolidated General Budget Balance (ESA)	-7.2	-6.4	-6.5	-8.7
Structural Budget Balance	-6.2	-6.2	-6.2	-8.2

Note: ESA deficits are sourced from the European Commission's Fiscal Notifications; the 2022 structural deficit is based on the EC's Autumn Forecasts; cash deficits represent the Ministry of Finance's own calculations.

Source: MF, 2024, 2025

In 2024, Romania recorded an alarming budget deficit of 8.65% of GDP, the second highest in recent history, following the pandemic-induced deficit of 9.55% of GDP. Public expenditure growth was nearly twice as high as the increase in budget revenues, further deepening fiscal imbalances (CF, 2025). In the same year, the current account deficit exceeded 8% of GDP, making it the highest among EU emerging economies, with over 60% of its financing needs met through borrowing.

Public debt rose to approximately 54% of GDP by the end of 2024, a level still moderate compared to the EU average. However, the rapid upward trajectory in recent years raises serious concerns. Romania is among the eight EU member states under the Excessive Deficit Procedure (EDP), holding the largest fiscal imbalance in the Union. A favorable development, however, is the agreement reached with the European Commission, allowing for a gradual budget deficit adjustment over several years, given the magnitude of the required corrections—from over 9% of GDP (including the impact of pension recalculations) to below 3% of GDP. The persistence of twin deficits puts pressure on the national currency and could weaken Romania's economy in the face of external shocks, reducing its medium-term resilience. In the short term, maintaining these imbalances may hamper access to financing under sustainable conditions. The main vulnerabilities identified by the Ministry of Finance (MF, 2025) include: (i) Romania has been under the Excessive Deficit Procedure since 2020, when the EU Council determined that the country had exceeded the deficit threshold established by the Treaty on the Functioning of the European Union (TFEU). Initially, the deadline for adjustment was set for 2022, but due to the Covid-19-induced economic crisis, it was extended to 2024; (ii) The European Commission has confirmed the existence of excessive macroeconomic imbalances, mainly due to persistent and rising public deficits, price and cost pressures, and insufficient fiscal policy measures; (iii) The rigid structure of public expenditures and the low share of fiscal revenues in GDP complicate fiscal consolidation efforts. In 2024, Romania continued to have the lowest level of government revenues among regional economies, accounting for only 33.7% of GDP, significantly below the EU and Eurozone averages, further limiting its fiscal adjustment capacity. Figure 1 illustrates how the budget deficit evolved in Romania, the EU, and the Eurozone (% of GDP) between 2020 and 2023.

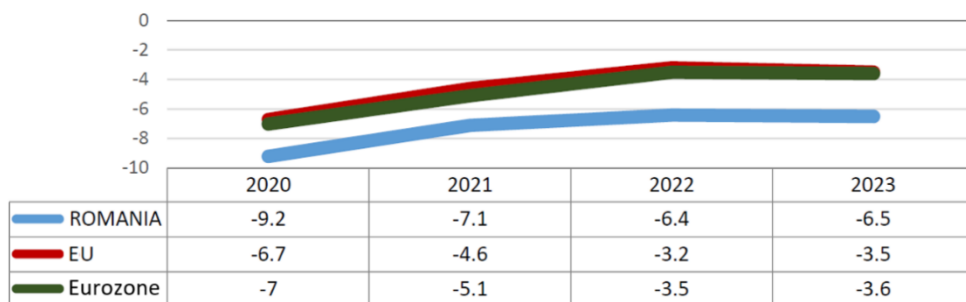


Figure 1. The evolution of the budget deficit in Romania, the EU, and the Eurozone (% of GDP) in the Period 2020-2023.

Source: MF, 2025, according to: Eurostat - EC Fiscal Notification – October 2024.

In 2024, the cash budget deficit reached 8.7% of GDP, with the structure of budget revenues as follows (Figure 2):

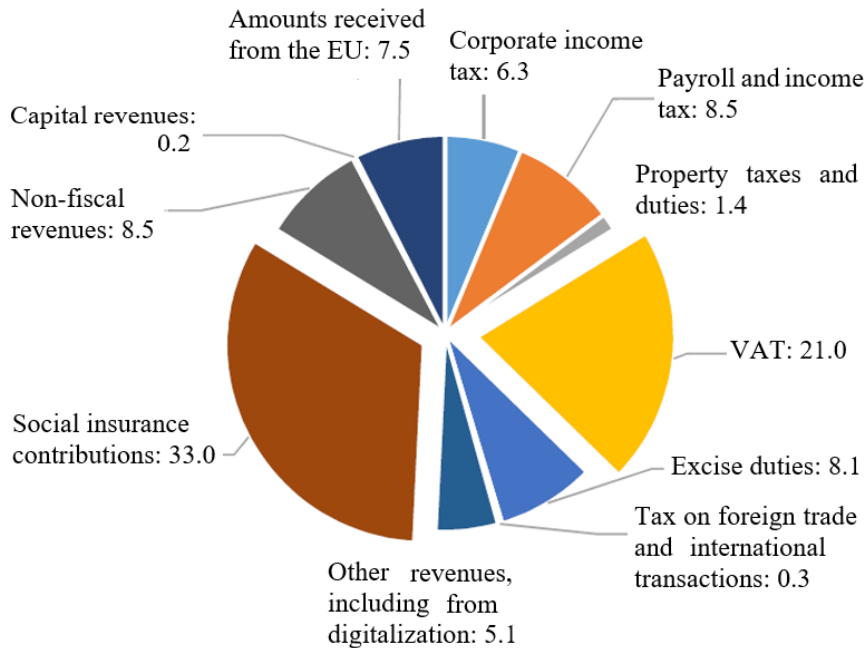


Figure 2. Structure of budget revenues in 2024 (% of Total revenues)

Source: MF, 2025

At the same time, budget expenditures stood at 41.9% of GDP (Figure 3), with a downward trend as a share of GDP over the reference period to support the budget deficit.

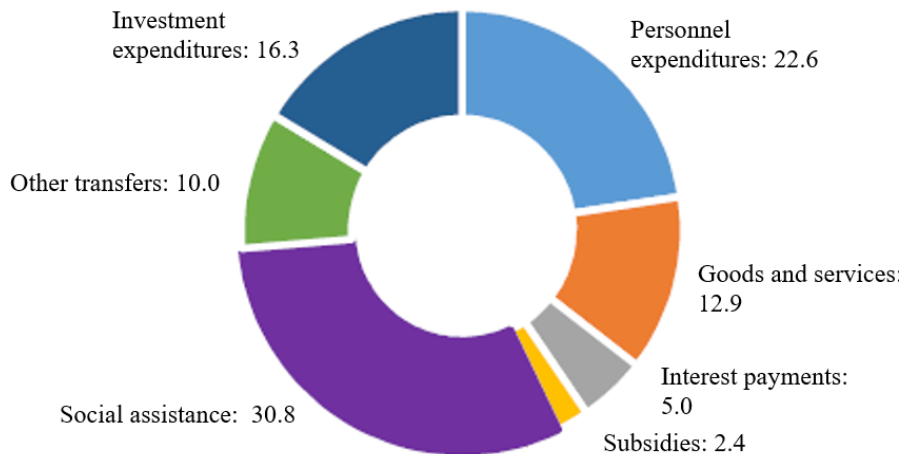


Figure 3. Structure of budget expenditures in 2024 (% of Total expenditures).

Source: MF, 2025

Romania has been subject to the excessive deficit procedure since 2020, when the EU Council determined that the deficit criterion set by the TFEU had been exceeded. Initially, the adjustment deadline was set for 2022; however, due to the economic crisis triggered by the Covid-19 pandemic, it was extended until 2024. While Romania managed to meet the milestones for deficit reduction in 2021 and 2022, a significant deviation occurred in 2023, with an ESA deficit of 6.5% of GDP, driven by a rapid increase in public spending. The main factors contributing to this increase were higher social transfers, rising expenditures on goods and services, public investments, and court-ordered wage payments for public sector employees (EU Council, 2024).

In June 2024, the EU Council concluded that Romania had not taken sufficient measures to comply with the fiscal adjustment trajectory established in 2021. Public expenditures saw a substantial expansion in 2023, particularly in social protection, interest payments, goods and services, investments, and public sector wages. Despite stronger-than-expected economic growth, the additional public revenues were not directed toward deficit reduction but instead fueled further budgetary expansion, contrary to the European Commission's recommendations. The Commission's analyses confirmed the existence of severe macroeconomic imbalances in Romania (MF, 2025). The major vulnerabilities stem from high and rising fiscal deficits, which exert pressure on external balances, persistent core inflation, and rapidly increasing labor costs, exacerbated by a tight labor market. These imbalances heighten Romania's dependence on external financing and expose the economy to significant risks in the event of a negative shift in investor sentiment or external shocks. To stabilize public finances, Romania must commit to a clear fiscal adjustment path. A realistic objective is to reduce the ESA deficit from an estimated 7% of GDP in 2025 to 5% in 2028 and ultimately to 2.5% of GDP in 2031, in compliance with the 3% threshold set by the TFEU and to mitigate risks to macroeconomic stability. Additionally, bringing public debt below 60% of GDP is very important to prevent long-term economic vulnerabilities. At the end of Q3 2024, Romania's debt-to-GDP ratio stood at 53.1%, ranking 16th in the EU. While this level remains below the euro area's average government debt (88.2% of GDP) and the EU's overall average (81.6% of GDP), the rapid pace of debt accumulation necessitates urgent fiscal consolidation measures to ensure long-term economic sustainability (Figure 4).

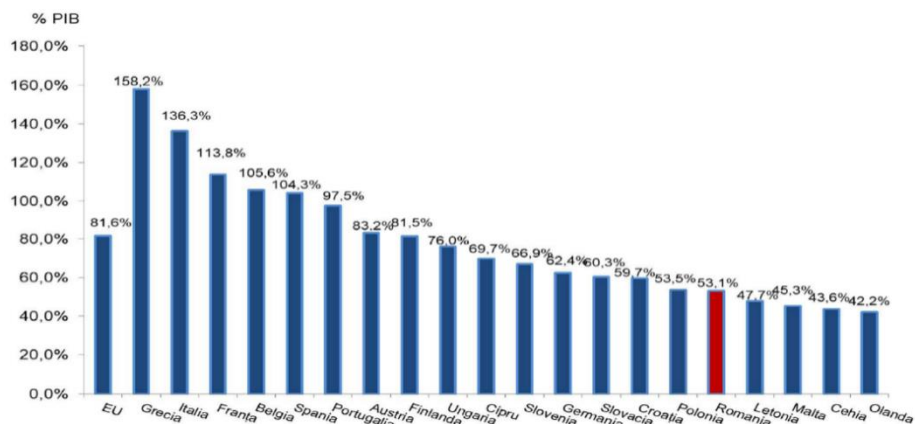


Figure 4. Debt levels of EU Member States (% of GDP) (% din PIB).

Source: Eurostat 2025

Regarding the design and execution of our approach, we emphasize that it is based on in-depth investigations into external public audit practices, with a focus on conducting fiscal compliance audit missions within Romania. The paper addresses the topic under discussion with the following structure: (1) Introductory budgetary considerations; (2) The National Agency for Fiscal Administration (ANAF): Organization, operation, role, and results; (3) Radiography of ANAF's activity through the lens of external public audit (in 2023 for the year 2022) (3.1. Audit objectives and criteria, 3.2. Applicable audit procedures and standards, 3.3. Findings of the Court of Accounts Audit; Identified non-compliance issues, 3.4. Description of identified irregularities and recommended measures); (5) Measures for improving ANAF's activity in accordance with external public audit recommendations for reducing the risk of fiscal non-compliance; (6) Conclusion.

The methodology applied in this study is based on a thorough observation and analysis of the external public audit performed by the Romanian Court of Accounts on ANAF's activities for the 2022 fiscal year, audited in 2023. The research adopts a risk-based approach, employing specific audit procedures to identify non-compliance in the collection and administration of tax revenues. The assessment included an analysis of official documents, the application of audit criteria, and the use of both statistical and non-statistical sampling methods.

The main findings are based on empirical data, audit standards, and current fiscal regulations, highlighting systemic deficiencies and proposing measures to improve fiscal governance.

2. The National Agency for Fiscal Administration (ANAF): Organization, Operation, Role, and Results

ANAF operates as a specialized body of the central public administration, holding the status of an autonomous public institution under the authority of the Ministry of Public Finance, funded by the state budget. According to Government Decision No.

520/2013, ANAF's activities focus on collecting state budget revenues, ensuring uniform application of tax legislation, providing fair treatment to all taxpayers, combating tax evasion, and implementing preventive measures against fiscal and customs fraud (RG, 2013). ANAF's fundamental principles are: (i) Operational efficiency; (ii) Transparency within legal limits; (iii) Non-discriminatory enforcement of tax and customs legislation; (iv) Respect for taxpayers; (v) Consistency and predictability of adopted measures.

ANAF's main functions include:

- a) Developing strategies and managing their implementation;
- b) Administering taxpayers and managing taxes and duties;
- c) Conducting tax inspections and audits;
- d) Collecting public revenues;
- e) Providing taxpayer services;
- f) Conducting operative and unannounced inspections;
- g) Combating tax evasion and fiscal and customs fraud;
- h) Providing technical support for the prosecution of tax-related offenses;
- i) Overseeing customs and tax activities, etc.

A major objective of ANAF is to combat tax evasion by implementing measures such as reforming risk management for tax non-compliance, developing digital control tools, and fostering collaborative actions among its departments. This also includes intensifying transfer pricing controls, optimizing enforcement measures, and improving taxpayer compliance. In 2023, ANAF intensified controls in high-risk tax evasion areas, such as trade in excisable goods and international transactions. To ensure a solid foundation for government project funding, fiscal inspection actions were carried out, including the issuance of 12,558 compliance notices for estimated tax risks amounting to RON 1.11 billion (ANAF, 2024a). Additionally, 20,093 documentary reviews were conducted, leading to the determination of additional amounts totaling RON 1.03 billion, while taxpayers who failed to rectify their tax situations were subjected to further tax inspections. These inspections identified additional amounts of RON 2.63 billion and resulted in 1,705 fines totaling RON 5.32 million, alongside 270 criminal referrals for damages amounting to RON 457.01 million. Furthermore, 13,117 unannounced field inspections were carried out. In the field of fiscal fraud prevention, ANAF's resources were allocated to monitoring and investigating complex tax evasion cases, including dismantling tax evasion networks and combating illicit activities involving "ghost" companies. Fraud inspectors conducted continuous monitoring of goods transportation and inspected 1,293,362 domestic shipments and 425,557 transit shipments. These actions identified tax implications of RON 5.76 billion, resulting in 199 criminal referrals for damages of RON 326.18 million. Additionally, 19,475 administrative sanctions were applied, with confiscations estimated at RON 69.87 million. Moreover, 408 taxpayers had their business activities suspended due to identified irregularities.

3. Radiography of ANAF's activity through external public audit (in 2023 for the year 2022)

ANAF's activity is periodically subject to audits conducted by the Court of Accounts, with the audit missions' themes aligned with applicable legislation and auditing standards (RP, 1992; Bostan and Dascălu, 2016; Bostan, 2010ab; Boulescu et al., 2009; Ispir, 2008). During Q3/2023, the Romanian Court of Accounts (RCA, 2023) audited "the manner in which ANAF fulfilled its legally conferred responsibilities in 2022 regarding the collection of revenues for the consolidated general budget, as well as compliance with legal provisions concerning the formation, recording, monitoring, and collection of revenues administered by ANAF."

3.1. Audit objectives and criteria

The objective of the analyzed audit mission was "to obtain reasonable assurance regarding the extent to which ANAF's activities in 2022 related to the fiscal administration of the consolidated general budget revenues—specifically, their formation, recording, monitoring, and collection—were in compliance with relevant legislation, norms, and regulations." (RCA, 2023). The evaluation was conducted by monitoring compliance with tax legislation and applicable regulations (as of 2022), covering both the central apparatus and subordinate units. The relevant audit criteria included: "(i) Analysis of budget revenue collection trends, achievement of collection targets, and arrears management; (ii) Assessment of the activities of ANAF's general directorates; (iii) Revenue collection for legal entities and individuals, including revenue formation and accounting; (iv) Tax inspection activities for legal entities and individuals; (v) Management of the state's revenue accounting and taxpayer analysis (legal entities and individuals); (vi) Granting of tax reliefs and payment rescheduling for overdue tax liabilities (legal entities and individuals); (vii) Implementation of enforcement measures, analysis and verification of budget arrears, and performance assessment of tax inspection bodies in combating arrears accumulation (legal entities and individuals); (viii) Management of fiscal administration responsibilities for economic operators trading harmonized excisable products" (RCA, 2023).

3.2. Relevant audit procedures and standards

ANAF's activity is subject to tax legislation as well as orders and regulations issued by the leadership of the Ministry of Public Finance and ANAF itself (Aniței, 2011). "The main objective of the audit mission was to assess compliance with legal regulations in force in 2022 regarding the formation and management of consolidated general budget resources." (RCA, 2023). The mission followed a risk-based approach, "which meant focusing the audit on activities prone to significant non-compliance. The audited processes were evaluated against audit criteria derived from applicable legal provisions. Following the risk assessment, the materiality threshold and level of assurance were determined, based on which audit samples were selected using statistical and non-statistical methods, as well as specific audit procedures. Audit evidence was obtained through control tests and substantive procedures (analytical procedures and detailed tests) to ensure

sufficient and appropriate evidence for a reasonable level of assurance supporting the audit conclusions." (RCA, 2023).

3.3. Court of Accounts Audit findings: Identified non-compliances

The Supreme Audit Institution conducted 43 compliance audit missions (in 2023) across ANAF structures, identifying 677 instances of non-compliance with legality and regularity standards (Table 2). To address these deficiencies, management letters were issued containing appropriate recommendations for corrective actions.

Table 2. Non-compliance findings of the Court of Accounts at ANAF (in 2023 for the Year 2022)

Field of irregularity / Description of identified irregularity	Frequency of irregularity	Additional revenues	Damages	Financial-accounting irregularities
Risk analysis	358	325,370,085	-	169,069,517
Collection and enforcement	35	-	3,240	3,784,867
Accounting for budgetary receivables	94	45,374,338	-	600,123,670
Conducting tax audits	24	7,721,360	-	-
Installments, payment facilities	29	645,983	-	9,143,946
Records by taxpayer, offsets, refunds	10	493,558	-	122,784,345
Management of tax files, balances, and archives	3	-	-	2,585,316
Insolvency, joint liability, and bankruptcy	32	-	72,792,076	202,888,959
Monitoring performance indicators	4	-	-	79,687
VAT refunds	10	-	-	77,727,740
Taxpayer register, tax returns and balances, tax record	76	52,717,262	-	3,061,651
Other irregularities	2	-	-	-
Total general	677	432,322,586	72,795,316	1,191,249,698

Source: RCA, 2023

The Supreme Audit Institution recorded that "non-compliance with legality and regularity standards was identified across all specific activities carried out by the component structures within the county public finance administrations (...): (i) the identified deficiencies mainly represent procedural shortcomings characteristic of the entire tax administration system, negatively impacting the efficient achievement of its purpose and objectives; (ii) the existence of dysfunctions in the exercise of internal managerial control (...)." (RCA, 2023). As a result, the conclusions of the audit missions for these structures—regarding the 2022 budgetary exercise—were predominantly "qualified" (Figure 5).

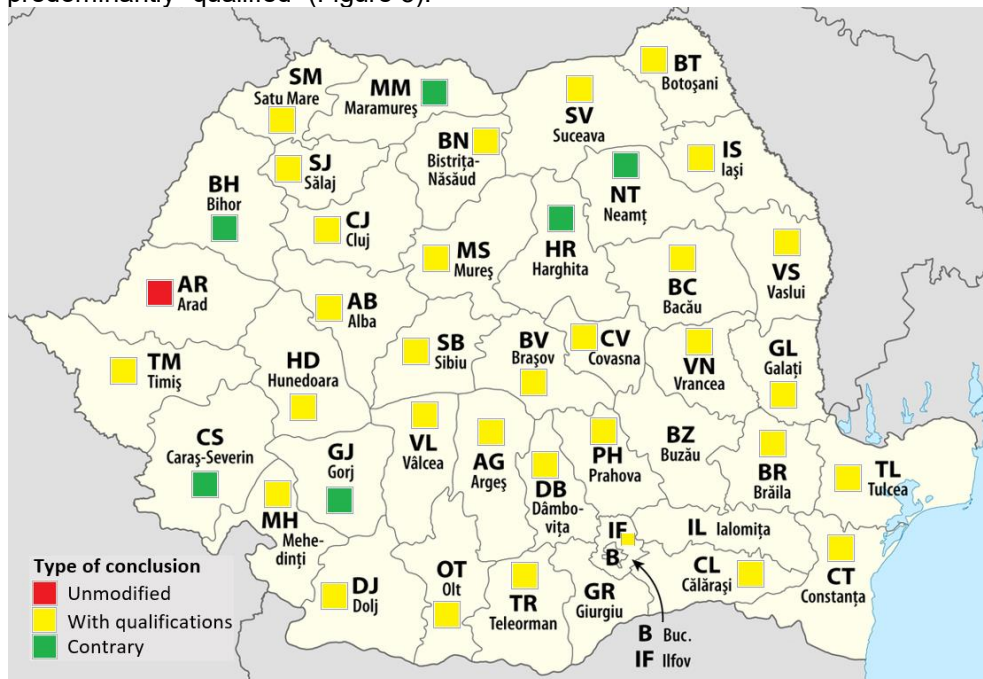


Figure 5. Conclusions of the compliance audit missions (for 2022) at the territorial structures of ANAF (AJFP).

Source: Prepared by the authors based on: RCA, 2023.

Note: Qualified conclusions were also expressed for: AS1FP Bucharest, AS2FP Bucharest, AS3FP Bucharest, DGAMC, and the Administration of Medium Taxpayers Bucharest; the consulted documents do not specify the type of conclusion assigned to AJFP Buzău, Giurgiu, and Ialomița.

With reference to the entire activity of ANAF, the audit conclusion expressed was "qualified", because—with certain exceptions regarding the non-compliances mentioned in the audit report—"it was found that the way in which the Agency fulfills its legally assigned duties in collecting the revenues of the consolidated general budget is, in all significant respects, in compliance with the applicable legal framework." (RCA, 2023).

3.4. Description of the identified deviations and the recommendations made

Since a significant proportion of the deviations affect the revenue collection capacity of the territorial structures of ANAF, recommendations and proposals were made to the leadership of ANAF and the Ministry of Finance, with an implementation deadline of December 31, 2024. The goal is to improve fiscal processes and combat tax evasion. These include (RCA, 2023):

- Review and improvement of domestic legislation to strengthen discipline and the efficiency of administrative activities;
- Ensuring the necessary financial resources to implement advanced IT solutions that will support ANAF's digitalization and enable real-time processing of fiscal information;
- Development of ANAF's IT infrastructure, including the creation of an application to monitor and investigate taxable revenues from e-commerce and online activities (e.g., blogs, vlogs, YouTube);
- Increasing the capacity for fiscal risk analysis in collaboration with tax authorities from other member states to identify and manage risks associated with taxpayers;
- Strengthening interoperability between the Ministry of Finance's structures involved in revenue collection, including tax and customs authorities;
- Ensuring resources to combat tax evasion, with a focus on high-risk areas and cross-border fraud;
- Investigating dysfunctions within the internal managerial control system and implementing corrective measures to improve procedures.

A specific case, involving a group of companies with significant arrears (786,417,775 lei), revealed a tax evasion practice based on accumulating debts, using mechanisms of rescheduling and restructuring fiscal obligations, followed by insolvency. Following this case, the following additional recommendations were made: (i) Analyzing the fiscal activity of business groups to identify those that repeatedly use rescheduling and restructuring procedures, as well as measures to prevent the accumulation of significant tax debts; (ii) Detailed investigation of the commercial and financial circuits of the business groups to understand their operating methods and identify specific fiscal risks; (iii) Identifying and tracking relevant assets of high-risk business groups, including applying debt recovery measures; (iv) Reviewing the legislation regarding tax payment facilities to prevent abuses by taxpayers who use these options to avoid paying debts; (v) Proposing legislative amendments to limit the possibilities of abuse in the process of rescheduling tax debts for taxpayers with inadequate fiscal behavior; (vi) Conducting an internal analysis at DGAF to identify the causes of superficial tax audits and implementing the necessary corrective measures.

Regarding large debtors, who accumulate significant fiscal arrears (48,113,280,553 lei), ANAF must apply all legal fiscal procedures, including forming an internal committee to periodically analyze cases of taxpayers with large debts and identify effective recovery measures.

Other recommendations include:

- (a) Evaluating the possibility of holding shareholders and administrators personally liable, alongside analyzing fiscal risks;
- (b) Revising the fiscal risk analysis method to intervene quickly in high-risk cases;
- (c) Reanalyzing the granting of tax facilities to taxpayers with arrears to prevent abuses;
- (d) Conducting in-depth tax investigations in cases of significant arrears to identify commercial and financial flows and establish their fiscal risks.

Additionally, it is recommended to initiate simultaneous fiscal and anti-fraud checks on companies and individuals involved in tax fraud.

4. Measures to improve ANAF's activity in accordance with the external public audit proposals aiming to reduce the risk of tax non-compliance

Overall, the audit found that ANAF is facing a complex and challenging period as it continues its fiscal administration reform program. Following the external public audit mission, certain measures were taken in line with the auditors' proposals aimed at reducing the risk of non-compliance. To prevent and combat tax evasion, several changes were made regarding the management of fiscal non-compliance risk (expected results – Figure 6).

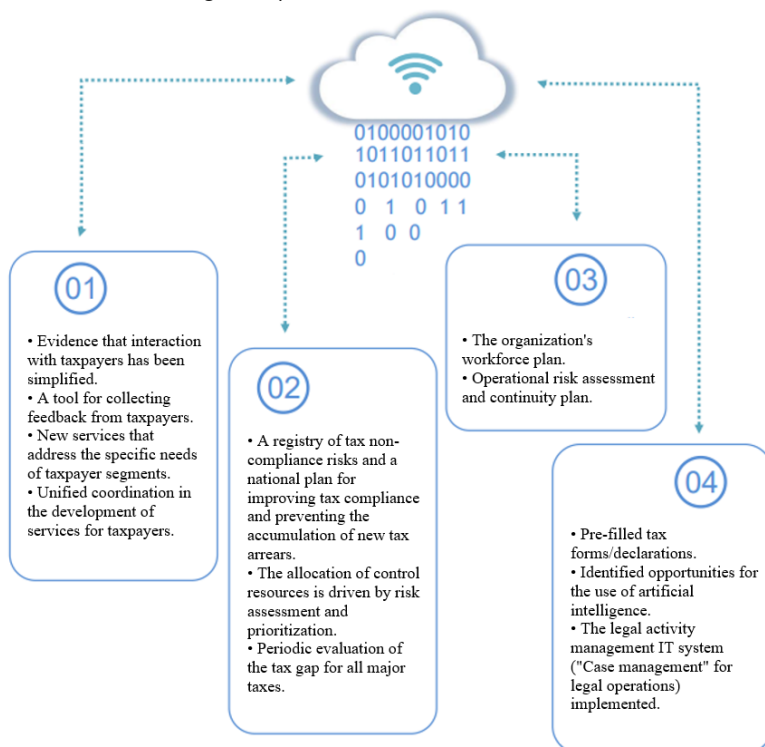


Figure 6. Expected results.

Source: ANAF, 2024b

Thus, to identify and assess tax risks, ANAF has implemented the following measures (ANAF, 2024c):

- Reviewing the risk indicators within the "Tax Risk Register", which is used to manage tax risks. This register reflects risks related to various types of taxes, taxpayer segments, and economic sectors, and is a continuously updated tool.
- Monitoring the performance of risk indicators in the register, with these being evaluated and tested periodically.
- Developing specific risk indicators based on data from the RO e-Factura system, as well as for medium taxpayers, with the goal of integrating them into an information system.

Regarding the tax inspection activity, ANAF focuses on two types of actions to enhance taxpayer compliance. First, it issues compliance notifications, which inform taxpayers about identified tax risks and request them to reassess their tax situation and fulfill their legal obligations. Then, it conducts documentary checks, which involve analyzing the coherence of the taxpayer's fiscal situation based on the documents in their tax file, as well as documents from third parties or held by tax authorities that are relevant for determining the tax situation. Within the structure dedicated to large taxpayers, significant progress has been made, and currently, a predictive system based on data analysis (data mining) and decision trees for calculating the risk level is being tested. This system aims to identify risk areas regarding corporate tax and VAT. The implementation of predictive analysis has improved the efficiency of tax inspections, as highlighted by a significant increase in the value of additional tax liabilities generated by these inspections. This efficiency was made possible by the development of a risk analysis system that prioritizes inspection actions based on the large taxpayer portfolio.

Regarding tax fraud activities, in the first semester of 2024, resources were focused on the following directions:

- Priority activities, including the analysis and investigation of complex tax evasion cases, aiming to combat tax evasion chains and eliminate "ghost" companies from the system.
- Monitoring and controlling high-risk activities to increase tax compliance by having anti-tax fraud inspectors present in high-risk areas, as well as detecting and sanctioning legal breaches during operational controls.

Additionally, documentary verification activities were carried out to ensure a proper assessment of the taxpayer's fiscal situation.

5. Conclusion

The analysis of tax compliance in Romania, conducted through the audit of ANAF's specific activities, highlights systemic deficiencies that affect the efficiency of revenue collection and fiscal governance. The identified irregularities—such as the lack of clear procedures, legislative gaps, and insufficiently digitalized strategies—underscore the need for structural reforms to strengthen administrative capacity and reduce the risks of tax non-compliance.

In this context, it is necessary to review and clarify the legislative framework to eliminate legal ambiguities that may lead to misinterpretations or abuses, alongside strengthening regulations on non-compliance penalties and improving enforcement mechanisms. Additionally, optimizing administrative processes by simplifying and automating tax reporting and collection procedures could help reduce the bureaucratic burden for both taxpayers and ANAF.

An important course of action is accelerating investments in digitalization and interoperability so that the implementation of advanced IT solutions allows for efficient management of tax obligations and rapid information exchange between tax institutions and taxpayers. Establishing an early warning system for identifying non-compliance risks, along with developing data-driven strategies and artificial intelligence-based solutions, could enhance tax control and improve the fight against tax evasion.

Furthermore, increasing transparency in the audit process and strengthening cooperation between ANAF and external oversight institutions are very important for improving the efficiency of fiscal resource management. Another important direction is the development of taxpayer awareness campaigns to promote voluntary compliance, as well as organizing training sessions for businesses and the general public to improve understanding and adherence to tax obligations.

By implementing these measures, ANAF's efficiency can be significantly improved, ensuring stronger revenue collection, reducing the budget deficit, and creating a predictable and transparent fiscal environment. In this context, structural reforms and investments in digitalization are very important pillars for modernizing tax administration and strengthening the sustainability of public finances in Romania.

6. Research Limitations

Since this study is based on data from a specific period, the results may not be applicable to future years. Moreover, the methodology used does not capture all nuances of taxpayer behavior, and international comparability has been entirely avoided. The authors also acknowledge that external factors—such as economic crises or legislative changes—can influence the results, requiring periodic updates to the study.

7. Future Research Directions

The authors emphasize that there are numerous aspects that warrant further analysis or could be explored in future research. These include extending the analysis period to observe long-term trends and assess whether legislative changes have had the intended effects. Equally important is a comparative approach with other EU states to identify effective tax compliance models and policies that could be adapted for Romania.

Additionally, future research may focus on analyzing the impact of digitalization—examining how ANAF's digital transformation influences tax compliance and

reduces tax evasion—as well as studying taxpayer behavior to better understand motivations and challenges in meeting tax obligations.

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EMERGING TRENDS IN ESG RESEARCH. BIBLIOMETRIC ANALYSIS

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Abstract: This article presents a comprehensive analysis of the evolution and impact of Environmental, Social, and Governance (ESG) principles on banking performance over a twelve-year period, from 2012 -2024. Through a detailed bibliometric and big data analytics examination of the ESG Bank Performance (EBP) corpus within SCOPUS, we uncover the thematic and geographical distribution of research contributions that underline the sector's dynamic journey towards sustainability. Our findings illustrate a significant shift in the academic focus, from foundational explorations of ESG integration strategies and risk management to addressing the broader complexities of global sustainability challenges, technological advancements, and regulatory changes. The period has seen a maturation of ESG from a niche interest to a strategic imperative within the banking sector, underscored by increasing scholarly output and citation engagement globally, particularly from countries like Italy, the Russian Federation, China, and India. Keyword co-occurrence analysis reveals a rich thematic landscape, emphasizing the integration of ESG into operational and financial strategies, the role of digital innovation, and the banking sector's response to climate finance and social governance issues. Our review provides insights into the evolving discourse on ESG impact, offering forward-looking recommendations for research and practice. We argue that ESG considerations have become integral to the banking industry's evolution, necessitating innovative, interdisciplinary approaches to further our understanding of sustainable banking practices. This study contributes to the advancement of sustainable banking by highlighting the significance of ESG considerations in shaping future financial and operational strategies that align with global sustainability objectives, fostering a more sustainable and resilient banking sector for the future.

Keywords: ESG integration; Environmental Social Governance; Banking performance.

JEL Classification: G21; Q56; M14

1. Introduction

The early 2000s marked a transformative period in the financial sector, characterized by the rise of "ESG" (Environmental, Social, and Governance)

principles. This significant shift towards the integration of sustainability within capital markets was ignited by a collaborative effort between the United Nations Global Compact and various financial institutions, which resulted in the influential "Who Cares Wins" report of 2004 (Knoepfel, 2004). The fundamental proposition of this report was to emphasize the financial significance of ESG factors. It powerfully argued for incorporating ESG considerations into investment frameworks, suggesting that such an approach could lead to more sustainable markets and improved societal outcomes.

The initial phase of the past decade saw a profound transformation within the financial sector. New paradigms emerged, aimed at realizing sustainability objectives within financial markets, leading to the introduction of the "ESG" (Environmental, Social, and Governance) principle. This integration was facilitated through a collaborative effort between the United Nations and various financial institutions, culminating in the publication of the "Who Cares Wins" report in 2004 (Knoppsville, 2004). This document underscored the significance of Environmental, Social, and Governance (ESG) factors from a financial perspective. It highlighted the necessity of incorporating these elements into the investment strategies of banking entities, demonstrating their potential to drive banking markets and sectors towards sustainability, while enhancing value addition and societal outcomes.

The 2006 publication of the United Nations Principles for Responsible Investment (PRI) marked a watershed moment in the ESG paradigm. With strong backing from the international investment community, this program established the applicability of ESG standards in the finance sector by offering a thorough framework for incorporating ESG considerations into investment decision-making processes (Sjåfjell and Richardson, 2015). The evolution of ESG from an area of interest to an urgent necessity has been influenced by the increasing awareness of climate change, the need for social justice, and corporate governance shortcomings (Senadheera et al., 2022). This increased consciousness has accelerated the adoption of ESG concepts and established them as essential components in the creation of investment plans and company policies across the globe.

The significance of ESG variables in improving banking performance has been highlighted by recent research endeavors, especially when viewed through the Sustainable Development Goals (SDGs) prism. The scholarly story, which dates back to the early 2000s, outlines how innovation and inclusive finance, when paired with ESG adherence, can improve financial performance and advance the SDGs (de Souza Barbosa et al., 2023). Subsequent investigations have centered on aligning sustainability programs with the Sustainable Development Goals of the United Nations in order to enhance a bank's value proposition, hence strengthening the belief that ESG is a fundamental component of sustainable banking operations (Weber, 2019). These talks have sparked an extensive, multidisciplinary, and global dialogue about how ESG practices affect banking performance and the importance of having a thorough understanding of ESG's impact within this sector.

The ESG Bank Performance (EBP) corpus created in this study is a monument to twelve years of international and interdisciplinary scholarly engagement, and it can positively contribute to this conversation. This corpus is an essential tool for finding patterns and creating well-defined hypotheses in the EBP space. We examine how research on banking performance and ESG has interacted over this

time, providing a thorough analysis of relevant literature to convey the spirit and background of the EBP corpus.

We had commenced a thorough examination of the context and content of the EBP corpus, dividing our research into four discrete time periods: 2012–2015, 2016–2018, 2019–2021, and 2022–February 2024. This chronological division facilitates the analysis of methodological advancements, the introduction of new ideas, and the theoretical frameworks that steer the conversation, including COVID-19 and the SDGs. The diffusion and evolution of research are greatly impacted by the editorial stewardship in this discipline, which emphasizes the significance of editorial duties in promoting the proliferation of relevant scholarly publications.

We use big data analytics (BDA) and bibliometric analysis to analyze the ESG impact on banking performance throughout the period of January 2014 to February 2024 by looking at the ESG Bank Performance (EBP) corpus. With a focus on published papers in accounting, finance, and business, we want to use BDA to uncover hidden patterns, relationships, and insights from the aggregation of 208 articles published on this topic during the previous twelve years. By using an analytical method, the corpus can be examined holistically, which makes it easier to make evidence-based decisions and extract insightful information.

There are four sections in this article. Firstly, we describe the search parameters and bibliometric methods that were applied to create the ESG Bank Performance corpus in order to clarify the methodology utilized in this retrospective research. After presenting a thorough bibliometric analysis of the corpus's publishing and citation trends, we look at the co-occurrence of keywords and how they have changed throughout the given time periods. Our conclusions are summarized in the last section, which also offers recommendations for further research on the relationship between ESG and banking performance.

2. Method

The corpus was established by conducting searching for the work on the ESG impact on bank performance through the SCOPUS database. Because of this, all analyses related to outside citation counts also only relate to work compiled in SCOPUS. We chose SCOPUS because it is the largest multidisciplinary database of peer-reviewed literature in the social sciences (Schotten et al., 2017) and is widely recognized and used in BDA quantitative analyses (Parlina et al., 2020). The terms of search were only for keywords and the search filter was filled with the following keywords: ("Environmental Social Governance" OR "ESG") AND ("bank*" OR "banking sector" OR "financial institution") AND ("performance" OR "evaluation" OR "assessment"). Years were set between 2012-2024. As a result, SCOPUS identified 208 articles in the EBP corpus: 3 from (2012–2015), 9 from (2016–2018), 41 from (2019–2021) and 155 from (2022–2024). These include editorials and full-length articles. Given the variety of patterns, we sought to uncover, we extracted a broad range of data from SCOPUS including article bibliographic details, citations, keywords, and abstracts.

To dig deeper into the sophisticated patterns of scholarly communication and thematic developments within this corpus, we employed bibliometric mapping techniques. A keyword co-occurrence analysis was conducted, with a minimum occurrence threshold set to identify the 45 most pertinent keywords out of 507, allowing for a focused yet comprehensive visual exploration of the data. The type of analysis was specified as co-occurrence, relying on author keywords for a nuanced capture of the research themes. In terms of the counting method, full counting was utilized, ensuring that each occurrence of a keyword was given equal weight regardless of the number of keywords in a given article, thus avoiding the dilution of prevalent themes.

Additionally, we utilized VOSviewer dictionary file to refine the terminology and synonyms within the dataset. This bibliometric mapping will enable the identification of dominant themes, emerging trends, and potential gaps in the literature about ESG impacts on bank performance.

3. Results

3.1. Context

Table 1: Citation Metrics for the (EBP) corpus

Metric	Value
Publication Years	2012-2024/Feb
Citation Years	12 (2012-2024/ Feb)
Papers	208
Citations	3,126
Cites/Year	260.50
Cites/Paper	15.03
Authors/Paper	3.00
h-index	31
g-index	52
hI,norm	19
hI,annua I	1.58
hA-index	18
Papers with ACC >= 1,2,5,10,20	125, 101, 61, 38, 14

Source: Author's interpretation

We use the Publish or Perish citation metrics from 2012 to 2024/ Feb to analysis the dataset. The results provide a compelling narrative about the academic traction gained by research on the impact of ESG on bank performance. Over these 12 years, a consistent annual output of research, amounting to 208 papers, signifies a sustained scholarly engagement with the topic. The substantial citation counts of 3,126, with an impressive annual average of 260.5 citations, underscores the relevance and influence of this body of work within the academic discourse on sustainable banking practices. The average of 15.03 citations per paper points to the moderate to high impact that each publication has had, indicating the research's resonance within the scholarly community.

The collaboration coefficient, averaging 3 authors per paper, reflects the interdisciplinary nature of ESG research, requiring diverse expertise to navigate its complexities. The h-index of 31 highlights that a substantial number of papers are

frequently referenced, showcasing their foundational role in furthering understanding of ESG's role in banking. This is further bolstered by a g-index of 52, suggesting that the most cited works are not only influential but pivotal in shaping subsequent research. The normalized h- index of 19, considering co-authorship, and the annual h-index of 1.58 demonstrate a consistent addition of impactful research year on year. The hA-index of 18 reinforces the notion of individual authors' contributions being widely recognized.

Moreover, the citation distribution across different thresholds reveals a deep impact, with 125 papers cited at least once and 14 papers cited 20 times or more, reflecting a long tail of influence that spans a broad range of studies within the corpus. This robust citation landscape paints a picture of a vibrant and dynamic field, where research outputs on ESG and bank performance have not only contributed significantly to academic knowledge but also to practical, policy-oriented, and strategic dimensions in the banking sector, resonating well with global sustainability trends.

Table 2. Annual Publication and Citation Structure of the (EBP) corpus 2012-2024.

Year	TP	CTP	TC	TCP	TC/CTP	TC/TCP	h-index
2012	1	1	39	1	39.000000	39.000000	1
2014	1	2	1	1	0.500000	1.000000	1
2015	1	3	15	1	5.000000	15.000000	1
2016	2	5	13	2	2.600000	6.500000	1
2017	3	8	242	3	30.250000	80.666667	3
2018	4	12	231	4	19.250000	57.750000	4
2019	10	22	962	10	43.727273	96.200000	9
2020	15	37	375	14	10.135135	26.785714	11
2021	16	53	408	13	7.698113	31.384615	9
2022	47	100	488	37	4.880000	13.189189	13
2023	92	192	349	49	1.817708	7.122449	10
2024/Feb	16	208	3	2	0.014423	1.500000	1

Note: TP: Total Publications per Year, CTP: Cumulative Total Publications, TC: Total Citations per Year, TCP: Total Cited Publication per Year, TC/CTP: Citations per Paper, TC/TCP: Citations per Cited Paper, h-index: Yearly h-index, indicating the maximum number h such that h publications have at least h citations each.

Table 2 shows the evolving landscape of research focused on the ESG impact on bank performance. From 2012 to 2024, the corpus reveals a trajectory of increasing scholarly output and citation engagement, with a notable surge in total publications (TP) and cumulative total publications (CTP) over time. In the initial years, 2012 through 2015, the field appears to be nascent, with a modest number of publications but a promising average of citations per paper (TC/CTP), particularly in 2012, which suggests early research was received with considerable interest.

As we progress to the middle years (2016-2018), there is a steady growth in research output, accompanied by a substantial increase in citations. The year 2017 stands out with a remarkable TC/CTP of over 30 and a high TC/TCP, indicating that the publications in this year were particularly impactful, with each cited publication garnering, on average, over 80 citations. This trend of impactful research continues

into 2018, with the h-index rising to 4, reflecting an expanding influence of the research being conducted during this period.

The period from 2019 to 2021 shows a remarkable uptick in research activity, with TP increasing significantly and a peak in TC in 2019, highlighting a year of profound academic interest and citation impact. The TC/CTP ratio remains impressive, and the h-index jumps to 9 and 11 in subsequent years, confirming the ongoing relevance and robust engagement with the research outputs.

The most recent years, 2022 to February 2024, present a dramatic escalation in TP, with the corpus almost doubling in size from the previous years, signifying a burgeoning field of inquiry. However, there is an interesting dip in TC and a noticeable decline in TC/CTP, which could suggest a multitude of factors, such as a lag in citations as newer publications typically take time to accumulate citations, or a dilution effect due to the rapid increase in publication volume.

The h-index fluctuates in these years, peaking at 13 in 2022, which indicates that a sizeable number of papers have achieved significant recognition. However, it drops back down to 1 by February 2024, which may be attributed to the incomplete data for the year or the aforementioned lag in the citation of newer publications.

In conclusion, the data paints a picture of a burgeoning field with a growing academic community that is increasingly engaging with the topic of ESG impact on bank performance. While the citation metrics suggest that the research field is maturing, with a diverse range of contributions gaining recognition, the dip in some citation metrics in the most recent years could indicate a need for a period of consolidation, in which the quality of research and its impact may become more focal than the sheer quantity of publications. The overall trend, however, underscores the significance of ESG considerations in banking, reflecting an academic response to the rising prominence of sustainability issues in the financial sector.

Table 3: Temporal Distribution of Top 10 Journals Citing of the (EBP) Corpus

Source Title	2012-2015	2016-2018	2019-2021	2022-2024 Feb
Sustainability (Switzerland)	0.0	134.0	214.0	87.0
Management of Environmental Quality: An International Journal	0.0	0.0	379.0	2.0
Corporate Social Responsibility and Environmental Management	0.0	122.0	249.0	2.0
Journal of Multinational Financial Management	0.0	0.0	139.0	0.0
Journal of International Financial Markets, Institutions & Money	0.0	0.0	112.0	11.0
Journal of Cleaner Production	0.0	0.0	114.0	3.0
Business and Society	0.0	83.0	0.0	0.0
Competitiveness Review	0.0	0.0	69.0	12.0
Journal of Business Ethics	0.0	64.0	0.0	16.0
British Accounting Review	0.0	0.0	0.0	76.0

Source: Author's interpretation

The temporal distribution of citations across top journals from 2012 to 2024, as shown in Table 3, reflects the escalating academic interest in the intersection of ESG factors and bank performance. The data reveals an initial latency in citations up to 2015, followed by a surge in attention, particularly in journals like 'Sustainability

(Switzerland)', which leads in citations during 2016-2018 and 2019-2021. This peak of interest correlates with a global shift towards sustainability in financial practices. Notably, the 'Management of Environmental Quality' and 'Corporate Social Responsibility and Environmental Management' journals experienced a spike in citations in 2019-2021, highlighting a period of intense research activity centered on corporate responsibility and environmental strategies in banking. The subsequent decline in citations across most journals by 2022-2024 could be indicative of an academic pivot to emerging topics or a natural citation cycle following a period of high productivity.

'Sustainability' and 'Journal of Business Ethics' retain their relevance, with the latter seeing an increase in citations in the latest period, suggesting a continued focus on the ethical aspects of ESG in banking. Conversely, the 'British Accounting Review' shows a notable increase in citations in 2022-2024, pointing towards a growing interest in the accounting dimensions of ESG. In essence, the citation trends indicate a maturing field with shifting research priorities, reflecting the broader dialogues within the realms of sustainable finance and ethical banking practices. The variability in citation patterns underscores the nuanced and evolving nature of ESG research as it adapts to new challenges and scholarly directions.

Table 4: Top 10 Countries Affiliated with Authors in the (EBP) Corpus Over Time.

Country	2012-2015	2016-2018	2019-2021	2022-2024 Feb
Bahrain	0.0	0.0	6.0	1.0
China	0.0	0.0	1.0	10.0
India	0.0	0.0	1.0	9.0
Indonesia	0.0	0.0	0.0	7.0
Italy	0.0	1.0	5.0	24.0
Poland	0.0	0.0	5.0	2.0
Romania	0.0	0.0	3.0	4.0
Russian Federation	0.0	0.0	0.0	20.0
United Kingdom	0.0	1.0	5.0	8.0
United States	1.0	2.0	2.0	7.0

Source: Author's interpretation

Table 3's analysis of the top 10 countries affiliated with authors on ESG's impact on bank performance indicates a growing global research interest, particularly post-2015. Early contributions were sparse, with the United States being the only consistent contributor. From 2019 to 2021, there's a notable uptick in academic output from diverse geographies, including Bahrain, China, India, and several European countries, reflecting a burgeoning global discourse on sustainable banking practices.

The most recent data from 2022 to early 2024 shows a pronounced spike in contributions from Italy (Menicucci & Paolucci, 2023; Menicucci & Paolucci, 2023) and the Russian Federation (Anikin et al., 2023; Korobeynikov et al., 2023; Zolotova, 2023), positioning these countries as emerging research centers in the field. China and India also demonstrate increased activity, aligning with their growing economic influence and interest in sustainable development. Overall, the distribution

indicates that ESG banking research has gained significant traction across different regions (e.g. Porzio and Battaglia, 2024; Peng, 2023; Korobeynikov et al., 2023), underscoring its relevance as a universal theme in the financial sector's evolution towards sustainability.

3.2. Content

Table 4. Terms That Define Each Cluster Within the (EBP) Corpus.

Term	cluster	link strength	Occurrences	Avg. citations
banking	1	11	6	2.6667
esg	1	79	55	16.2364
europe	1	7	3	2.3333
financial stability	1	6	4	2
green bonds	1	3	3	27.3333
green finance	1	7	4	1.5
impact investing	1	6	3	2.6667
sustainability	1	27	16	14.3125
banking sector	2	28	12	17.4167
board diversity	2	6	3	37.6667
climate risk	2	2	3	2.6667
corporate governance	2	21	8	24.25
environmental performance	2	10	4	34
esg performance	2	15	11	19.1818
social responsibility	2	11	4	35
banking industry	3	11	4	58.75
climate change	3	4	4	8.75
covid-19	3	10	4	28.5
environmental	3	20	9	14
financial performance	3	18	8	0.875
governance	3	10	5	12.2
social	3	11	4	22
bank lending	4	5	3	1.6667
bank risk	4	7	3	50.6667
content analysis	4	11	4	10.5
csr	4	15	9	42.2222
default risk	4	5	3	16.3333
esg score	4	7	5	26
sustainable finance	4	3	3	3.6667
banks	5	33	18	24.8889
esg disclosure	5	19	8	39.75
financial institutions	5	11	6	10
islamic banks	5	5	4	6.75
performance	5	23	9	32.6667
sustainability reporting	5	20	8	37.375
bank stability	6	3	3	18
corporate social responsibility (csr)	6	6	4	14.75
esg controversies	6	3	3	13.3333
esg rating	6	3	5	3
non-financial reporting	6	4	3	18
corporate social performance	7	7	4	38.5
corporate social responsibility	7	20	10	26
esg ratings	7	3	4	6.25
risk management	7	6	3	24.3333

Source: Author's interpretation

Clusters communities

The leading cluster in terms of centrality and overall significance within the network of keywords is Cluster 1, centered around the keyword 'ESG'. This cluster has the highest link strength, indicating the most connections within the cluster, which suggests it is the most prominent and influential theme in the research network. The term 'ESG' also has the highest number of occurrences, reinforcing its central role in the discourse on the impact of ESG factors on bank performance. The prominence of 'ESG' within Cluster 1, combined with associated terms like 'banking', 'Europe', 'financial stability', 'green bonds', 'green finance', 'impact investing', and 'sustainability', points to a comprehensive exploration of how ESG criteria are integrated into banking operations and their influence on financial stability and sustainable investment practices.

The trends across these clusters indicate an evolving research landscape that has expanded from ESG integration and financial stability to include specific challenges like climate change and the COVID-19 pandemic (Peng, 2023; Bax et al., 2023; Rastogi & Singh, 2022). The increasing focus on governance, disclosure, and social responsibility suggests a holistic approach to ESG, where financial performance is considered alongside ethical and risk management practices. The high citation counts in certain clusters point to a strong academic and practical interest in understanding the multifaceted impact of ESG on bank performance, with particular emphasis on governance structures and the emerging field of non-financial reporting. Overall, the clustering reveals a rich and complex picture of ESG research in banking, with diverse and interconnected themes that reflect the sector's pressing issues and priorities.

Cluster 1: ESG Integration and European Focus: This cluster is characterized by its strong link to 'ESG' as the central term, with the highest link strength and occurrence, suggesting that ESG integration in banking is a primary area of research focus. The presence of 'Europe' indicates a geographical emphasis, possibly due to the region's progressive policies on sustainability (Porzio & Battaglia, 2023; Schult et al., 2023; Arboleda, 2023). 'Financial stability' and 'green finance' themes, including 'green bonds' and 'impact investing', emphasize the financial instruments and investment strategies driven by ESG criteria (Lee et al., 2023; Li et al., 2024; Kolsi et al., 2023). The occurrence of 'sustainability' signifies the broad application of ESG principles in the banking sector.

Cluster 2: Governance and Performance: The second cluster highlights the interplay between 'corporate governance' and ESG, with 'board diversity' and 'environmental performance' featuring prominently. The high average citations for these terms suggest impactful research linking governance structures to ESG performance and outcomes (Ziolo et al., 2019; Ahmadi & Amara, 2023). 'Banking sector' as a term underscores the focus on the broader industry implications of ESG practices.

Cluster 3: Industry-Specific Challenges and COVID-19: 'Banking industry' leads this cluster, alongside 'climate change' and 'COVID-19', highlighting the examination of sector-specific challenges and the pandemic's impact on banking performance (Dragomir et al., 2022; Zahid et al., 2023). High citations for 'financial performance'

indicate scrutiny of the financial outcomes of ESG initiatives, while 'social' and 'governance' aspects round out the ESG triumvirate.

Cluster 4: Risk Assessment and CSR: Keywords like 'bank risk', 'default risk', and 'ESG score' underscore the cluster's focus on risk assessment within the ESG context. The term 'CSR' (Corporate Social Responsibility) reflects the social dimension's importance and its interrelation with risk factors (Evlakhova, 2022; Forgione & Migliardo, 2020). The high average citations for 'bank risk' suggest a strong academic interest in the risk implications of ESG factors.

Cluster 5: Disclosure and Islamic Banking: With 'banks' and 'ESG disclosure' at the forefront, this cluster emphasizes the transparency and reporting aspects of ESG in the banking sector. 'Islamic banks' appear as a specific research area, suggesting interest in how ESG aligns with the principles of Islamic finance (Muhamad et al., 2022; Buallay et al., 2020). The term 'performance' indicates ongoing investigations into the relationship between ESG practices and bank performance.

Cluster 6: Stability and Responsibility: This cluster focuses on 'bank stability' and incorporates 'ESG controversies' and 'ESG rating', pointing to the importance of ESG in assessing and communicating bank stability (Vărzaru et al., 2021; Tóth et al., 2021). 'Corporate social responsibility (CSR)' and 'non- financial reporting' reflect the broadening scope of reporting practices beyond financial metrics.

Cluster 7: Social Performance and Risk Management: The final cluster brings together 'corporate social performance' and 'risk management', highlighting the crucial link between social factors and risk strategies within banks. The presence of multiple terms related to 'corporate social responsibility' and 'ESG ratings' indicates a dual focus on social impact and the evaluative frameworks used to measure ESG compliance and performance (Wang et al., 2022; Daszyńska-żygadło et al., 2021).

Keyword communities

Analyzing the co-occurrence data for keywords using VOSviewer, we can discern significant trends and focal points in the research on ESG impact on bank performance. The data, based on occurrences and average citations, reveals which areas within the ESG banking discourse have captivated academic interest and how these areas interlink to form a comprehensive narrative.

Table 5. Top Keyword Occurrences in the (EBP) Corpus 2012–2024.

Term	cluster	link strength	Occurrences	Avg. citations
esg	1	79	55	16.2364
banks	5	33	18	24.8889
sustainability	1	27	16	14.3125
banking sector	2	28	12	17.4167
esg performance	2	15	11	19.1818
corporate social responsibility	7	20	10	26
environmental	3	20	9	14
csr	4	15	9	42.2222
performance	5	23	9	32.6667
corporate governance	2	21	8	24.25
financial performance	3	18	8	0.875
esg disclosure	5	19	8	39.75
sustainability reporting	5	20	8	37.375
banking	1	11	6	2.6667
financial institutions	5	11	6	10
governance	3	10	5	12.2
esg score	4	7	5	26
esg rating	6	3	5	3
financial stability	1	6	4	2
green finance	1	7	4	1.5
environmental performance	2	10	4	34
social responsibility	2	11	4	35
banking industry	3	11	4	58.75
climate change	3	4	4	8.75
covid-19	3	10	4	28.5
social	3	11	4	22
content analysis	4	11	4	10.5
islamic banks	5	5	4	6.75
corporate social responsibility (csr)	6	6	4	14.75
corporate social performance	7	7	4	38.5
esg ratings	7	3	4	6.25
europa	1	7	3	2.3333
green bonds	1	3	3	27.3333
impact investing	1	6	3	2.6667
board diversity	2	6	3	37.6667
climate risk	2	2	3	2.6667
bank lending	4	5	3	1.6667
bank risk	4	7	3	50.6667
default risk	4	5	3	16.3333
sustainable finance	4	3	3	3.6667
bank stability	6	3	3	18
esg controversies	6	3	3	13.3333
non-financial reporting	6	4	3	18
risk management	7	6	3	24.3333

Source: Author's interpretation

The keyword co-occurrence analysis reveals a multi-faceted research landscape where ESG's role in banking is scrutinized from various angles, including sustainability practices, financial outcomes, and the broader societal and environmental impacts. The data suggests a strong and growing academic interest in how ESG considerations are reshaping the banking sector, driving new strategies

for risk management, operational efficiency, and value creation (Bhaskaran et al., 2023). The emphasis on sustainability reporting and CSR indicates a shift towards greater transparency and accountability, aligning with stakeholder demands for more responsible banking practices (Gunawan et al., 2022).

Moreover, the integration of ESG into financial performance analysis highlights a critical trend: the banking sector's shift towards sustainability is not just ethically driven but is increasingly viewed as a cornerstone for financial resilience and competitive advantage (Schult et al., 2023; Krech et al., 2018). The emergence of themes like COVID-19 and the focus on specific areas like Islamic banking and green finance reflect the sector's responsiveness to global challenges and the diversity of approaches to ESG integration.

Overall, the trends suggest that ESG considerations are becoming integral to the banking industry's evolution, with research playing a pivotal role in uncovering the complexities, challenges, and opportunities presented by this integration.

ESG (Environmental, Social, and Governance): With the highest occurrences and substantial link strength, 'ESG' stands at the forefront of the research. This prominence underscores the centrality of ESG considerations in the banking sector, reflecting a keen academic and industry interest in understanding how ESG factors influence bank operations, risk, and performance.

Banks and Banking Sector: 'Banks' and 'banking sector' are key focal points, indicating a broad examination of ESG impacts across the banking industry. This includes analyses of how banks are integrating ESG principles into their strategic frameworks and the resultant effects on their operational and financial performance (Iannuzzi et al., 2023).

Sustainability and Sustainability Reporting: These terms highlight the importance of sustainability in the banking sector, not just as a principle but as a practice, through sustainability reporting (Gutiérrez- Ponce & Wibowo, 2023). This suggests a growing emphasis on transparency and accountability in how banks disclose their ESG and sustainability efforts (Mandas et al., 2023).

ESG Performance and Financial Performance: The combined analysis of 'ESG performance' with 'financial performance' and 'performance' suggests a critical investigation into the relationship between ESG initiatives and financial outcomes (Bax et al., 2023; Alamsyah and Muljo, 2023; Dinh and Melloni, 2023). The significant occurrences and citations reflect ongoing efforts to quantify the financial benefits of ESG integration in banking.

Corporate Social Responsibility (CSR): With CSR and related terms like 'corporate governance' and 'corporate social performance' featuring prominently, there's a clear academic focus on the social and governance aspects of ESG. This includes exploring how banks' CSR practices contribute to their overall ESG performance and impact (Ben Fatma and Chouaibi, 2023).

Environmental Focus: Keywords such as 'environmental', 'green finance', and 'climate change' denote a specific interest in the environmental dimension of ESG. This trend indicates a keen exploration of how environmental risks and opportunities are managed within the banking sector and the role of green financial products (Rossi et al., 2024; Li et al., 2024).

Emerging Themes: 'COVID-19' emerges as a recent theme, suggesting an interest in understanding the pandemic's impact on ESG practices and bank performance. 'Islamic banks' also appear as a niche area of interest, indicating an exploration of ESG within alternative banking models.

3.3. Research Trend from 2012-2024

3.3.1. Research Trends and Emphasis (2012-2015)



Figure 1. Academic focus during 2012-2015

Source: Created by the Author using Python

Between 2012 and 2015, the research on ESG impact on bank performance was characterized by a multifaceted approach, encompassing integration strategies, risk management, financial outcomes, regulatory influences, and stakeholder relations. The period marked a foundational stage in understanding the complexities and benefits of embedding ESG principles within the banking sector. The trend indicated a growing awareness and empirical investigation into how ESG factors are not only essential for sustainable development but also pivotal in shaping the financial and operational paradigms of banks. A noticeable trend during this period was the exploration of how banks integrate ESG criteria into their investment decisions, risk assessment models, and overall strategic planning (Kocmanová and Dočekalová, 2012). Research focused on understanding the methodologies and frameworks banks employed to incorporate ESG factors, suggesting a growing recognition of sustainability issues within the financial sector (Zeidan and Spitzbeck, 2015).

4. Discussion

The integration of Environmental, Social, and Governance (ESG) principles within the banking sector from 2012 through February 2024 has unfolded as a multifaceted narrative of evolving research focus, global engagement, and thematic diversification (Knoepfel, 2004; Sjøfjell & Richardson, 2015; Senadheera et al., 2022). This comprehensive examination reveals how the academic community and banking industry have dynamically engaged with ESG principles, marking a significant shift towards sustainability in banking practices. The foundational research initiated in the early years laid the groundwork for understanding ESG's integration, emphasizing methodologies and frameworks that embed these principles effectively to mitigate risks and enhance operational stability amidst evolving regulatory landscapes (de Souza Barbosa et al., 2023; Weber, 2019).

As the dialogue around sustainable finance matured, the period from 2016 to 2018 witnessed a deeper exploration into the nuances of ESG's impact on banking performance, highlighting its strategic value as a competitive advantage (Schotten et al., 2017; Parlina et al., 2020). This phase underscored the intersection of ESG with technological innovations and the pivotal role of stakeholder engagement, suggesting that banks embracing ESG principles were poised to navigate the financial landscape's complexities more adeptly. The subsequent years, up to 2021, expanded the research focus to address global sustainability challenges, including climate change and the COVID-19 pandemic, emphasizing ESG's critical role in ensuring the banking sector's resilience and competitiveness (Menicucci & Paolucci, 2023; Anikin et al., 2023; Zolotova, 2023).

The most recent trends leading up to February 2024 have showcased an industry actively contributing to the global sustainability agenda, with ESG considerations emerging as strategic imperatives (Porzio & Battaglia, 2024; Peng, 2023; Korobeynikov et al., 2023). This period is characterized by a focus on climate finance, digital innovation, and the comprehensive integration of ESG principles, reflecting the banking sector's pivotal role in achieving a sustainable future.

Incorporating the geographical distribution of research contributions and keyword co-occurrence analysis enriches our understanding of the global and thematic dimensions of ESG integration within the banking sector. The increased research activity from countries like Italy, the Russian Federation, China, and India illustrates a broadening global interest in ESG banking practices, underscoring ESG issues' cross-cultural and international relevance (Bhaskaran et al., 2023; Gunawan et al., 2022). This diversity in research origin suggests a global phenomenon, resonating with both emerging markets and developed economies, and points towards the necessity for cross-cultural collaborations to effectively tackle global sustainability challenges through banking and finance.

The keyword analysis reveals a thematic landscape marked by operational and strategic integration of ESG principles, alongside emerging challenges and innovations. Themes such as "COVID-19," "climate change," "Islamic banking," and "green finance" signify the sector's adaptability to global challenges and openness to diverse ESG integration approaches (Schult et al., 2023; Krech et al., 2018). This

dynamic nature of ESG research within banking, adapting to new challenges and exploring niche areas, reflects the evolving discourse on sustainable finance.

The confluence of geographical insights and thematic explorations provides a nuanced understanding of ESG research in banking, highlighting the importance of fostering a global research community. This community would embrace diversity in perspectives and methodologies, tackling the complex challenges of sustainable banking. The evolving thematic focus areas underscore the need for innovative research approaches to navigate ESG integration's complexities, leveraging new technologies and analytical models.

In summary, the integration of ESG principles in banking from 2012 to 2024 not only underscores a significant evolution in research focus and practice but also highlights the interconnectedness of global sustainability challenges with the banking sector's role in addressing them. As the banking industry continues to evolve in response to these challenges, the insights derived from this comprehensive analysis will be invaluable in shaping strategies that align with global sustainability objectives, fostering a more sustainable and resilient banking sector for the future.

5. Conclusion

Embarking on an exploration of the intricate landscape of Environmental, Social, and Governance (ESG) principles within the banking sector from 2012 through February 2024, our investigation was aimed at delineating the progression and impact of ESG integration on banking performance. This period has unfolded as a testament to the increasingly central role of ESG in the global and interdisciplinary realms of banking studies. Through our analysis, we identified pivotal clusters within the ESG corpus, dissecting their evolution across distinct phases that echo the shifts in scholarly focus and editorial stewardships.

Our journey through the ESG Bank Performance (EBP) corpus has offered a panoramic view of how the conversation around sustainable banking practices has evolved, becoming richer and more complex over the past twelve years. This exploration has not only highlighted the corpus's growing significance in the academic dialogue but also pinpointed emerging trends and areas ripe for future exploration. In doing so, we have aimed to furnish the banking and academic communities with a reflective tool—a mirror, if you will—allowing them to discern their strengths and areas for further development within the ESG domain.

Moreover, we envisage that our comprehensive review will perpetuate the trend of employing Big Data Analytics (BDA) to unearth insights into specific research contexts, thereby enriching our collective understanding of ESG's role in banking. Our findings reveal a dialogue around ESG that is as dynamic and multifaceted as the concept of small groups itself, characterized by ongoing growth and complexity. And, akin to any evolving conversation, it becomes imperative occasionally to pause and reflect upon the discourse thus far, acknowledging the journey, the milestones achieved, and the path that lies ahead for sustainable banking practices. This reflection is not merely an academic exercise but a necessary pivot towards ensuring that the integration of ESG principles within banking continues to be

relevant, insightful, and aligned with global sustainability goals, thereby shaping a resilient and sustainable banking sector for future generations.

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ESG REPORTING IN ROMANIA: ASSESSING SUSTAINABILITY PRACTICES AND THEIR FINANCIAL IMPACT ON BET-LISTED COMPANIES

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Abstract: In recent years, ESG reporting in Romania has gained increasing relevance, driven by both regulatory developments at the European level and growing investor demand for transparency regarding corporate sustainability practices. This paper investigates the development and implementation of Environmental, Social, and Governance (ESG) initiatives among companies listed on the Bucharest Stock Exchange (BET 20 index), based on the analysis of their 2023 sustainability reports. The research aims to evaluate both the level of ESG reporting maturity and the extent to which ESG performance is associated with financial outcomes, particularly EBITDA. To examine the financial implications of ESG performance, a quantitative analysis was conducted using multiple linear regression. The results indicate a statistically significant and positive correlation between the Social (S) score and EBITDA, suggesting that companies with stronger social engagement—such as employee welfare, community involvement, and health and safety practices—may benefit from improved financial performance. Conversely, the Environmental (E) and Governance (G) scores did not exhibit statistically significant relationships with EBITDA, although the Governance component showed a moderate negative trend, potentially reflecting short-term costs associated with compliance and reform initiatives. The findings underscore the potential for ESG, particularly the Social dimension, to act as a driver of financial value in the Romanian market context. However, the heterogeneity of ESG reporting practices suggests the need for greater standardization and regulatory alignment. This study contributes to the limited empirical literature on ESG in Eastern Europe and provides practical implications for policymakers, investors, and corporate leaders seeking to integrate sustainability considerations into financial decision-making.

Keywords: ESG; sustainability reporting; company performance; Romania's BET 20

JEL Classification: M14; Q56.

1. Introduction

In the context of growing global concerns over climate change, social inequality, and corporate governance failures, the integration of Environmental, Social, and Governance (ESG) principles into corporate strategy and reporting has become a key area of focus for both companies and investors. The need for enhanced corporate accountability and transparency in sustainability-related issues has been widely acknowledged, prompting a regulatory shift in many jurisdictions. At the European level, landmark frameworks such as the Corporate Sustainability Reporting Directive (CSRD) and the Sustainable Finance Disclosure Regulation (SFDR) have been instrumental in institutionalizing ESG practices across the corporate landscape (Dobre et al., 2025).

These regulatory developments have had significant implications for national markets, including Romania, where ESG reporting has evolved from a voluntary initiative into a gradually formalized compliance obligation. Initially, the adoption of ESG reporting in Romania was driven primarily by multinational corporations operating locally, who adhered to global reporting standards and practices. Over time, however, ESG disclosure has become more prevalent among Romanian entities, reflecting a broader alignment with European Union directives and expectations surrounding sustainable business conduct (Udrescu, 2024).

A notable milestone in this transition has been the mandatory ESG reporting requirement introduced for companies listed on the Bucharest Stock Exchange (BVB), particularly those included in the BET index—the benchmark index comprising Romania's most liquid and capitalized companies. Starting in 2023, these companies have been required to prepare and publish sustainability reports in accordance with the provisions of Directive (EU) 2022/2464, which officially introduced the CSRD (Milu & Hațegan, 2021). This directive extends ESG reporting obligations to large undertakings and public-interest entities that, on a consolidated basis, employ an average of more than 500 individuals during the financial year.

While the directive marks a significant step toward harmonized non-financial reporting across the European Union, its implementation remains in a formative phase. The fiscal year 2024 is the first in which ESG reports will be subject to mandatory audit, with the first wave of audited reports expected to be published in 2025. As such, Romania currently finds itself in a transitional period, where regulatory compliance, data quality, and organizational preparedness for ESG reporting are still developing.

Against this background, the present study aims to evaluate the ESG reporting practices of 20 BET-listed companies based on their 2023 sustainability reports and to analyze the content, depth, and consistency of ESG disclosures and to empirically investigate the relationship between ESG performance and financial outcomes, with particular emphasis on EBITDA as a proxy for operational profitability.

Through a mixed-method approach that combines content analysis with regression modelling, this research seeks to provide insights into how the quality of ESG reporting varies across companies and whether higher ESG performance is associated with superior financial results.

By examining ESG integration in a transitional economy such as Romania, this study contributes to the broader academic discourse on sustainability and corporate performance in emerging markets. Furthermore, the findings offer practical implications for corporate decision-makers, investors, and policymakers interested in advancing ESG adoption and aligning sustainable development goals with corporate value creation.

2. Literature review

Over the past several decades, the concept of sustainable development has undergone significant transformation, evolving into a multidimensional framework that reflects the complex and interdependent challenges of contemporary global society. Initially introduced as a response to the growing awareness of environmental degradation, sustainable development has since become a central paradigm in the discourse on economic growth, environmental preservation, and social equity.

As environmental concerns such as climate change, biodiversity loss, and resource depletion became increasingly prominent on the global agenda, sustainable development moved beyond its early conceptual boundaries. What once was considered a primarily ecological initiative has matured into a comprehensive strategic approach, informing both public policy and corporate governance. Since the early 1990s, the sustainable development agenda has progressively expanded to incorporate social considerations, emphasizing the importance of reducing inequalities, promoting inclusive economic opportunities, and safeguarding human rights (Pezzey, 1992).

A landmark in the institutionalization of this concept was the publication of the Brundtland Report (1987), officially titled *Our Common Future*, which offered a widely accepted definition of sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The report played a foundational role in integrating sustainability into international policy dialogues, and significantly, it highlighted the interlinkages between environmental protection, economic progress, and social well-being. Crucially, the Brundtland Report also marked a turning point in recognizing the role of non-governmental organizations (NGOs) as essential actors in the sustainability landscape. By acknowledging NGOs as legitimate participants in global environmental governance, the report paved the way for their active involvement in international negotiations, advocacy efforts, and the formulation of both national and transnational sustainability strategies. This development contributed to the democratization of the sustainability discourse, allowing for more diverse stakeholder participation and enhancing the accountability of decision-making processes (Lélé, 1991).

In the subsequent decades, the concept of sustainable development has continued to gain institutional legitimacy, becoming embedded in a wide array of international frameworks, including the United Nations' Millennium Development Goals (MDGs) and, more recently, the Sustainable Development Goals (SDGs) adopted in 2015 (United Nations, 2000 – 2030 Agenda). Among the core areas of

action within the sustainable development framework are the eradication of poverty and hunger, the promotion of gender equality, the expansion of access to quality education and healthcare services, the protection of the natural environment, the pursuit of inclusive economic prosperity, and the preservation of global peace. These objectives collectively reflect the multidimensional character of sustainable development, which is structured around three interdependent pillars: the economic, the social, and the environmental. These frameworks have further reinforced the multidimensional nature of sustainability and solidified its status as a guiding principle for equitable and resilient global development.

The initial efforts toward sustainability reporting emerged as a direct response to the growing awareness of the environmental and social impacts generated by economic activities. In the early 1990s, a significant number of organizations began to develop tools and frameworks designed to evaluate and communicate non-financial performance, acknowledging that financial metrics alone were insufficient for assessing a company's overall contribution to sustainable development.

One of the pioneering initiatives in this domain was the establishment of the Global Reporting Initiative (GRI), which in 1997 introduced the first voluntary reporting framework for companies to disclose their environmental, social, and economic impacts in a transparent and standardized manner (Olteanu et al., 2024). The GRI framework was instrumental in laying the foundation for what would later become mainstream sustainability disclosure practices. It also marked a turning point in the evolution of corporate accountability, emphasizing the need for comprehensive performance measurement that extends beyond financial results (Bunget et al., 2024).

This paradigm shift was strongly driven by increasing demands from a wide range of stakeholders -including investors, regulators, and civil society organizations- who began to call for greater transparency regarding corporate sustainability practices. As a result, Environmental, Social, and Governance (ESG) criteria began to be progressively integrated into corporate reporting systems, influencing both internal decision-making and external perceptions of corporate responsibility (Zairis et al., 2024).

In light of the growing recognition that private sector engagement is essential to achieving global sustainable development goals, regulatory bodies have responded with a proliferation of new legislative frameworks aimed at standardizing and mandating non-financial disclosure. A significant milestone in this regard was the adoption of Directive 2014/95/EU of the European Union, commonly referred to as the Non-Financial Reporting Directive (NFRD). In force since 2017, the directive requires large public-interest entities operating within the EU to publish non-financial reports, detailing how they address issues such as environmental protection, social responsibility, human rights, anti-corruption measures, and board diversity.

Building upon the objectives of sustainable development and recognizing the imperative of aligning national practices with international regulatory standards, the Romanian government has undertaken significant legislative initiatives in recent years, particularly starting from 2018. One of the most notable legal advancements was the adoption of a regulation requiring Romanian companies with an average of over 500 employees, as well as those listed on public markets, to prepare and

submit a non-financial statement alongside their annual financial statements (Tiron et al., 2019; Păun et al., 2020).

The purpose of this non-financial statement is to enhance corporate transparency and to reflect a company's commitments regarding social responsibility, environmental stewardship, business ethics, and corporate governance. Through this reporting obligation, companies are required to disclose relevant information concerning the environmental, social, and economic impacts of their activities, thereby contributing to a more comprehensive assessment of their long-term sustainability. Moreover, non-financial reporting fosters corporate accountability and represents a key step toward building a more responsible and sustainable economy, in alignment with the United Nations Sustainable Development Goals (SDGs) and the standards established by the European Union (Tăchiciu et al., 2020).

These legislative provisions not only strengthen transparency but also serve as an incentive for companies to adapt their business strategies to address contemporary social and environmental challenges. In doing so, they promote sustainable development and encourage active corporate engagement within communities. Nevertheless, this framework remains in a developmental stage. The 2024 fiscal year marks the first in which ESG audits become mandatory in Romania, with the first audited non-financial reports expected to be published in 2025.

The non-financial statement, as regulated under Order of the Minister of Public Finance (OMFP) No. 3456/2018, constitutes an important step toward increasing the accountability of Romanian companies concerning their social, environmental, and economic footprint. As part of their non-financial reporting obligations under Order No. 3456/2018, companies are required to disclose comprehensive information across five core dimensions:

- the company's strategic positioning and the impact of its operations on society and the economy;
- its policies and practices related to environmental protection;
- its approach to employee relations and the protection of human rights;
- its measures to prevent and combat corruption and bribery;
- its commitment to promoting diversity within the organization.

In addition, beginning in 2022, reporting entities are mandated to include a dedicated chapter on the EU Taxonomy within the non-financial statement. This requirement aims to assess the extent to which a company's economic activities align with the technical screening criteria outlined in the European Union's Taxonomy Regulation, thereby enhancing the comparability and transparency of sustainability disclosures in accordance with EU standards (Dănilă et al. 2020; Niculescu et al., 2023).

Although non-financial reporting has become mandatory for certain categories of companies, a substantial number of firms have chosen to adopt this practice voluntarily (Chelba and Ciobotariu, 2025). According to a 2020 study conducted by Ernst & Young, over 43% of Romanian companies that are not legally obligated to submit non-financial statements have chosen to do so voluntarily. This trend reflects a growing recognition that sustainability reporting is not merely a compliance exercise but a tool for competitive differentiation and a means of demonstrating genuine commitment to social welfare and environmental stewardship.

Voluntary adopters of non-financial disclosure engage in such practices not only to enhance their legitimacy in the eyes of consumers and investors but also to gain a more nuanced understanding of their social and environmental performance.

In the long term, the integration of sustainability principles and transparent non-financial reporting exerts transformative effects on corporate behavior. It shapes strategic decision-making, operational development, and stakeholder engagement, reinforcing the organization's role in fostering a resilient, inclusive, and environmentally conscious economic ecosystem.

Ultimately, sustained commitment to transparency and ESG integration enhances organizational resilience and positions companies for sustainable growth in a rapidly evolving economic and regulatory context.

3. Research Methodology

3.1. Data and Methodology

The objective of this study is to examine the extent to which the top 20 publicly listed Romanian companies, collectively referred to as the BET 20, have incorporated ESG (Environmental, Social, and Governance) regulations into their corporate practices, as well as to explore the potential relationship between ESG reporting and financial performance. The analysis is based on data extracted from the companies' 2023 annual sustainability reports, publicly accessible on their official websites, complemented by a detailed review of additional documents, including but not limited to: corporate strategies, sustainability strategies, annual financial results. The non-financial information examined in this research emphasizes three principal dimensions of sustainability:

Environmental factors: this dimension involves the assessment of the current impact of corporate operations on the natural environment. Thus, we have considered the usage of renewable energy since this indicator directly reflects a company's commitment to reducing its carbon footprint and environmental impact. Some industries within BET 20 (e.g., utilities, manufacturing, oil & gas, and heavy industry) consume large amounts of energy. For these companies, transitioning to renewable energy can lead to significant cost savings, risk reduction, and enhanced ESG ratings (Issa and Hanaysha, 2023; Silaban and Sitorus, 2025);

Social Factors: this dimension addresses the companies' initiatives aimed at fostering social responsibility, including the promotion of gender equality, enhancement of working conditions, facilitation of social dialogue, protection of trade union rights, and the assurance of health and safety standards within the workplace. The indicator considered for this dimension was the percentage of women in company board since having women represented on boards reflects a company's commitment to diversity, equity, and inclusion, which are core social values. Gender-diverse boards bring varied viewpoints and experiences, which contribute to more balanced, innovative, and comprehensive decision-making and women on boards are often associated with stronger oversight, better ethical standards, and a focus on long-term sustainability goals (Wu et al., 2024; Zhu and Chen, 2025; Omenihu et al. 2025);

Sustainable Development Aspects: examination of the entity's impact on sustainable development commitments using the GEM ASSAY™ score, a specialized research instrument that enables the level of transparency in non-financial reporting practices (Hofstetter and Diegelmann, 2023).

Due to the emerging nature of this research topic within the Romanian context, existing studies examining the impact of sustainable policy implementation on firm performance remain limited (Milu and Hațegan 2021; Vasile 2022; Vasiu, 2023; Fometescu and Hațegan, 2024), and most of them focus on specific sectors of the industry. The results of these studies reveal a positive relationship between high ESG scores and performance (Siminica et al., 2019; Rajesh 2020; Nguyen et al. 2021) and also highlight the fact that the implementation of ESG initiatives are only producing effects on the long term (Arvidsson and Dumay; Domanović, 2022; Piao 2024)

Based on the above, the following hypotheses are proposed:

Companies listed on the Bucharest Stock Exchange (BET 20) that report higher levels of ESG (Environmental, Social, and Governance) performance in their 2023 sustainability reports exhibit significantly better financial performance compared to those with lower ESG scores;

The relationship between company performance and ESG initiatives is only relevant on the long term.

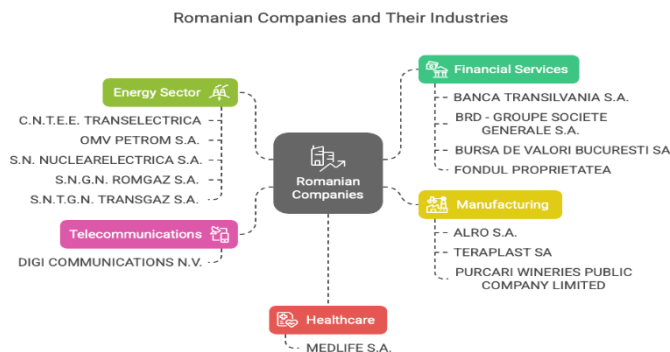


Figure 1: Top 20 publicly listed Romanian companies (BET20)

Source: Author's interpretation based on the information available on the Bucharest Stock Exchange

3.2. Methodology

Hypothesis testing and validation was performed using quantitative methods of gathering information collecting data from the BET 20 company annual sustainability reports for 2023, considered appropriate in the context of the research's objective. For each dimension we have identified one relevant indicator (Environment - usage of renewable energy; Social - the percentage of women in company board; Governance – the companies GEM ASSAY™ score) considering the significant differences among the companies included in the study in terms of size, industry, and target markets, variations that may influence the observed outcomes and

should be carefully accounted for in the analysis. The three indicators mentioned above were considered as independent variables.

The values for "Usage of renewable energy", where percentages ranged from 0% to 95% were modified due to the high data dispersion as follows: 1 from 0%-10%, 2 for 11-20%, 3 for 21-50%, 4 for 51-80%, 5 for 81% or more. The study also aims to provide an initial assessment of the impact of ESG adoption on financial performance, using EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization) as the dependent variable. EBITDA is widely recognized in both academic and professional literature as a key indicator of a company's operating performance, particularly because it provides a clearer picture of profitability by isolating core business operations from the effects of financing and accounting decisions (Damodaran, 2012; Bouwens et al., 2019).

The regression analysis was performed in SPSS 29.0 while for EBITDA we have used Orbis database.

3.3. Results and discussions

In terms of financial performance, we have considered EBITDA for the fiscal year 2023 and out of 20 listed companies we only found available data for 17 (the ones missing were C.N.T.E.E. TRANSELECTRICA, CONPET SA and FONDUL PROPRIETATEA), while one of them (ALRO SA) had negative results. The final sample is listed in the table below:

Table 1: Sample table

Company	EBITDA (Ron)	E	S	G
ALRO S.A.	-169.869,00	4	22,4	18,18
AQUILA PART PROD COM	176.540,00	3	29,4	20
BANCA TRANSILVANIA S.A.	3.501.700,00	5	17	28,57
BRD - GROUPE SOCIETE GENERALE S.A.	4.705.400,00	5	14,4	45
BURSA DE VALORI BUCURESTI SA	31.644,00	3	23,8	0
DIGI COMMUNICATIONS N.V.	592.000.000,00	1	39	0
MEDLIFE S.A.	291.596,00	1	26,8	14,28
OMV PETROM S.A.	10.862.900,00	1	28,9	35
ONE UNITED PROPERTIES	568.876,00	3	18,4	50
PURCARI WINERIES PUBLIC COMPANY LIMITED	100.634.666,00	2	34	15
S.N. NUCLEARELECTRICA S.A.	3.171.534,00	1	23	33,3
S.N.G.N. ROMGAZ S.A.	5.552.132,00	1	29	14,29
S.N.T.G.N. TRANSGAZ S.A.	729.804,00	1	27,6	40
SOCIETATEA ENERGETICA ELECTRICA SA	1.792.052,00	1	29,90	14
SPHERA FRANCHISE GROUP	211.312,00	1	18,7	0
TERAPLAST SA	52.761,00	4	23,4	20
TTS (TRANSPORT TRADE SERVICES)	446.091,00	1	21,8	40

Source: Author's interpretation based on the information available on the Bucharest Stock Exchange, financial reports and GEM ASSAY™ score

Following the exclusion of companies with unavailable data, the final sample comprised 17 listed entities from the BET 20 index. After processing the data using the Simple Linear Regression and Pearson correlation, the following results were obtained:

Table 2: Pearson correlation between EBITDA and the ESG dimensions

ESG Indicator	Correlation	p-value
Environmental	-0,217	0,402
Social	+0,622	0,008
Governance	-0,386	0,126

Source: Author's interpretation

The Social (S) score demonstrates a positive and statistically significant correlation with EBITDA, indicating that companies with higher social performance tend to exhibit better financial performance, as measured by EBITDA. This relationship suggests that social responsibility—manifested through factors such as employee well-being, community engagement, diversity and inclusion, and human rights practices—may contribute meaningfully to a firm's operational efficiency and financial outcomes.

In contrast, the Environmental (E) and Governance (G) components did not exhibit statistically significant correlations with EBITDA in this analysis. While the Governance score showed a tendency toward a moderate negative relationship with financial performance, the lack of statistical significance implies that these findings should be interpreted with caution. It is possible that the influence of E and G components on performance may be more nuanced or dependent on industry-specific factors, company size, or other mediating variables that were not accounted for in this model. Moreover, considering that most initiatives aimed at improving environmental performance and corporate governance typically involve substantial financial investments, it is reasonable to expect a negative short-term impact on profitability. These actions often entail upfront costs—such as upgrading infrastructure, implementing compliance systems, or enhancing transparency—which may outweigh the immediate financial benefits, despite their potential to generate long-term value. Based on the empirical results of the study, *the first hypothesis was partially validated*, as a statistically significant correlation was identified between financial performance—measured through EBITDA—and the social dimension of ESG indicators. This suggests that, among the three ESG pillars, social factors currently exhibit the strongest link to operational profitability within the sample analyzed. With respect to the second hypothesis, the findings do not indicate a strong short-term relationship between overall ESG reporting and financial performance. **This outcome underscores the importance of adopting a longitudinal perspective when assessing the financial implications of ESG integration.** Given that ESG-related initiatives often require substantial upfront investment—particularly in areas such as environmental infrastructure, employee welfare programs, and governance reform—it is reasonable to anticipate a potential short-term drag on profitability. Therefore, continued monitoring of the selected companies over multiple reporting periods is necessary to capture the medium- to long-term effects of ESG adoption on corporate performance.

Table 3: OLS Regression Results

Metric	Value
Multiple R	0.652
R-square	0.425
Adjusted R-squared	0.281
F-statistic	9.445
p-value (model)	0.077

Source: Author's interpretation

The regression analysis revealed a moderate to strong correlation between the independent variables and the dependent variable, as indicated by a Multiple R of 0.652. The model explains approximately 42.5% of the variance in the dependent variable ($R\text{-squared} = 0.425$), suggesting a fair degree of explanatory power. However, when adjusted for the number of predictors in the model, the explained variance decreases to 28.1% ($\text{Adjusted } R\text{-squared} = 0.281$), which may reflect limitations related to sample size or variable selection. The F-statistic of 9.445 indicates a reasonably strong model fit, yet the corresponding p-value of 0.077 suggests that the model is not statistically significant at the conventional 5% level. Nonetheless, the result is marginally significant at the 10% threshold, indicating a potential relationship worth further exploration. These findings should be interpreted with caution and may benefit from further validation using a larger sample and more refined ESG metrics.

The results of this study suggest a moderate relationship between ESG factors and financial performance, as measured by EBITDA, among companies listed on the Bucharest Stock Exchange (BET 20). Among the ESG components, the Social dimension demonstrated a statistically significant and positive influence on financial performance, supporting the hypothesis that socially responsible practices may contribute to improved operational outcomes. However, the overall model did not reach statistical significance at the 5% level ($p = 0.077$), highlighting the need for cautious interpretation. The findings, while promising, underline the complexity of quantifying ESG's impact on performance and point to the need for more robust evidence to draw generalizable conclusions. Most of the results can be explained by the fact that ESG investments often yield long-term benefits so future research could examine the delayed impact of ESG performance on financial outcomes, using lagged variables or longitudinal data. Also, as future research directions we could include more variables for each dimension and incorporate other performance measures such as Return on Assets (ROA), Return on Equity (ROE), or market-based indicators (e.g., stock price performance) that could offer a more comprehensive view of financial impact.

5. In conclusion

Over the past several decades, the concept of sustainable development has evolved from a primarily ecological concern into a comprehensive and multidimensional framework that integrates economic, environmental, and social dimensions and is no longer viewed solely as a normative goal but has become a foundational principle shaping policy agendas and corporate strategies worldwide.

Within this evolving context, the institutionalization of mandatory non-financial reporting has played a pivotal role in operationalizing sustainability at the corporate level. Legislative frameworks such as the EU Non-Financial Reporting Directive and the Corporate Sustainability Reporting Directive (CSRD) have established clear disclosure requirements, pushing companies beyond voluntary commitments toward standardized, transparent, and accountable reporting practices. Romania has progressively aligned with these European mandates, introducing key regulations -such as OMFP No. 3456/2018- that require large undertakings and listed entities to report on their environmental, social, and governance (ESG) performance.

This study explored the extent and implications of ESG reporting among Romania's top publicly listed companies (BET 20), shedding light on both regulatory compliance and voluntary corporate behavior in a transitioning economy. The analysis revealed a partial validation of the hypothesis that higher ESG performance is associated with improved financial results, with the Social (S) component showing a statistically significant and positive correlation with EBITDA. This finding highlights the tangible financial benefits that may arise from enhanced social responsibility, particularly in areas such as workforce diversity, employee well-being, and stakeholder engagement.

Conversely, the Environmental (E) and Governance (G) dimensions did not demonstrate statistically significant relationships with financial performance, suggesting that their influence may be more latent or dependent on sector-specific variables. Given that ESG initiatives, especially those tied to environmental and governance reforms, often entail considerable initial costs, their financial benefits may only materialize over the medium to long term. As such, a short-term analysis may underestimate the true value of ESG integration.

While the regression model demonstrated a moderate degree of explanatory power ($R^2 = 0.425$), its statistical significance was marginal, with a model p-value of 0.077—slightly above the conventional 5% threshold. This suggests that while the independent ESG variables collectively explain a fair portion of the variance in financial performance (as measured by EBITDA), the results should be interpreted with caution. The marginal significance implies that the observed relationships may not be robust across different samples or under alternative specifications, and that the model might be sensitive to omitted variables or sample size limitations.

These results more strongly support the second hypothesis, emphasizing that the financial impact of ESG initiatives—particularly those related to environmental and governance practices—may materialize primarily over a longer time horizon. Investments in ESG often entail upfront costs that may temporarily reduce profitability, while the associated benefits—such as improved risk management, enhanced reputation, regulatory compliance, or access to capital—typically accrue

over time. Therefore, the weak short-term correlation observed in this study aligns with the notion that ESG's full financial implications are better captured through a longitudinal approach. Future research employing multi-year panel data or lagged ESG variables could offer deeper insights into these delayed effects.

Overall, the study confirms that ESG reporting in Romania is not solely a compliance mechanism but increasingly a strategic tool leveraged voluntarily by companies to differentiate themselves and align with international sustainability standards. The results offer valuable insights for corporate leaders, investors, and policymakers aiming to foster responsible business conduct and sustainable economic development in emerging markets.

The Romanian corporate landscape reflects a steady advancement in sustainability awareness and reporting maturity. Although the practice of ESG reporting remains in a transitional phase, with full audit requirements taking effect starting from fiscal year 2024, the increasing number of companies engaging voluntarily in non-financial disclosure signals a shift in mindset.

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EUROPEAN FUNDS AND REGIONAL GDP DYNAMICS IN ROMANIA. CASE STUDY: NORTH-WEST REGION AND BIHOR COUNTY

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Abstract: *This paper analyzes the relationship between the absorption of European funds, regional GDP dynamics, and the processes of local and regional development in Romania, with a focus on the North-West Region and Bihor County. Based on data provided by the National Institute of Statistics for the period 2000–2022, the study explores how investments made through the Cohesion Policy have influenced local economic and social development. Against the backdrop of a European framework that promotes territorial convergence, the research highlights that while European funds can be an important engine of development, their impact on GDP and local development varies significantly depending on the institutional, economic, and social context of each region or county. In Bihor's case, a steady increase in GDP can be observed, along with persistent disparities when compared to counties such as Cluj, which has succeeded in building an innovation-driven economic model focused on high added-value services. The results show a positive correlation between attracted European funds and GDP growth, though not a directly proportional one. Thus, regional and local development cannot be assessed solely through GDP indicators, but must be examined in a broader framework that includes infrastructure, access to public services, social inclusion, administrative capacity, and quality of life. The paper argues that public policies should be grounded in an integrated approach, tailored to territorial needs, and that European funds must be aligned with clear objectives of sustainable, equitable, and balanced development.*

Keywords: *European funds, GDP, local development, regions, Bihor, convergence, cohesion*

JEL classification: *H72; H83; R51; R53*

1. Introduction

The European Union strengthens its economic, social, and territorial cohesion with the aim of promoting harmonious development across its entire territory. The EU is particularly focused on reducing disparities between the development levels of its various regions, by supporting public investment and strengthening the local capacity to absorb funding.

Gross Domestic Product (GDP) dynamics are often used as a key indicator of economic progress. In the context of the European Union's Cohesion Policy, structural and investment funds are the main financial instruments aimed at reducing regional disparities and stimulating balanced development (Barca, 2009). This paper investigates the relationship between the absorption of European funds and the evolution of GDP in Romania, with a particular focus on the North-West Region and Bihor County, where major infrastructure, energy, and public administration projects have been implemented.

The analysis is based on: official data from the National Institute of Statistics (INS) regarding regional and county-level GDP (2000–2022); comparative charts between the North-West Region and other development regions; the evolution of nominal GDP and GDP per capita; correlations between the amounts of European funds absorbed and GDP dynamics and European studies and reports on economic cohesion (European Commission, 2022).

2. Literature review

This approach is supported by the work of Pike, Rodríguez-Pose, and Tomaney (2017), who argue that regional development should not be seen solely in terms of economic growth, but also in terms of the equitable distribution of opportunities and resources. Stimson, Stough, and Roberts (2006) emphasize the importance of integrating economic, social, environmental, and institutional dimensions in regional planning processes.

Under the Cohesion Policy framework, the European Union defines regional and local development as processes aimed at achieving sustainable economic growth, social inclusion, and job creation by leveraging the endogenous potential of territories. In the European Commission's strategic documents, local development is viewed as a key component of territorial cohesion and democratic participation, emphasizing multi-level governance, partnerships, and community involvement in defining strategic directions. Through concepts such as "Community-Led Local Development" (CLLD), the EU promotes a bottom-up approach aimed at tailoring interventions to the real needs of territories, offering an alternative to top-down policy models.

In the official understanding, regional development is a sustained process of economic growth and improvement in living conditions in a given region, aimed at reducing territorial disparities, strengthening cohesion, and capitalizing on local potential. In Romania, according to Law no. 315/2004 on regional development, the concept is defined as a set of public policies, measures, and institutional initiatives that seek the balanced development of regions by attracting investments and creating jobs.

In academic literature, regional development is perceived more comprehensively—as a multidimensional process involving not only economic growth (e.g., GDP increases) but also social, cultural, ecological, and institutional aspects. It implies the mobilization of local resources, community engagement, and the development of a functional institutional framework adapted to territorial specificities (Rodríguez-Pose, 2015; Barca, 2009).

Similarly, local development is described as the process through which local communities harness their own resources and build tailored development strategies through public participation, local leadership, and vertical policy integration. This bottom-up approach is increasingly reflected in modern European policies, including the LEADER method and Integrated Local Development Strategies.

Examples of concrete investment priorities outlined in Romania's 2021–2027 Partnership Agreement include: the development of sustainable and connected transport infrastructure, support for the green and digital transition, modernization of education and vocational training systems, strengthening research and innovation, promoting social inclusion and poverty reduction, and enhancing administrative capacity at the local and regional level. These directions are implemented through thematic and regional operational programs, designed to reflect territorial specificities and respond to regional challenges.

The 2021–2027 Partnership Agreement between Romania and the European Commission also sets clear priorities for reducing regional disparities, promoting the green and digital transition, supporting SME competitiveness, and fostering sustainable urban development and social inclusion. These priorities align with the European Pillar of Social Rights, which stresses equal opportunities, fair access to services, and decent working conditions.

The European Union's Cohesion Policy is a key instrument in pursuing harmonious, sustainable, and equitable development across all regions of Europe. According to the Treaty on the Functioning of the European Union (Art. 174), economic, social, and territorial cohesion is a core objective, aiming to reduce disparities in development levels between regions—particularly those disadvantaged or affected by economic transition.

Specialized studies highlight that the impact of European funds on economic growth is influenced by institutional factors, administrative capacity, and the effectiveness of local development strategies (Rodríguez-Pose & Garcilazo, 2015). In the literature, regional convergence is examined both in terms of GDP per capita and quality of life (Mohl & Hagen, 2010). Moreover, local development involves not only economic growth but also improvements in infrastructure, public services, social inclusion, and the capacity of communities to generate their own solutions. Thus, GDP is an important quantitative indicator, but not sufficient to capture the complexity of development (OECD, 2020). In Romania, EU funds have often acted as catalysts for essential public investments (Ionescu & Constantin, 2020), yet the effects on sustainable development differ significantly across counties.

3. Empirical Analysis: The Case of the North-West Region and Bihor County

In addition to European funds absorbed and public projects implemented in Bihor County, a key contribution to the area's economic development comes from strategic private investments with national and regional impact. Among these is the expansion of Michelin's operations in the industrial zone of Oradea, strengthening the automotive production sector. Likewise, the announcement of a major Lockheed Martin investment in Bihor—in a defense manufacturing facility—reconfirms the county's strategic potential in attracting global investors. These investments

generate multiplier effects, contributing both to local employment and GDP, while complementing the efforts of the public administration in infrastructure modernization and the creation of a competitive investment climate.

To better highlight intraregional disparities and support comparative analysis, it is relevant to examine, alongside Bihor and Cluj counties, Satu Mare County as well. This county provides a significant contrast, with a more modest GDP evolution and an economic profile based on manufacturing and cross-border trade. In 2022, GDP per capita in Satu Mare was approximately 42,800 lei—well below Cluj's level (99,400 lei) but close to Bihor's (49,600 lei). This intermediate positioning underscores the need for differentiated strategies within the same development region. While Cluj has capitalized on its innovation and university ecosystem, and Bihor has invested heavily in infrastructure and public administration, Satu Mare holds growth potential through the strengthening of its logistic role and regional connectivity.

Analysis of charts and data from the National Institute of Statistics for the period 2000–2022 reveals several key aspects regarding GDP dynamics and implications for regional and local development: generalized but uneven growth across regions, North-West region – strong but polarized growth, Bihor County – steady growth, but lagging behind Cluj County and Correlation with European Funds.

Generalized but uneven growth across regions

All development regions in Romania experienced continuous GDP growth. However, the Bucharest-Ilfov Region clearly stands out, exceeding 150 billion lei in 2022, compared to approximately 60 billion lei in regions like the North-West or Centre. This disparity underscores an excessive concentration of development around the capital city, despite the EU's efforts for convergence.

Table 1: Analysis of the nominal gross domestic product variation in Romania's regions (millions of lei)

Nominal GDP	2000	2005	2010	2015	2020	2022
North West Region	9,121.70	33,456.50	61,796.30	81,531.10	132,428.30	168,235.90
Center Region	9,780.50	32,228.20	61,918.00	79,102.50	121,681.50	151,799.10
North East Region	9,553.50	31,814.80	57,764.50	71,814.80	115,421.50	140,470.10
South East Region	9,523.80	32,555.90	57,258.00	76,118.30	102,878.40	135,182.60
South Region						
Muntenia	9,909.70	36,253.40	67,289.30	87,188.80	120,549.80	160,933.00
Bucharest Ilfov Region	18,261.50	69,258.50	136,487.80	195,911.10	296,274.50	400,993.40
South West Region						
Oltenia	7,036.10	23,150.60	42,379.30	52,222.70	81,220.60	108,430.50
West Region	7,577.60	27,938.20	54,902.30	68,089.20	98,423.40	122,477.30

Source: Romanian national institute of statistics, (2025) - regional gross domestic product in Romania, <http://statistici.insse.ro/>

North-West region – strong but polarized growth

The North-West Region showed significant growth, with GDP rising from 15.8 billion lei in 2000 to over 62 billion lei in 2022. However, county-level data reveal a strong economic polarization, with Cluj in a dominant position: Cluj surpassed the 100,000 lei GDP per capita threshold in 2022. Bihor, Satu Mare, Maramureș, Sălaj, and Bistrița-Năsăud remained between 40,000 and 50,000 lei per capita. This disparity raises questions about the efficiency of using European funds in relation to local development strategies.

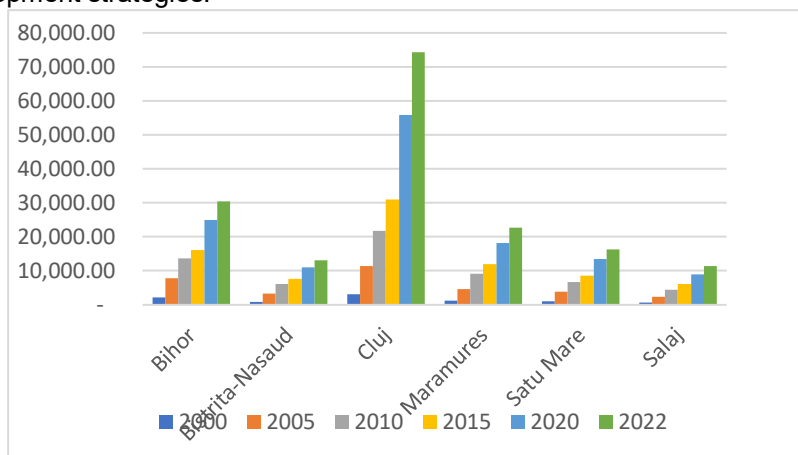


Figure 1: Analysis of the nominal gross domestic product variation in the North West Region (millions of lei)

Source: Romanian national institute of statistics, (2025) - regional gross domestic product in Romania, <http://statistici.insse.ro/>

Bihor County – steady growth, but lagging behind Cluj County
Bihor's GDP per capita increased from 3,228 lei (2000) to 49,601 lei (2022), indicating significant progress. However, the gap with Cluj has nearly doubled during this period, suggesting that Bihor's development model, based on public investments and EU funding, did not generate the same economic dynamics as Cluj's innovation and private investment-driven growth.

Table 2: Analysis of the nominal gross domestic product variation in Romania's regions (millions of lei)

GDP per capita (lei)	2000	2005	2010	2015	2020	2022
North West Region	3,149.39	11,693.29	21,677.64	28,706.14	46,724.42	59,739.60
Center Region	3,666.50	12,135.75	23,362.22	29,963.18	46,273.50	58,157.77
North East Region	2,459.87	8,160.30	14,850.41	18,297.43	28,795.91	35,082.85
South East Region	3,189.26	10,981.11	19,474.23	26,346.14	36,540.80	48,745.00
South Region Muntenia	2,842.20	10,586.58	19,974.82	26,552.88	38,040.64	51,944.12
Bucharest Ilfov Region	7,508.38	28,426.58	55,063.96	78,732.12	113,588.8	151,594.11
South West Region Oltenia	2,938.22	9,851.73	18,490.02	23,480.21	37,825.77	51,488.55
West Region	3,646.56	13,578.80	26,839.44	33,663.41	49,220.49	61,991.76

Source: Romanian national institute of statistics, (2025) - regional gross domestic product in Romania, <http://statistici.insse.ro/>

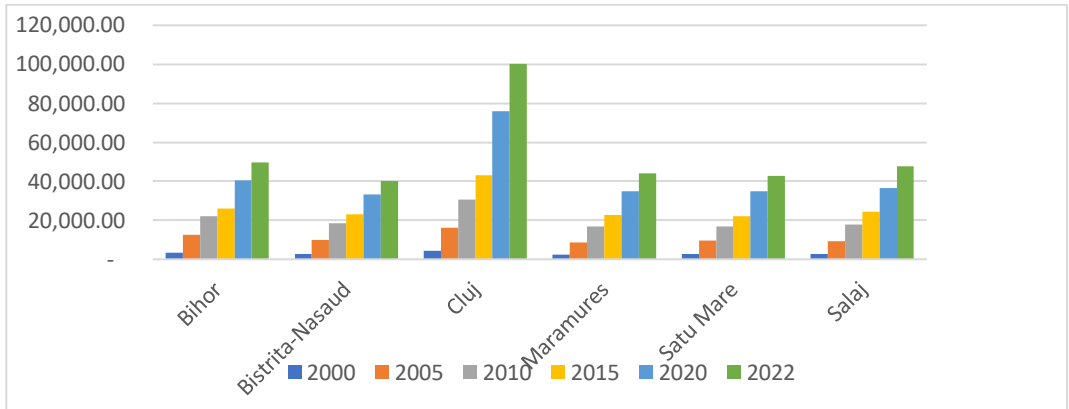


Figure 2: Analysis of the variation of the nominal gross domestic product per capita in the North West Region (lei)

Source: Romanian national institute of statistics, (2025) - regional gross domestic product in Romania, <http://statistici.insse.ro/>

Correlation with European Funds

European funds have supported important projects in infrastructure, energy, urban development, and digitalization, particularly in Oradea and Bihor. Still, data show that absorbing EU funds does not automatically lead to accelerated economic growth. The impact depends on the quality of investments, their integration into coherent local strategies, and the ability to attract private capital.

Table 3: Eligible budget in the programming period 2014 - 2020 (millions of euros)

County	POCU	POR	POIM	POPAM	POCA	POC	TOTAL
Bihor	15.49	416.10	474.70	8.21	3.04	68.94	986.48
Bistrita-Nasaud	24.98	371.20	266.50	4.801	2.30	39.15	708.93
Cluj	73.66	887.70	337.90	4.25	8.52	204.40	1,516.43
Maramures	85.64	278.30	319.20	12.11	3.80	59.76	758.81
Satu Mare	11.99	162.50	330.40	12.72	2.78	24.10	544.49
Salaj	13.10	225.30	29.27	5.37	2.00	16.00	291.04

Source: Ministry of European Investments and Projects (2025), statistics on the absorption of European funds in 2014 – 2020, <https://www.fonduri-ue.ro/statistici>

The North-West Region has experienced substantial GDP growth over the past two decades, yet county-level analysis shows considerable internal disparities. Cluj stands out with an economy based on IT, services, and innovation (Crescenzi & Giua, 2016). In contrast, Bihor, though successful in attracting EU funds, did not experience the same growth acceleration. Charts analyzed show a steady rise in Bihor's GDP, but the gap with Cluj widened, raising questions about the type of investments made and the sustainability of development (Zaman & Georgescu, 2015). Beyond GDP, Bihor's local development has improved significantly in terms

of public services, urban mobility, and administrative modernization, although these aspects are not always directly reflected in macroeconomic indicators.

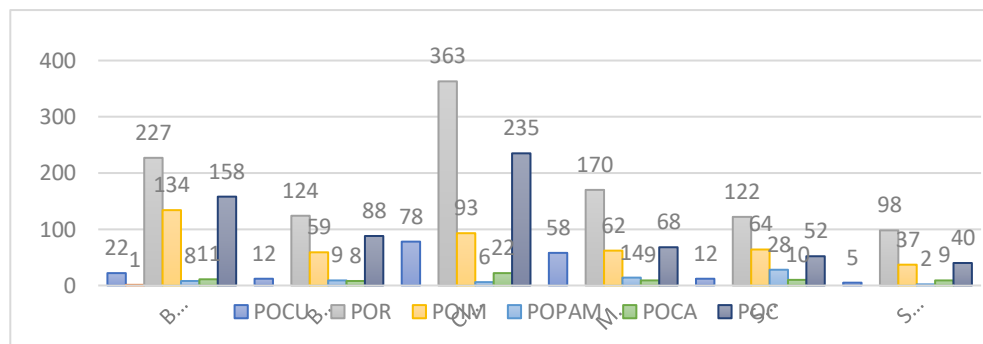


Figure 3: Number of financing contracts signed in the programming period 2014 - 2020

Source: Ministry of European Investments and Projects (2025), statistics on the absorption of European funds in 2014 – 2020, <https://www.fonduri-ue.ro/statistici>

4. Results and Discussions

Recent studies confirm that structural funds can have a positive impact on regional convergence, but this impact is often conditional upon governance quality and local administrative capacity (Dall'erba & Le Gallo, 2008). Additionally, the classical analysis by Sala-i-Martin (1996) points out that genuine convergence involves not only reducing GDP per capita differences but also long-term structural integration and institutional adaptation.

The data indicate a positive correlation between European funds and GDP growth, but not a direct proportional relationship. Economic growth also depends on the structure of the local economy and the ability of authorities to steer investments toward high value-added sectors (Boldrin & Canova, 2001). The case of Bihor shows that, in the absence of a strong entrepreneurial and innovative ecosystem, European funds can support infrastructure and public services but do not guarantee economic convergence (Ilie & Gherghina, 2018). At the same time, regional development entails reducing territorial inequalities, improving connectivity, and enhancing quality of life—dimensions that must be evaluated alongside GDP evolution to assess real progress.

5. Limitations

This study has several limitations that should be acknowledged. First, the analysis is based primarily on quantitative data (GDP and EU funds absorbed), which, while useful, do not fully capture the multidimensional nature of local and regional development. Second, the correlation between European funds and GDP growth is explored at a descriptive level, without employing advanced econometric

techniques to determine causality. Additionally, the study does not account for time lags between fund absorption and economic impact, which may vary significantly depending on project type and regional absorption capacity. The heterogeneity of counties, in terms of economic structure, administrative performance, and access to complementary investments, also limits the generalizability of findings. Moreover, data availability at a disaggregated level for certain indicators (such as employment in innovative sectors or quality of life indices) remains a challenge. Future research could expand the analysis using panel data econometrics and qualitative case studies to better understand the mechanisms through which European funds influence territorial development.

6. Conclusion

The conclusions highlight that local and regional development, in its complex meaning, involves more than just measurable economic growth through GDP. It represents a territorial transformation process aimed at reducing inequalities, harnessing endogenous potential, and increasing the capacity of communities to generate sustainable solutions. Therefore, public policies should integrate a long-term vision based on integrated, participatory development tailored to the specific needs of each region.

For European funds to have a real impact on local development, territorial strategies must be personalized, considering the economic and institutional specificities of each county. In the case of Bihor, the focus should be on stimulating SMEs, digitalization, and innovation, alongside continued infrastructure development (OECD, 2020). Post-2027 Cohesion Policy should encourage integrated initiatives that link funding to real development indicators (Ministry of European Investments and Projects, 2023). The success of these policies should not be evaluated solely by GDP growth, but also by improvements in quality of life, sustainability, and territorial equity.

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THE ROLE OF PRIVATE INVESTMENT IN THE TRANSITION TO A CIRCULAR AND SUSTAINABLE ECONOMY IN THE EUROPEAN UNION

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Abstract: *Based on the international pressure to achieve climate neutrality and the need to adhere to a sustainable economic framework, the EU faces dilemmas related to the efficient mobilization of capital for the circular economy. This article aims to examine the evolution of private investment at EU level in sectors related to the circular economy. By including economic aspects of sustainability-related investments, the research can provide new public policy models to accelerate the transition to a greener economy and in line with international standards.*

A comprehensive analysis of the interconnections between private investment on the economic performance of circular sectors and climate obligations is a key element of this article. In the first part of the research, we conducted a literature review that captures a unique combination of gross value added, international investment position, direct investment income and climate allocations by sector. In the second part of the article, we presented the investment situation at the European Union level, highlighting both the connections and discrepancies between direct, private and climate investments in relation to the performance of circular economy indicators. Last but not least, this paper contains an econometric analysis on investment dynamics in the European context, using a coherent range of economic and financial indicators, including EU direct investment income, by country and economic activity, Private investment and gross added value related to circular economy sectors, Investments in climate change mitigation, Investment by institutional sectors, Net international investment position and Environmental protection investments of total economy.

Our findings indicate a modest, but growing gap between private capital engagement and circular performance, alongside a notable disparity between the potential for international financing and its actual absorption in green sectors. The findings argue for fiscal stimulus measures and a cohesive policy framework to transform investment into a genuine catalyst for a sustainable transition.

Keywords: *private investment, circular economy, sustainable finance*

JEL Classification: Q56, O44, E22

1. Introduction

The most pressing problem facing society is the preservation and protection of the natural environment. This has a serious negative impact on ecosystems and, as a result, reduces both the individual economic potential of countries and the entire world community.

Investors' attention to projects for a transition to a circular and sustainable economy in the European Union is growing. This trend is due to several factors, including awareness of the financial risks associated with climate change, increased environmental regulation, and growing consumer and societal demand for more sustainable products and services.

Sustainable investments open new profit opportunities while contributing to addressing global environmental issues. Investments in renewable energy, waste management, sustainable transport and other green sectors are seeing increasingly higher returns and increased risk tolerance. However, the development of industrial production, transport and the agrarian revolution in agriculture, caused by the rapid scientific and technological progress of mankind, have had a negative effect on nature and led to significant changes in the natural cycle of ecosystems.

In general, the development trends of environmental investments are strongly influenced by climate and environmental risks that are intensifying as regulations tighten. Awareness of investors and consumers about this topic is becoming increasingly vehement as this area will play an increasingly important role in transforming the economy. Further expansion of private investment will be key to achieving sustainable development goals and shaping a low-carbon future.

Taking these aspects into account, we believe that private investment has an essential role in the transition to a circular and sustainable economy in the European Union. The study of specialized literature has opened new research horizons that target the impact of environmental protection investments of total economy, the dynamics of direct investment income at EU level, net international investment position and the evolution of investment for the total economy, government, business as well as household sectors at EU member states level. The research is complemented by the econometric analysis of the way in which private investment and gross added value related to circular economy sectors and Investments in climate change mitigation influence GDPcap. In other words, we have formulated three research hypotheses:

H1. Gross investment in tangible goods positively and significantly influences GDPcap.

H2. The value added to factor costs significantly and positively influences GDPcap.

H3. Private investment in climate change mitigation significantly and positively influences GDPcap.

2. Literature review

The literature review that we conducted starts with a bibliometric analysis of the field of circular economy investments. Thus, a sample was collected, the source of which was the Web of Science database, which was analyzed using the VOS viewer program, which allows grouping and network analysis of bibliometric information. The first step was to analyze keywords such as “circular economy investment”, “environmental protection investments”, “EU investments” and “investments in climate change mitigation”. These keywords form the “identity” of this interdisciplinary field.

As the main method of data analysis using the VOS viewer program, the “co-occurrence” method was chosen, which groups keywords according to the degree to which they appear together in a single paper. Thus, the keywords form thematic groups. In the “scientific maps” below, clusters are marked in different colors, the size of each keyword is determined by the “total link strength” indicator, i.e. the strength of the connection of a given keyword with all others, and the lines reflect the connections between two separate keywords. The publication period was limited to 2000–2024, and it is worth noting that the number of journal articles and conference proceedings varies significantly.

First, we treated the subject of our study from a global point of view, focusing on "EU investment". To build a scient metric map, we took only those keywords that appeared in the sample at least 5 times, so 1688 terms were selected, from which 33 meet the threshold. A visualization of the research domain is presented in Figure. 1.

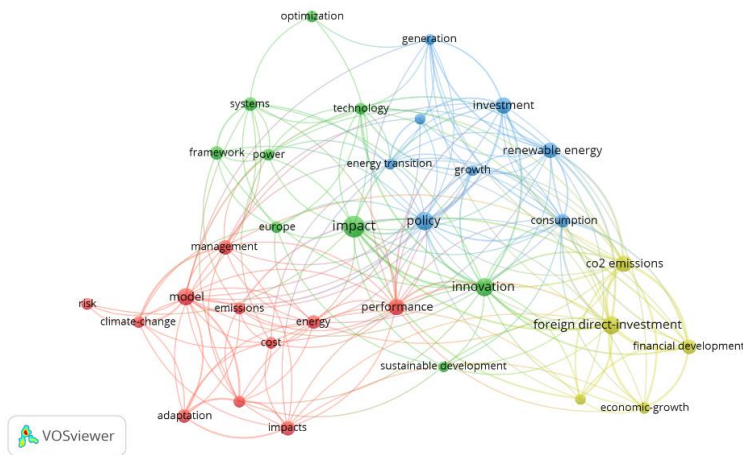


Figure 1: Bibliometric map of keyword “EU investment”

Source: Authors' projection using VOSviewer version 1.6.17 in processing data extracted from the WoS database

The bibliometric map identifies four significant clusters, which can be designated as “impact” and “innovation” (green), “performance” and “management” (red), “foreign

direct investment” and “CO2 emissions” (yellow), “policy”, “renewable” “energy and investment” (blue).

The green cluster covers a wide range of concepts related to “sustainable development”, “system”, “technology” and “power”. The blue cluster, although it contains topics such as “growth” and “consumption”, is primarily focused on issues such as renewable energy. The yellow cluster is quite compact and deals with “financial development” and “economic growth”. Last but not least, the red cluster focuses on topics such as “climate change”, emission and adaptation. The next analysis includes “circular economy investment”, and the final selection of keywords consists of 324 keywords.

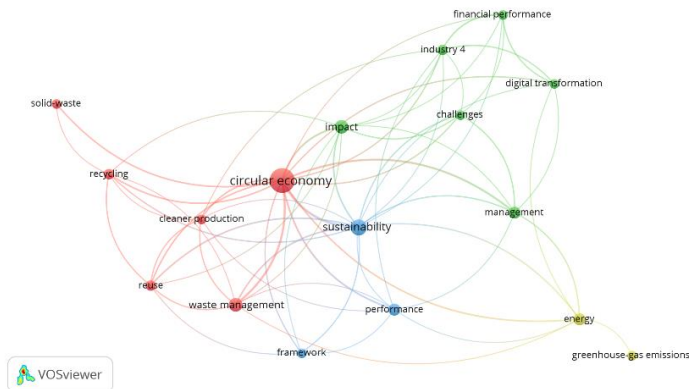


Figure 2: Bibliometric map of keyword “circular economy investment”

Source: Authors’ projection using VOSviewer version 1.6.17 in processing data extracted from the WoS database

The visualization of the results is presented in Figure 2, where the size of the object reflects the total strength of the link, and the width of the lines reflects the strength of the link between two terms.

The analysis allows us to identify several clusters, which can be roughly designated as “circular economy” (red), “sustainability” (blue), “financial performance” (green), and “energy” (yellow). The interpretation of the clusters is based on the keywords found in them, however, it should be noted that this division is quite arbitrary, since both the clusters and the terms are interrelated. In the second stage, an analysis was carried out to understand the place of “environmental protection investments” in sustainable economy research. In this way, our search was limited to 894 keywords of which 38 met the threshold. The results of the clustering are presented in Figure. 3.

The results demonstrate that “environmental protection investments” are indeed a broad and diverse field of research. These areas include, first of all, “investments” (red cluster) and their impact on climate change, but also on the management policies that a company has. The second cluster, blue, includes “economic growth”, “financial development” and “green finance”. “Green financing” is the basis of sustainable economic growth, because it brings together “financial institutions”, “environmental measures” and “economic development”. Under green financing is

understood the financial services offered by companies for the purpose of improving the environment, mitigating global climate change and using resources more efficiently.

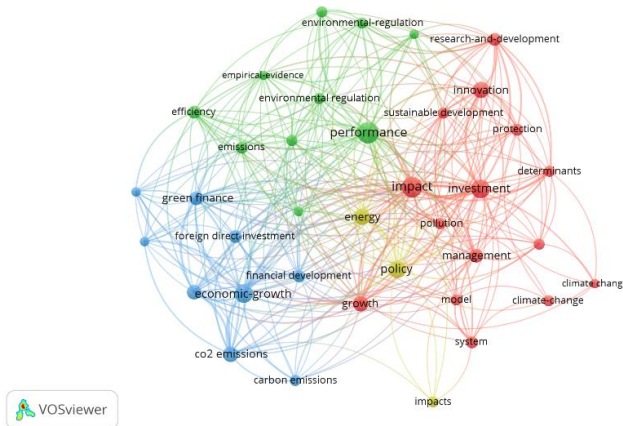


Figure 3: Bibliometric map of keyword “environmental protection investments”

Source: Authors' projection using VOSviewer version 1.6.17 in processing data extracted from the WoS database.

Thirdly, the research field also includes “performance” (green cluster), “efficiency”, “environmental regulation” and “empirical evidence”. The development of various environmental programs and the protection of the natural environment implies, in addition to respecting the principles of sustainable development, the application of legislative norms. Finally, the yellow cluster represents issues related to policy, energy and impacts. Finally, the last map analyzed has as its research keyword “investments in climate change mitigation”. Thus, we have 581 keywords, 17 meet the threshold. The results obtained are illustrated in Figure 4.

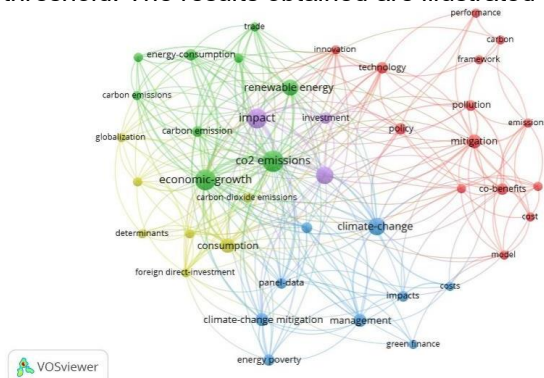


Figure 4: Bibliometric map of keyword “investments in climate change mitigation”

Source: Authors' projection using VOSviewer version 1.6.17 in processing data extracted from the WoS database

The most widespread cluster is the blue one, which focuses on “climate change” and “management”. The main nodes that we can notice are “climate change”, “climate change mitigation” and “green finance”. These are strongly connected to “economic growth” and “policy”. The red cluster focuses on “technology”, “policy” and “co-benefits”. The central nodes include “mitigation” and “pollution”. At the same time, we can notice a strong connection with “performance”, “innovation” and “cost”. The green cluster has “renewable energy”, “energy consumption” and “carbon emission” as main nodes. These are closely related to “impact”, “investment” and “technology”. The yellow cluster targets “economic growth”, “consumption”, “foreign investment” and “globalization”. These are related to “carbon emissions”. Finally, the purple cluster has the words “impact”, “investment” and “CO2 emission” at its center and presents itself as a central point of intersection with the other clusters.

The concept of a “circular economy” involves building economic activity on the principles of resource renewal and preserving the health of the social environment. ecological-economic system, which allows for efficiency at all scales: from households and small businesses to the global economy (Geissdoerfer, Savaget, Bocken, & Hultink, 2017).

According to experts from the (Ellen MacArthur Foundation, 2019) circular economy has a restorative and closed character, it involves creating a continuous cycle of development that preserves natural capital and increases its value, increasing the efficiency of resources due to the optimization of their use.

The development of a circular economy is associated with a special type of environmental investment - circular investment, appropriate to the criteria of the new sustainable (responsible) investment models. Circular investments usually aim not to obtain profit, but to return negative externalities from economic activity subjects. Such investments are socially responsible because they comply with the laws of development of society and the environment and ensure control over the global environmental problem (Santiago, Scavarda, Caiado, Santos, & Mattos Nascimento, 2025).

Circular investment is an investment in non-financial assets, which involves the transformation of production and consumption waste into a new resource of raw materials (European Investment Bank, 2020).

It is important to note that the formation of circular investments contributes to changing the very paradigm of investment in favor of the so-called transformative investments, or impact investments, which correspond not only to a certain level of economic expectations but also have the potential for social and environmental impact (Penna, Schot, & Steinmueller, 2021).

Circular investment is socially responsible because it complies with the laws of development of society and the environment and ensures control over the ecological debt and ecological footprint, from the reimbursement of negative effects from the economic activity of economic entities (Baratta, Cimino, Longo, Solina, & Verteramo, 2023).

The ultimate goal of the development of circular economy investment is the creation of a sustainable business, the activities of which help to cover not only the operating costs associated with the current execution of works, the provision of services, but also the implementation of investment projects that are consistent with

the ongoing policy of resource and energy conservation (Diaz, Reyes, & Baumgartner, 2022).

(European Commission, 2020) recently adopted a new action plan for the development of a circular economy. The plan was adopted in the framework of two other EU sustainability initiatives: the Green Deal and the New Industrial Strategy, which aim to achieve climate neutrality by 2050 and the sustainable use of natural resources.

3. Research methodology and tools

In our research, we used the most practical approaches to make the connection between the purpose and objectives of the research as easy as possible. Thus, we created a mix of methods for a general framework, classified according to certain specific criteria.

First, we performed a bibliometric analysis, based on which we developed specialized literature. The bibliometric relationships between the key concepts were illustrated in VOSviewer. Subsequently, we selected a Eurostat database that corresponded to the purpose of our work based on the selected dependent and independent variables. We limited the search to the countries of the European Union and to a period starting from 2010 and until 2023. For some of the selected variables, we performed a comparative analysis, due to the incomplete data provided and a small sample to analyze. However, we considered these aspects important for the present research and wanted to capture their evolution during the analyzed period through graphs made using Tableau software.

Finally, we also conducted an econometric analysis using STATA 13 software, applying a fixed-effects panel regression model to study the relationship between private investment and gross added value related to circular economy sectors, Investments in climate change mitigation and GDPcap.

4. Data analysis

Following the review of the specialized literature dedicated to the analysis of private investment in the transition to a circular and sustainable economy in the European Union, no works were found that examined the comparative evolution at EU level of EU direct investment income, Environmental protection investments of total economy and Investment by institutional sectors divided into Business investment, Government investment and Households investment. At the same time, we studied the intensity of the link between Net international investment position, Investments in climate change mitigation by NACE Rev. 2 activity, Investment and Gross value added as an integral part of Private investment and gross added value related to circular economy sectors with GDP per capita. In the first stage, it was necessary to decide on the database, the countries and the time interval. Thus, for the comparative analysis the selected time interval is between 2014-2023, the unit of measurement is Million euro, and the countries for which we found complete data are Belgium, Bulgaria, Czechia, Denmark, Germany, Estonia, Ireland, Greece,

Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden and Norway. Regarding the econometric analysis the selected time period 2005-2023, the unit of measurement is Million euro, and the countries selected according to the complete availability of data are Belgium, Bulgaria, Czechia, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland and Sweden. The data was collected entirely from Eurostat. The table below contains a brief description of the variables analyzed.

Table 1. Description of analyzed variables

Variables	Abbreviation	Description of variables
Private investment and gross added value related to circular economy sectors	PP1	„includes “Private investments”, and “Gross value added” in three sectors: the recycling sector, repair and reuse sector and rental and leasing sector” (Eurostat, 2025).
Net international investment position - annual data	PIGVA	„shows at a point in time the value and composition of: financial assets of residents of an economy that are claims on non-residents and gold bullion held as reserve assets, and liabilities of residents of an economy to non-residents” (Eurostat, 2025).
Investments in climate change mitigation by NACE Rev. 2 activity	ICCM	„describes the statistical population is the national economy and includes corporations undertaking activities mitigating climate change” (Eurostat, 2025).
Investment by institutional sectors	IIS	„measures the share of GDP that is used for investment activities in the government, business and household sectors” (Eurostat, 2025).
EU direct investment income, by country and economic activity	DI	„encompasses all kind of cross-border investment made by an entity resident in one economy (direct investor) to acquire a lasting interest in an enterprise operating in another economy (direct investment enterprise)” (Eurostat, 2025).
Environmental protection investments of total economy	EPITE	Includes the following variables: „investment for the production of environmental protection services, consumption of environmental protection services, imports and exports of environmental protection services, transfers of funds for environmental protection” (Eurostat, 2025)

Source: own elaboration based on data collected from Eurostat

First, we will address the issue related to the Net international investment position. The net investment position is an indicator that shows the result of many years of capital movement. The size of this indicator is the result of the globalization of the financial sector. At the same time, it indicates the connection between the accumulated trade deficit of the EU and the compensating factors in the financial balance. It should be noted that an analysis of the development and analysis of investments in the transition to a circular economy without considering the international investment position of the country would be incomplete. The graph below shows the average of Net EU international investment position from 2010 to 2023. The most worrying values are found in Ireland with -151,535 million euros, Greece with -137,121 million euros and Cyprus with -129.2 million euros. In contrast, the situation is relatively favorable for Malta with an average of 60.34 million euros, Belgium with 50.1 million euros and Luxembourg with 48.72 million euros.

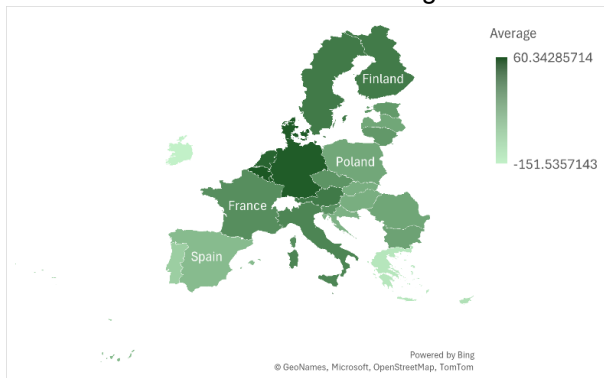


Figure 5: Average of Net EU international investment position from 2010 to 2023

Source: own elaboration in Microsoft Office Excel

The next indicator analyzed is Environmental protection investments of total economy.

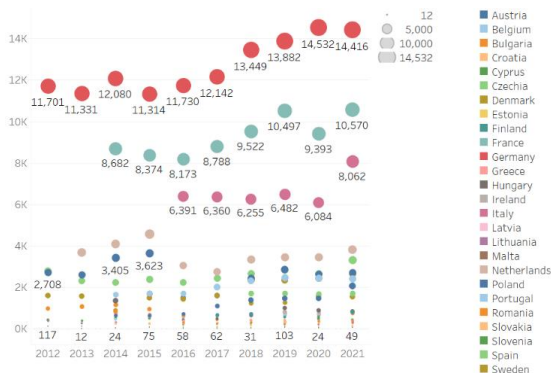


Figure 6: Environmental protection investments of total economy from 2012-2021

Source: own elaboration in Tableau 2025.1

This indicator is essential to study because it shows us the priority areas of use of foreign investments in financing environmental protection programs in basic industries, for the purpose of structural restructuring, their modernization and the prevention of possible environmental disasters. As can be seen in the graph below, Greece is in the best position with 14,416 million euros, with a considerable increase in EU funds for green investments, followed by Poland and Hungary. The lowest values are in Romania, Bulgaria and Slovakia, which have deficiencies in environmental investments.

Regarding Total investment, in the following graphic, it can be noted that we have grouped into Business Investment and Household Investment. The largest average in total investments is Business Investment compared to Household Investment. However, if until the outbreak of the COVID 19 pandemic we can observe an increasing trend, starting with 2020 we can notice a constant fall because of the increase in reluctance regarding investments.

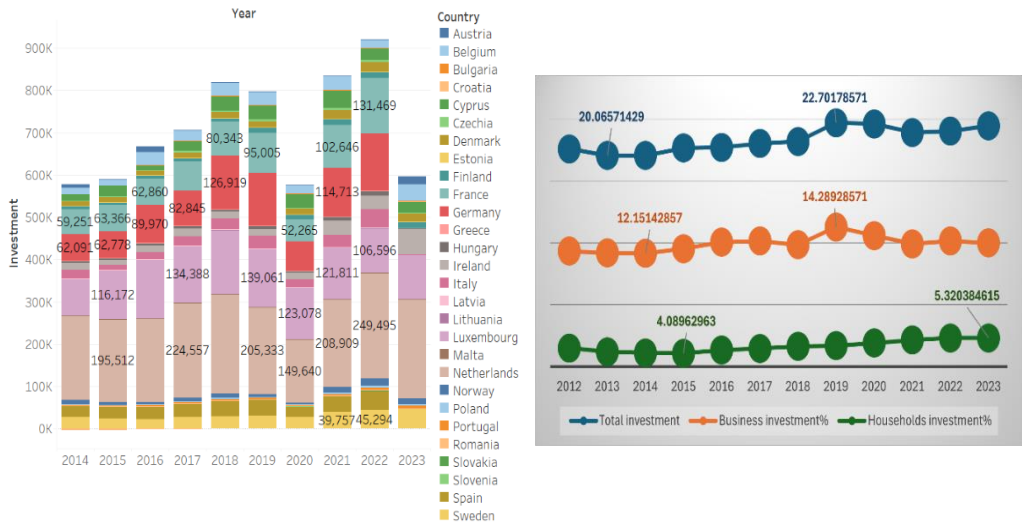


Figure 7: Total investment and EU direct investment income

Source: own elaboration based in Microsoft Office Excel and Tableau 2025.1

Last but not least, we analyzed EU direct investment income, by country and economic activity. A quick look at the graph below shows constant fluctuations, with a significant decrease in 2020 and a partial recovery by 2023. Inflation and new tax reforms made 2023 a year of uncertainty with a strong impact on the investment sphere. However, it can be noted that the highest values are found in Germany, France and Italy, while the lowest values are found in Croatia, Malta and Romania. For the econometric analysis, we selected independent variables Private investment and gross added value related to circular economy sectors, which we divided into two categories Investment (PP1) and Gross value added (PIGVA), respectively

Investments in climate change mitigation (ICCM), and the dependent variable GDP per capita (GDPcap).

First, we performed descriptive statistics of our variables. The basic descriptive statistics contain number of observations (obs), mean (mean), standard deviation (Std. Dev.), maximum (max) and minimum (min) of the specified variables for each year. Adding the detail option also allows you to output characteristic quantiles, several largest and smallest values, skewness and kurtosis coefficients. PP1 variable has the lowest mean values, and GDP cap has the highest mean values. Due to the fact that the distributions, although positively skewed, have very large non-normal extreme values and are affected by positive outliers, we logarithmized the data. The transition to the logarithm allows to reduce the asymmetry. Moreover, the transition to the logarithm in a few cases allows to bring the distribution of regression residuals closer to normal. Next, we will work with the logarithms of the variables PP1, PIGVA ICCM and GDPcap. We will note them in our research “ln_PP1”, “ln_PIGVA”, “ln_ICCM” and “ln_GDPcap”.

The histograms indicate positive asymmetries, ICCM and GDPcap have a long tail towards the right that is accentuated. ICCM also has leptokurtic distribution, and GDPcap has moderate kurtosis. PP1 and PIGVA are also similar.

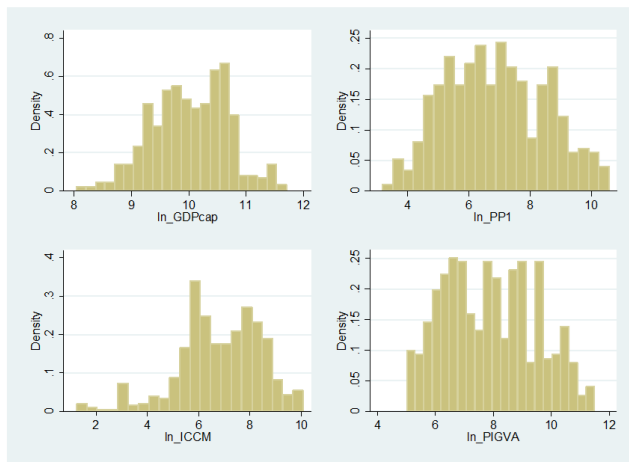


Figure 8: Histogram of ln_GDPcap, ln_PP1, ln_ICCM and ln_PIGVA

Source: own elaboration in SPSS 17.0

The boxplot presented shows that the most compact and stable indicator is GDPcap. ICCM and PP1 show the most fluctuations, with notable differences between observations, while PIGVA is the most balanced variable.

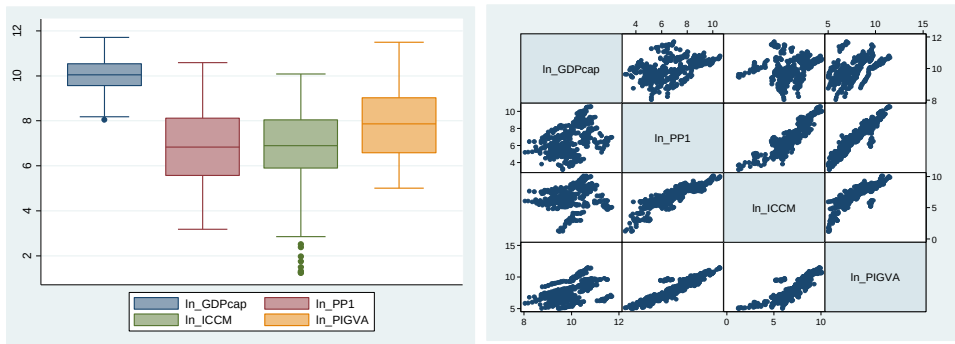


Figure 9: Boxplot and Scatterplot matrix of of $\ln\_GDPcap$, $\ln\_PP1$, $\ln\_ICCM$ and $\ln\_PIGVA$

Source: own elaboration in SPSS 17.0

The scatterplot matrix shows us some strong correlations between the selected variables after logarithmization. From this we can deduce that our research hypotheses are graphically confirmed in the sense that public and climate investments, as well as value added, have a common evolution. Moreover, we can observe that as one of the variables increases, the other tends to decrease. In other words, there is an interdependence between investments and the indicators that support the transition to a circular economy.

Special tests of stationarity and cointegration for time-series panels prove to be more effective than their conventional time series counterparts. Using panel data allows us to work with smaller samples in the time dimension by increasing the amount of available data in the individual dimension, which reduces the likelihood of structural breaks and solves the problem of low-test power. Initially, panel data stationarity tests assumed of independence of subjects. Andrew Levin and Chien-Fu Lin proposed the first unit root test in panel data based on a simple first-order autocorrelation model of the form. Andrew Levin and Chien-Fu Lin formulated the null hypothesis as the presence of a unit root of the time series. In 2002, Levin, Lin, and Chu extended the work of Andrew Levin and Chien-Fu Lin and suggested that the alternative hypothesis is not only the stationarity hypothesis but also the homogeneity of the autoregressive root hypothesis. In other words, the hypothesis of the Levine–Lin–Chu (LLC) test is based on the homogeneity of the conclusion about the presence of a unit root in the dynamics of the variable: either the hypothesis of stationarity for all objects is rejected, or not (Levin, Lin, & Chu, 2002). The main limitation of the test is the fact that it assumes homogeneity of the autoregressive root, especially in the framework of macroeconomic panels (Westerlund, 2008).

STATA commands for panel data analysis have the prefix “xt”, which denotes the presence of both a structural “x” component and a time “t” component. Thus, to test stationarity, we applied the command “Xtunitroot” and the results are presented in the tables below.

Table 2. Levin-Lin-Chu unit-root test

Command	Statistic	p-value
<i>. xtunitroot llc ln_PP1-Levin-Lin-Chu unit-root test for ln_PP1</i>		
Unadjusted t	-6.244	
Adjusted t*	-3.537	0.0002
<i>. xtunitroot llc ln_PIGVA - Levin-Lin-Chu unit-root test for ln_PIGVA</i>		
Unadjusted t	-7.702	
Adjusted t*	-6.003	0.0000
<i>. xtunitroot llc ln_ICCM - Levin-Lin-Chu unit-root test for ln_ICCM</i>		
Unadjusted t	-6.793	
Adjusted t*	-3.630	0.0001
<i>. xtunitroot llc d_ln_GDPcap - Levin-Lin-Chu unit-root test for d_ln_GDPcap</i>		
Unadjusted t	-20.059	
Adjusted t*	-12.314	0.0000

Source: authors' calculation in Stata 13

Autocorrelation was evaluated using Wooldridge's autocorrelation test for panel data. The results show that there is no autocorrelation in the panel, so we applied the "xtserial" command.

Table 3. Wooldridge test for autocorrelation in panel data

Command	F(1, 26)	Prob > F
<i>. xtserial ln_GDPcap ln_PP1</i>	372.971	0.000
<i>. xtserial ln_GDPcap ln_PIGVA</i>	323.482	0.000
<i>. xtserial ln_GDPcap ln_ICCM</i>	896.253	0.000

Source: authors' calculation in Stata 13

Next, because there is no autocorrelation, we applied the simple panel in the robust form to treat possible heteroscedasticity a priori. Thus, the tests for effects show that fixed effects are optimal, and the command used "xtreg, fe vce(cluster id_Country)". The results presented below contain: estimates of coefficients obtained by the least squares method (Coef.); standard deviations of estimates (Std.Err.), t-statistics (t-statistics tests the hypothesis that the corresponding coefficient in the regression is zero; $t = \text{Coef.} / \text{Std.Err.}$, the p-level of significance of the t-test is equal to the probability of erroneously accepting the hypothesis about the difference between the sample means when it is not true. In many studies, the p-level of 0.05 is considered an "acceptable limit" of the error level and confidence intervals for regression coefficients.

Table 4. Regression results – fixed effects models

Variable	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
. xtreg ln_GDPcap ln_PP1, fe vce(cluster id_Country)						
ln_PP1	0.3842	0.0669	5.7400	0.000	0.2467	0.5217
_cons	7.3825	0.4595	16.0700	0.000	6.4379	8.3271
sigma_u	0.6740					
sigma_e	0.1879					
rho	0.9279					
. xtreg ln_GDPcap ln_PIGVA, fe vce(cluster id_Country)						
ln_PIGVA	0.704	0.053	13.300	0.000	0.595	0.813
_cons	4.464	0.418	10.690	0.000	3.605	5.323
sigma_u	0.997					
sigma_e	0.128					
rho	0.984					
. xtreg ln_GDPcap ln_ICCM, fe vce(cluster id_Country)						
ln_ICCM	0.206	0.077	2.660	0.013	0.047	0.365
_cons	8.615	0.529	16.300	0.000	7.528	9.701
sigma_u	0.640					
sigma_e	0.224					
rho	0.891					

Source: authors' calculation in Stata 13

5. Results and discussions

The stationarity of the variables was tested in the panel analysis, by applying the LLC test. Thus, we tested the hypotheses according to which we rejected the null hypothesis H0 indicating that the panels contain a unit root, and the series is not stationary. The independent variables are stationary, with significant and positive values of the adjusted statistics, a fact confirmed unanimously by $p < 0.001$. However, the independent variable was not stationary, becoming so after applying the first log differentiation.

Autocorrelation was tested by using the Wooldridge test for panel data. According to the results, we can say that a first-order autocorrelation is present ($F > 300$; $p < 0.0000$). To remedy these problems related to standard errors, later in our analysis we used the methods of autocorrelation roughness. Autocorrelation and heteroscedasticity were estimated by regression models with fixed effects and robust standard errors. The coefficient for rho, in our case is ≥ 0.89 and justifies the

use of fixed effects models due to the fluctuations specific to each country analyzed. Thus, from the results of the analysis we can say that between PP1 and GDPcap there is a significant and positive association, with a coefficient of 0.385 ($p < 0.001$), and a 1% increase in PP1 leads to a 0.36% increase in GDPcap. ICCM has a positive effect and a moderate but significant relationship with GDPcap, the coefficient is 0.206, and $p=0.013$). The most intense relationship is between PIGVA and GDPcap, with a coefficient of 0.704, explaining over 70% of the variation in GDPcap within the analyzed countries.

In other words, all three research hypotheses are confirmed: H1. Gross investment in tangible goods positively and significantly influences GDPcap, H2. Value added at factors cost significantly and positively influences GDPcap, and H3. Private investment in climate change mitigation significantly and positively influences GDPcap.

6. Conclusion

In conclusion, the role of private investment in the transition to a circular and sustainable economy in the European Union can be explained by the link and influence of the impact of environmental protection investments of total economy, the dynamics of direct investment income at EU level, net international investment position and the evolution of investment for the total economy, government, business as well as household sectors at EU member states level. The econometric analysis validates how private investment and gross added value related to circular economy sectors and Investments in climate change mitigation influence GDPcap. The European Union has budgetary and private financing for environmental protection. Currently, traditional sources of financing have declined sharply. The COVID-19 pandemic has had a significant impact, leading to a reluctance to private investment and a reassessment of financing decisions. Moreover, the tightening of conditions for the implementation of targeted programs to eliminate the consequences of environmental accidents and disasters has led to strict reforms. Thus, there is a constant trend of decentralization of the investment process among investment sources. The share of investments in environmental protection financed from the state budgets of EU countries is decreasing. Most investments are financed from the own funds of enterprises and organizations, which today represent the main source of financing for investments in environmental protection.

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BANK BRANCHES AND LENDING IN THE EURO AREA – A PANEL ANALYSIS

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Abstract: *Since the Great Financial Crisis, the number of bank branches has decreased significantly as credit institutions have sought to cut costs and increase efficiency. However, such developments may have adverse effects on households' access to finance. Using a panel dataset for the Euro area from 2010 to 2023, this paper aims to uncover how the changes in bank branch density have affected lending growth. Our results indicate that, after controlling for a series of macroeconomic and financial indicators, a reduction in bank branch density of 10 per 100,000 people leads to a decrease of 0.2% in the yearly growth rate of mortgage loans. These developments have important consequences both for the health of the banking sector and the real-estate sector, as well as households' welfare and ability to build wealth. On the other hand, the reduction of bank branches did not affect consumer loan issuance.*

Keywords: *mortgage lending, banking, finance, panel data.*

JEL classification: *G51; E58; C35; D14.*

1. Introduction and Literature Review

Access to finance for households is an important component for building wealth, especially regarding mortgage financing. However, the trend in the Euro Area since the Great Financial Crisis has been the reduction of the number of branches, as banks sought to cut costs and move their activity online. For example, the average number of bank branches per 100,000 people in 2010 was 42, while by 2023 it had decreased to 19 per 100,000 people. Furthermore, as shown in Figure 1, there exists a significant heterogeneity between countries, with some countries such as Spain, Luxembourg and Cyprus experiencing a decrease twice as large as the average, while in other countries such as Slovakia, Croatia and Austria the density of branches was mostly stable. By leveraging on these cross-sectional differences, this paper strives to prove that this structural shift has had a negative impact on access to finance for households.

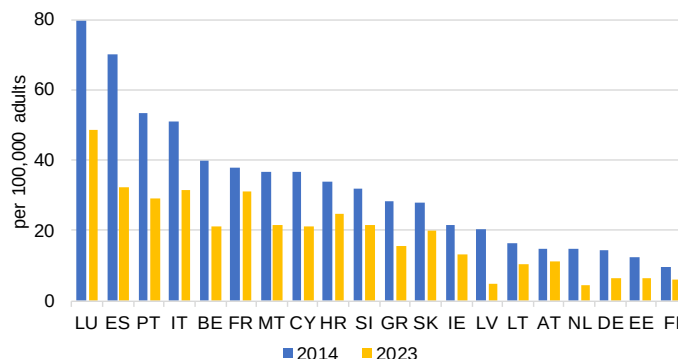


Figure 1: The evolution of commercial bank branches density in the Euro area over time

Source: World Bank, World Development Indicators

Access to credit is an important avenue, especially for low-income debtors, to build wealth by investing in real-estate. Given that most households have invested their wealth in their homes, access to mortgage finance can have significant consequences on households' long-term well-being. However informational asymmetries and lack of financial literacy may prevent borrowers from accessing credit in case of branch closures. Jiang et al. (2023) show that branch closures have asymmetric effects, impacting to a greater extent older and poorer borrowers, as they have less access to technology to supplement services of bank branches through online banking. Barca and Hou (2024) show that this trend was exacerbated by the COVID-19 pandemic which supported banks to shifting operations online, while Richardson et al (2017) show that in the US branch closures affected disproportionately census tracts which were predominantly rural or had high proportions of minorities. Additionally, Koont (2023) shows that banks which introduce a digital platform offer more loans to high income borrowers, while on the liability side they rely more on uninsured deposits.

On the other hand, Ergundor (2010) finds that the existence of branches of bank branches in low-income neighborhoods has positive effects on mortgage issuance, both in terms of issuance volumes, as well as interest rates charged. Ergundor and Moulton (2014) demonstrate that mortgages issued to lower-income debtors by banks with a physical preference have a lower probability of default compared to similar mortgages issued by nonlocal banks. Agarwal et al. (2018) find that relationship banking leads to a marked improvement in terms of default and attrition rates for credit cards, while increasing utilization rates. Gilje et al. (2017) demonstrate that bank branches pay an important role in integrating local credit markets by attracting deposits in counties which benefited from the shale oil boom and allowing increased supply of mortgage loans in other regions where these banks have a physical presence.

This paper contributes to the literature in three ways. First of all, most studies presented focus on single geographic entities, especially on the United States. By

performing a panel analysis of Euro area countries, our analysis sheds light on the effect of branch closures in an international context. Second of all, our analysis spans a long period of time (10 years) and thus is able to offer longer term predictions regarding the effect of bank branch presence on access to finance. Finally, by controlling for both banking sector characteristics, as well as macroeconomic developments on the national level, we are able to isolate the effect of bank branch density on issuance of mortgage loans.

2. Methodology

In order to estimate the impact of bank branch density on mortgage loan origination, this paper will use a yearly panel model. We run two separate estimations. Firstly, we analyze the impact of bank branch density on mortgage lending. Consequently, the dependent variable is the 1-year growth rate of mortgage loans at the national level, as calculated from the Monetary Financial Institutions Balance Sheet Items in the Statistical Data Warehouse. Secondly, we look at the impact of bank branches on consumer lending, thus the dependent variable in our second set of estimations is the 1-year growth of consumer loans.

Additionally, we include our controls sequentially. Initially we only include country fixed effects, besides our variable of interest which is the number of commercial bank branches per 100,000 adults. The second specification also includes banking sector controls such as CET 1 capital ratio, NPL ratio, return on equity and cost of mortgage borrowing. These are important as banks with higher capitalization and profitability are more likely to lend. On the other hand, if the NPL rate is high or if the costs of borrowing increases, banks are less likely to lend. These indicators are taken from the Consolidated Banking Data in the Statistical Data Warehouse. Finally, we also include macroeconomic controls such as real GDP growth, unemployment rate and price growth of residential real-estate. All controls are included with a 1-year lag. By using these controls, we ensure that we control for both supply-side factors related to the health of the banking sector, as well as demand-side factors related to the health of the residential real-estate market and general economic conditions. The relevant descriptive statistics can be found below in Table 1.

Table 1: Descriptive statistics

Name	Source	Number of observations	Mean	Standard deviation	Median
1 year growth rate of mortgage loans	Statistical Data Warehouse	199	0.9	4.6	1.2
1 year growth rate of consumer loans	Statistical Data Warehouse	199	0.9	9.8	1.1
Commercial bank branches /number per 100,000 adults	World Bank	199	25.5	16.4	22.9
CET1 capital ratio	Statistical Data Warehouse	199	17.8	4.3	17.0
NPL ratio	Statistical Data Warehouse	199	5.4	7.9	2.5
Return on Equity	Statistical Data Warehouse	198	6.7	7.1	7.6
HH Composite cost of mortgage borrowing	Statistical Data Warehouse	189	2.4	1.0	2.3
Real GDP growth	Eurostat	199	2.6	3.9	2.3
Unemployment rate	Eurostat	199	8.0	4.2	6.8
Residential real estate price growth (nominal., y-o-y)	Eurostat	199	5.4	5.6	5.2

The empirical specification is a yearly panel level as show below

$$\text{Yearly growth rate}_{i,t} = \beta_0 + \beta_1 * \text{Bank branch density}_{i,t} + \beta_2 * \text{Financial controls}_{i,t} + \beta_3 * \text{Macro controls}_{i,t} + \text{Country Fixed effects}_i + \varepsilon_{i,t}$$

For the first specification, the *Yearly growth rate_{it}* refers to mortgage loans, while the *Financial sector controls_{it}* include CET1 capital ratio, NPL ratio, Return on Equity and Composite cost of mortgage borrowing. Furthermore, *Macro controls_{it}* refer to Real GDP growth, unemployment rate and residential real estate price growth. For the second specification, *Yearly growth rate_{it}* refers to consumer loans, while the *Financial sector controls_{it}* include CET1 capital ratio, NPL ratio and Return on Equity, while *Macro controls_{it}* include Real GDP growth, unemployment rate.

3. Results

Analyzing the results in Table 2, we observe that the coefficient relating to bank branch density is positive and significant in all specifications. Taking into account all controls, a reduction of 10 branches / 100,000 persons results in a -2% lower mortgage credit growth. Given that the overall change was -13 branches /100,000 persons between 2014 and 2023, we can conclude that this the reduction of bank branches had an impact of approximately -2,6% on credit growth and consequently

on household welfare and ability to build wealth. Furthermore, as mentioned in the introduction, some countries have experienced much larger reductions of bank branches (Spain -37 branches / 100,000 people, Luxembourg -31 branches / 100,000 people and Portugal -25 branches / 100,000 people). For these jurisdictions, the cumulative impact would be between -5% and -7%, representing a significant decrease in mortgage issuance. This also has important consequences on the profitability of the banking sector which is expected to face lower profitability due to lower volumes, as well as the real economy as acquisitions through credit are an important channel to support demand for residential real estate. Thus, the reduction in bank branches is expected to have exacerbated the real-estate slowdown in the aftermath of the Great Financial Crisis, leading to a vicious cycle.

Table 2: The impact of bank branch density on yearly mortgage growth

	(1)	(2)	(3)
Commercial bank branches /number per 100,000 adults	0.119*** (0.037)	0.166*** (0.048)	0.204*** (0.053)
CET1 capital ratio		0.102 (0.113)	0.128 (0.113)
NPL ratio		-0.071 (0.056)	-0.016 (0.080)
Return on Equity		-0.136*** (0.048)	-0.139*** (0.049)
Real GDP growth			-0.156** (0.071)
Unemployment rate			-0.218 (0.231)
RRE price growth			0.025 (0.064)
Observations	198	174	174
R-squared	0.539	0.559	0.574
Country FE	Yes	Yes	Yes
R2	0.539	0.559	0.574
Likelihood	-501.5	-436	-433

Source: Own calculations

Going further, we examine the impact of bank branch density on consumer loans. Unlike mortgages, the coefficient here is statistically insignificant. Given the rising importance of online banking and the possibility to access consumer loans directly through such online services, our show that the physical presence of branches does not play an important role in regard to consumer loan issuance. Furthermore, consumer loans are typically standardized products which are accepted or declined

immediately based on the credit-scoring of the debtor. On the other hand, applications for mortgages are much more complex, as they require numerous legal documents, as well as a thorough analysis of the debtor's finances. Consequently, the importance of bank branches is much greater for mortgage loans in order to reduce the information asymmetry, while for consumer loans the process can be automatized and conducted remotely.

Table 3: The impact of bank branch density on yearly consumer loan growth

	(1)	(2)	(3)
Commercial bank branches /number per 100,000 adults	-0.102 (0.104)	-0.102 (0.120)	-0.114 (0.137)
CET1 capital ratio		0.081 (0.305)	0.004 (0.307)
NPL ratio		0.223 (0.155)	0.304 (0.206)
Return on Equity		0.268** (0.133)	0.242* (0.134)
Real GDP growth			0.295 (0.191)
Unemployment rate			-0.248 (0.525)
Observations	188	187	187
R-squared	0.292	0.311	0.323
Country FE	Yes	Yes	Yes
R2	0.292	0.311	0.323
Likelihood	-666.9	-660.8	-659.1

Source: Own calculations

4. Conclusion

Using a country-level dataset for the Euro between 2010 and 2023, we have shown that the reduction of bank branch density has had an important effect on mortgage lending. Given that most households build wealth through home ownership, these developments highlight the negative consequences that branch closures have had on households' welfare. Given the existence of asymmetric information, bank branches play an important role in filling that gap and supporting credit issuance, especially to low-income households. On the other hand, the closure of bank branches has not had an effect on consumer lending. As these loans are more standardized and can be accessed online, the importance of physical

branches is much lower compared to consumer loans. Further developments of this study may aim analyze the distributional consequences of branch closures, by evaluating mortgage and consumer loan issuance by income class.

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ANALYSIS OF THE FINANCIAL PERFORMANCE OF THE COMPANIES OPERATING IN THE SOFTWARE INDUSTRY LOCATED IN ROMANIA, HUNGARY AND CZECH REPUBLIC IN THE PERIOD OF 2019-2023

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Abstract: *The software industry is considered to be one of the fastest growing economic sectors in the last decade, especially in the Central and Eastern Europe. Its importance is highlighted by the numerous studies published in the specialized literature, however very few studies were focused on the evolution of the financial indicators of the companies operating in the field. In order to bring a novel approach regarding the performance of the software companies, the current study is focused on analyzing the evolution of financial indicators of the main companies operating in the software industry in 3 Central and Eastern European countries: Czech Republic, Hungary, and Romania. The current article will take into consideration the financial information provided by the financial reporting data for the years 2019-2023, for a number of 320 companies. The raw data was collected from EMIS University database and processed by the authors. For each of the companies' specific financial data was selected and processed, such as: operating revenue, total assets, total equity and specific indicators were extracted: Return on Equity (ROE), Return of Assets (ROA), Solvency, Liquidity, Leverage, Altman Z-score.*

Keywords: software industry, financial analysis, financial performance, financial indicators

JEL classification: G32, G17, G34, O16

1. Introduction

In today's world, it is almost impossible to avoid discussions about artificial intelligence (AI) and the software industry, as this sector is expanding at an accelerating pace and its societal impact is becoming increasingly significant. The software companies were the first to integrate Artificial intelligence (AI) in their business models transforming traditional operations and enabling new revenue streams (Golubtsov et al., 2025 and Kolomiyets et al., 2025). Therefore, the incorporation of AI into software products have increased their operational efficiency (Filipovic and Sapic, 2025, Alkalha et al., 2025; and Kovic and Palcic, 2024).

The aim of this article is to highlight the importance of this industry and draw attention to its impact, particularly in Central and Eastern Europe. One of the key research questions underlying this study is how the continuous development of software and AI in recent years has affected companies focused on these areas and what financial indicators reveal about these developments. Over the last decade, Europe has made significant progress not only in the development of the information sector related to software and AI, but also in the academic research of this field, as evidenced by the increasing number of scientific publications that focus on the specific characteristics of this field. Given the dynamic and constantly evolving nature of this industry, the period between 2019 and 2023 was chosen as the timeframe for this study to allow for a more focused analysis of the results. Due to the extensive information available for each European country, we considered it useful to focus on just three countries, which we selected for in-depth analysis based on statistical data from companies specializing in software and AI services. In this article, we would like to present the results and findings for each selected European country. To illustrate the individual development, a comparative analysis of the collected data and the calculated financial indicators will be carried out to determine which country had the strongest growth and which had not and how these dynamics affect the respective economies.

2. Analysis of financial performance in the software industry

As mentioned earlier, the software industry has become a pivotal sector in the regional economy, being the sector which is characterized by rapid innovation, support for implementation of AI and adapting successfully to dynamic market conditions. Understanding the financial performance of companies within this industry requires examining key financial metrics and the impact of technological advancements.

Authors such as Senna and Moxoto (2025), Kim et al (2018) and Tutcu et al (2024) highlight the importance of analyzing indicators such as Return on Assets (ROA), Return on Equity (ROE) while assessing software companies. Ge et al (2020), Bragg (2012) and Oware and Mallikarjunappa, (2021) are considering that, for public companies, Earnings per Share (EPS) should be also analyzed. Belgraver and Verwaal (2018) and Canillas et al (2024) consider that revenue growth is a key metric for assessing expansion and competitive position of software companies. Sustained revenue growth often correlates with successful product innovation and market penetration.

According to what Aarstad and Kvitastein wrote in their 2023 study, operating revenue represents the income generated in a company generates from its main activity (Aarstad & Kvitastein, 2023).

The Altman Z-Score financial indicator is known to be an indicator for verifying the company's health (Rahman, 2024). Altman Z-Score model exhibited substantial predictive capability in identifying firms in financial distress, as assessed using the Z-Score (Liang & Pathak, 2018). An improved version of Altman Z-Core (Barboza et al, 2017), considers that the following factors are required to use the discriminant function: „ X_1 = Working capital/Total assets, X_2 = Retained Earnings/ Total assets,

X_3 = Earnings before interest & taxes/ Total assets, X_4 = Market value equity/ Total liabilities, X_5 = Sales/ Total assets”.

Table 1: Financial indicators analyzed for financial performance

Key Financial indicators	Calculation formula
Operating profit EBIT	Gross profit – Operating Expenses
ROA	Gross profit/ Total assets
ROE	Net income/ Shareholder’s equity
Current ratio	Current assets/Current liabilities
Altman Z-score	$Z=1,2X_1+1,4X_2+3,3X_3+0,6X_4+1X_5$
Debt to Equity Ratio	Total Liabilities/Total Equity
Debt to Total Assets Ratio	Total Debts/Total Assets

Source: Table developed by the authors based on the literature research) (Liang & Pathak, 2018)

3. Research and methodology

The statistical data underlying this research were extracted from the EMIS database of the University of Oradea, and the selected sample consists of companies operating in the software and AI sectors. The criteria for extracting the statistical data were as follows: The region included 8 European countries, namely Bulgaria, the Czech Republic, Croatia, Hungary, Poland, Romania, Slovenia and Slovakia. For a more focused analysis, the database was narrowed down to only three countries, including our own country, Romania. The selection criterion for the other countries was their proximity to Romania; the selected countries are therefore Romania, Hungary and the Czech Republic. Other criteria for extracting the statistical data from the EMIS platform were filtering the companies based on total assets (minimum 0.2 – maximum 5000), total liabilities (minimum 0.2 – maximum 4000), a minimum number of 50 employees, the fact that the company is operational, and the fact that the main business field is the software and AI industry. After applying these criteria, a database covering the period 2019–2023 was exported. The exported file contained 1303 companies, and after removing the other five European countries, the number of companies was reduced to a total of 320 operational companies in the software industry. The database was cleansed of indicators that were not very relevant and the remaining financial indicators were analyzed, including by calculating average values. Numerous articles were found using the following search terms: “software industry”; “financial analysis”; “financial performance”; “financial indicators”, of which the most relevant were selected to deepen the understanding of the topic.

4. Data analysis

Table 2: Evolution of median Operating Revenue for the selected companies (million USD), by Country (2019–2023)

		2019	2020	2021	2022	2023
Romania	Median	9.39	10.06	13.80	14.10	17.39
Czech Republic		25.40	19.40	22.72	24.94	28.04
Hungary		9.71	12.24	13.44	14.85	18.28
All		11.89	13.70	16.21	17.44	21.49

Source: Table developed by the authors based on the data provided by EMIS

Table 2 shows the median Total Operating Revenues for software companies in Romania, the Czech Republic and Hungary, as well as the overall median for the period 2019-2023. A general trend of increasing operating revenues can be observed for all three countries and for the total companies in the analyzed database over the five years. Romania recorded a constant increase from USD 9.39 million in 2019 to USD 17.39 million in 2023. The Czech Republic had the highest median operating revenues over the entire period, reaching USD 28.04 million in 2023. Hungary also showed a notable increase, from USD 9.71 million to USD 18.28 million.

Table 3: Evolution of Median Total assets of the selected companies (million USD), by Country (2019–2023)

		2019	2020	2021	2022	2023
Romania	Median	4.56	5.44	6.02	7.08	8.87
Czech Republic		12.19	12.67	13.12	13.01	17.68
Hungary		5.49	7.33	9.11	11.44	14.57
All		5.84	7.03	8.55	9.20	12.17

Source: Table developed by the authors based on the data provided by EMIS

According to the table above, the median value of Total Assets has increased from one year to another in each country analyzed and a continuous upward trend can be observed because the values over time have even doubled. The largest increase can be observed in Hungary which reached from 5.49 million USD in 2019 to 14.57 million USD in 2023.

Table 4: Evolution of Operating profit EBIT for the selected companies (million USD), by Country (2019–2023)

		2019	2020	2021	2022	2023
Romania	Median	0.79	0.94	1.13	1.25	1.37
Czech Republic		1.65	1.53	1.70	1.43	1.94
Hungary		0.66	1.01	1.29	1.01	1.49
All		0.86	1.09	1.23	1.25	1.57

Source: Table developed by the authors based on the data provided by EMIS

The values shown in Table 4 represent the development of the operating profit (EBIT) of companies in Romania, the Czech Republic and Hungary. Due to the fact that the general values are positive and increasing, we can say that there has been an improvement in the operating performance of the companies. Although certain fluctuations can be observed in the Czech Republic and Hungary over the years, the Czech Republic reaches the highest value in 2023. In the case of Romania, the trend is upward, with no downward fluctuations.

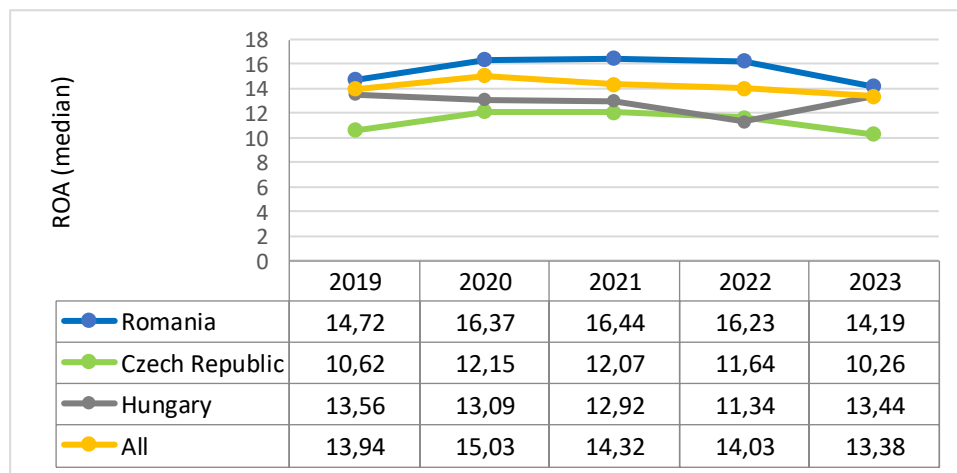


Figure 1: Evolution of the Median ROA (%) for the selected companies, by Country (2019–2023)

Source: Chart developed by the authors based on the data provided by EMIS

Tutcu et al (2024) defined the following indicators as follows: ROA (Return on Assets) indicates the profitability that a company generates with its assets and reflects how efficiently these assets are used to generate profits (Tutcu, et al., 2024). According to the graph above, Romania recorded the highest percentage of ROA over the 5 years, but in the end, there is a downward trend from 16.23% in 2022 to 14.19%

14.19% in 2023. In the case of the Czech Republic and Hungary, the percentages increase slightly with some fluctuations, and reach the point where the percentages in 2023 are close to the 2019 values but slightly lower.

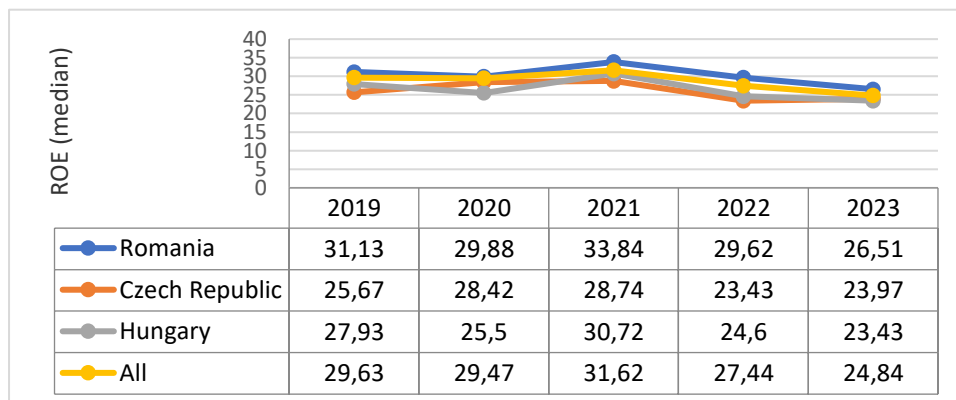


Figure 2: Evolution of the Median ROE (%), by Country (2019–2023)

Source: Chart developed by the authors based on the data provided by EMIS

ROE (return on equity) measures how efficiently a company uses its equity to generate profits (Tutcu, et al., 2024). Figure 2 shows that Romania was superior to the other two countries in terms of the median value of the registered ROE indicator during the period analyzed. The fact that all 3 countries registered a rather high ROE percentage suggests that they are all using their equity efficiently to generate profits.

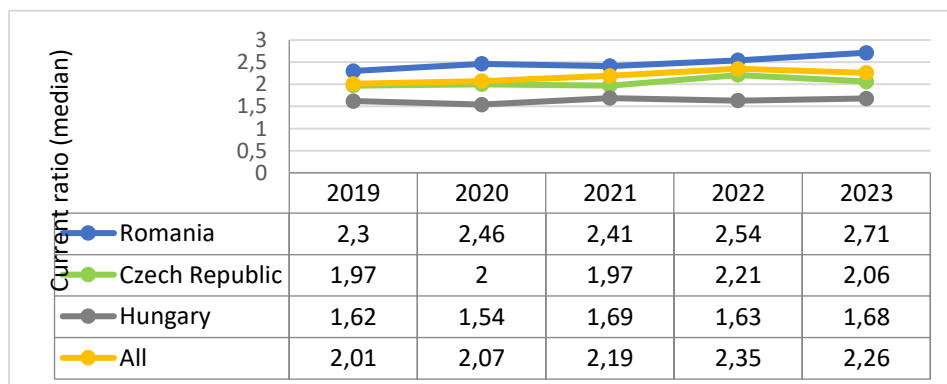


Figure 3: Evolution of the Median Current ratio for the selected companies, by Country (2019–2023)

Source: Chart developed by the authors based on the data provided by EMIS

In Figure 3 we see the graphical representation of the development of the median of the current ratio. Hungary is positioned with the lowest median of the current ratio, while Romania is again represented with the highest percentage in the graph, which can be interpreted as good and improving liquidity. A current ratio of more than 1 (in

the range 1,5-2,5), indicates that a company has sufficient current assets to cover its current liabilities (Honková & Kuběnka, 2020).

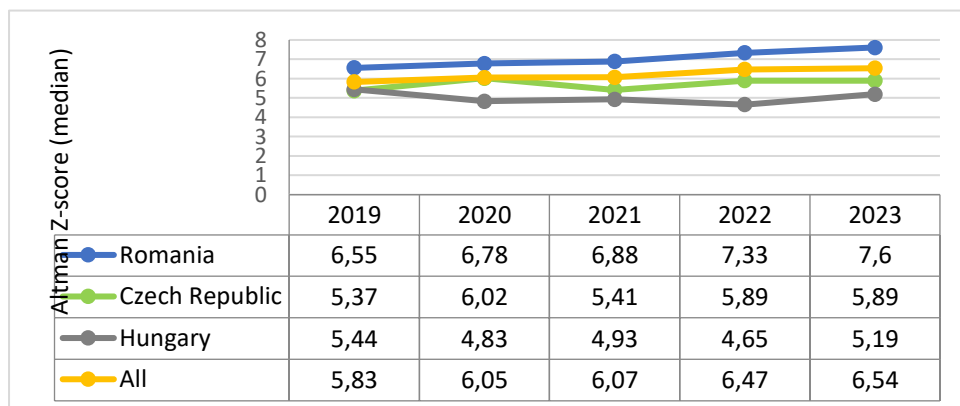


Figure 5: Evolution of the Median Altman Z-score, by Country (2019–2023)

Source: Chart developed by the authors based on the data provided by EMIS

The Altman Z-Score financial indicator is known to be an indicator for verifying the company's health (Rahman, 2024). The values for this indicator in the countries considered in this financial analysis can be interpreted as follows: Romania is even higher in the chart with the highest median Altman Z-score and this indicates financial health and a low risk of bankruptcy. We can also confirm financial stability for Hungary and the Czech Republic, which have a lower percentage, but within good and balanced values.

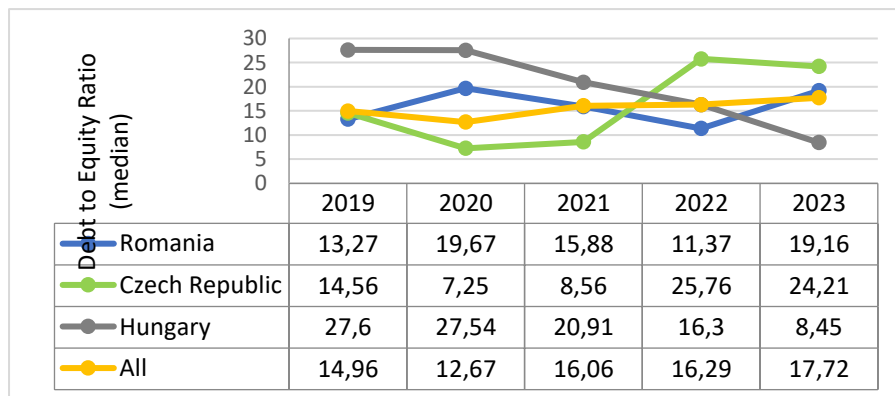


Figure 6: Evolution of the Median Debt to Equity Ratio (%), by Country (2019–2023)

Source: Table developed by the authors based on the data provided by EMIS

Figure 6 shows the evolution of the median debt-equity ratio. According to the graphical data, Hungary is significantly higher in 2019 compared to Romania and the Czech Republic, but a gradual percentage decrease in the median indicator can be observed over the years, meaning that Hungary's dependence on debt financing has decreased over time. Romania recorded an increasing percentage of leverage

from 13.27% in 2019 to 19.16% in 2023. Czech companies in the software industry recorded a significantly higher average percentage of leverage in the analyzed period compared to the baseline in 2019: 14.56% in 2019 – 24,21% in 2023.

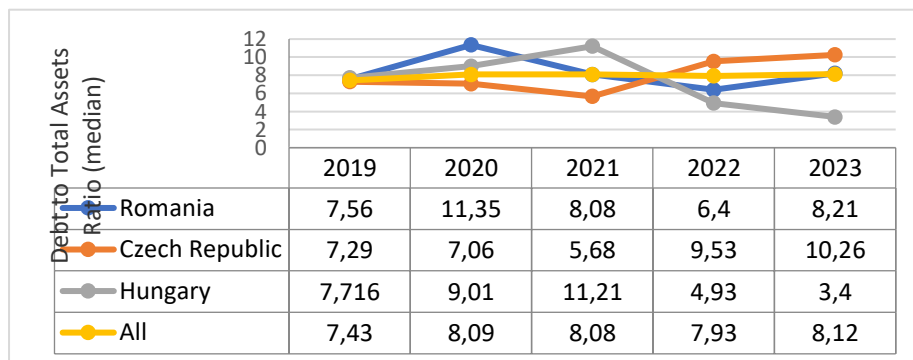


Figure 7: Evolution of the Median Debt to Total Assets Ratio (%), by Country (2019–2023)

Source: Table developed by the authors based on the data provided by EMIS

The graph above (Figure 7) shows the Median Debt to Total Assets Ratio for software companies in Romania, Hungary and the Czech Republic. This financial indicator is considered an indicator of the level of indebtedness and a decrease in its value is a good sign (Gunawan, et al., 2022). Of the 3 countries considered for the current research, Hungary stands out as it has the lowest value of this indicator in 2023 - 3.40% compared to the percentage in 2019, 7.16%. The Median Debt to Total Assets Ratio in Romania has remained stable over the five years with a slight increase. However, a high percentage of this indicator was reached in Romania in 2020, namely 11.35%, an increase that could be motivated by the occurrence of the COVID-19 pandemic.

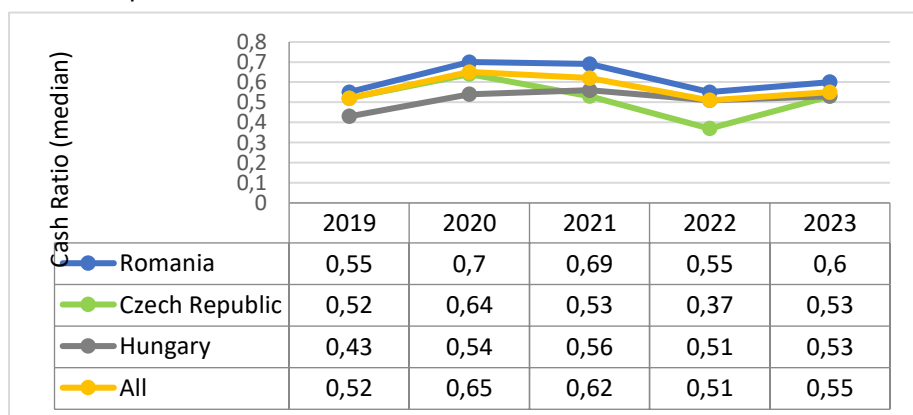


Figure 8: Evolution of the Median Cash Ratio, by Country (2019–2023)

Source: Table developed by the authors based on the data provided by EMIS

The evolution of the median cash ratio in the European countries Czech Republic, Hungary and Romania during the analyzed period was relatively good for all countries. Romania had the highest percentage of the ratio, reflecting the fact that companies in the software sector in Romania are more capable to meet their short-term obligations with immediate liquidity.

5. Conclusion

Based the above presented analysis which was based over the financial database extracted from the EMIS database, we conclude that the financial development of companies in the software industry in the Czech Republic, Hungary and Romania in the period 2019-2023 is promising and in full development. Most of the financial indicators which were assessed (especially operating revenues, total assets, operating profit and EBIT) followed an increasing trend of values, reflecting the expansion, development, improvement and increasing profitability of companies from the software sector located in the Central and Eastern Europe. Unexpected, while ROA and ROE indicators registered outstanding values, have also decreased slightly over the five years. ROA could be improved by companies paying more attention to the way assets are managed to generate profits.

Based on the median values of the Current Ratio, companies have sufficient current assets to cover current liabilities, as the Current Ratio values are all above the indicated range, namely above 1.5, so we see an improvement in liquidity. After analyzing the Debt-to-Equity Ratio and Debt-to-Assets Ratio indicators, a surprising result was obtained by analyzing Hungarian companies where these indicators recorded a reduction in values over the analyzed period, which means that the leverage ratio has decreased. The companies operating in Czech Republic recorded a positive evolution of the indicator. The median cash ratio shows that all three countries can cope with the burden of short-term obligations with immediate liquidity.

Finally, the Altman Z-Score in this study shows that the software industry in Central and Eastern Europe (more specifically in the Czech Republic, Hungary and Romania) has a low risk of bankruptcy and is therefore financially healthy. As a general conclusion we consider that the financial performance of software companies is multifaceted, influenced by key financial metrics, technological advancements, and strategic resource management. While existing literature provides valuable insights, further research is necessary to explore the long-term impacts of technological innovations and regional performance variations.

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PERFORMANCE ANALYSIS OF HUNGARIAN FOOD INDUSTRY ENTERPRISES USING THE DEA METHOD

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Abstract: *This study examines the performance of Hungarian food industry enterprises using the Data Envelopment Analysis (DEA) method. In today's rapidly evolving economic environment, assessing operational efficiency and cost-effectiveness is of paramount strategic importance. The primary objective of this research is to investigate how performance measurement and benchmarking can enhance informed decision-making and drive business development within the sector. The empirical analysis is based on secondary data retrieved from the EMIS database, covering 611 companies over the financial years from 2018 until 2023. The selected input variables include the value of tangible assets, material and personnel-related expenses, other operational costs, and interest paid. Output variables consist of total revenue and gross value added (GVA). The linear programming-based DEA model calculates a relative efficiency score for each decision-making unit, comparing firms with similar input-output structures. The study investigates efficiency differences across four dimensions: regional location, industry sub-sector, company size (based on number of employees), and enterprise age. The results reveal considerable heterogeneity. Companies in the Budapest region show the highest efficiency levels, while those in Pest County perform the weakest. Among industry sub-sectors, the efficiency gap between the best and worst performers reaches 36%. Larger firms, especially those employing more than 250 people, consistently outperform smaller ones. In terms of age, the youngest (0-5 years) and the oldest (over 50 years) enterprises exhibit the highest technical efficiency, whereas mid-aged firms tend to lag behind. The findings offer valuable insights for both academic research and practical applications by identifying key performance drivers and benchmarking opportunities within the Hungarian food industry.*

Keywords: *DEA method, data envelopment analysis, the performance of food industry enterprises, SMEs, efficiency, Hungarian economy*

JEL Classification: C61, D24, L66, M21

1. Introduction

In a rapidly changing economic environment, monitoring the operational efficiency and performance of companies is becoming increasingly important - particularly in strategically significant sectors such as the food industry. To remain competitive and ensure sustainable development, businesses require reliable and objective performance indicators to support their decision-making processes. One of the most widely used modern methods for evaluating efficiency is Data Envelopment Analysis (DEA), which enables the comparison of the relative efficiency of organizations that utilize similar resources.

This study aims to conduct an empirical and quantitative analysis of the efficiency of Hungarian food industry enterprises using the Data Envelopment Analysis (DEA) method, with a particular focus on differences by regional location, industry sub-sector, company size, and age. The research is based on secondary data obtained from the EMIS database, covering financial information from 611 domestic food industry companies over the 2018-2023 period.

Beyond mapping the current state of efficiency in the sector, the objective of this analysis is to identify key benchmarking opportunities and performance-driving factors that can support the formulation of both firm-level and industry-wide development strategies.

2. Dimensions of Corporate Performance – Theoretical Foundations and Interpretive Frameworks

The concept of corporate performance is inherently complex and multifaceted, and its interpretation and measurement remain among the most debated topics in management science. Various academic disciplines, such as economics, organizational theory, and controlling, emphasize different aspects of performance, resulting in a wide array of theoretical and practical approaches over recent decades. Traditionally, corporate performance has been assessed along two principal dimensions: effectiveness and efficiency, which Dobák et al. (1996) also identify as the cornerstones of performance management. While these dimensions can be distinguished in theory, they are often inseparably linked in practice: efficiency is only regarded as a meaningful performance metric if it contributes to effective operations.

Recent studies increasingly support a broader interpretation of corporate performance. In addition to traditional financial indicators, new dimensions—such as quality, productivity, innovation capacity, human capital, and sustainability—have gained prominence. These factors not only reflect the internal functioning of firms but also their ability to adapt to external environments, which is essential for long-term competitiveness. Wimmer (2004) emphasizes the role of profitability in evaluating business performance, not as a standalone dimension but as the cumulative outcome of effectiveness, efficiency, productivity, and innovation.

The relationship among these performance dimensions is not hierarchical but interdependent. For example, improvements in quality may enhance customer satisfaction, leading to increased revenues and, consequently, higher outputs for

the same level of input - thus improving efficiency. Similarly, innovation may serve as a predictor of future performance, even if it entails short-term cost increases that temporarily lower efficiency. As a result, performance metrics must always be interpreted in context and within an appropriate time frame (Kaplan & Norton, 1992; Neely et al., 2005). Several authors, including Bititci et al. (1997) and Otley (1999), argue that performance measurement should extend beyond financial indicators to include non-financial factors that indirectly influence effectiveness. These may encompass internal elements (e.g., employee satisfaction, equipment utilization) or external ones (e.g., customer feedback, market share).

The specific characteristics of the food industry, such as high seasonal volatility, stringent food safety standards, and short supply chains, make multidimensional performance evaluation particularly relevant. Therefore, the application of the DEA method enables the integrated assessment of various performance dimensions, including material usage, labour input, asset efficiency, and output value. The empirical research presented in this study thus explores not only the interrelation between effectiveness and efficiency but also their regional, structural, and temporal variations within the DEA framework.

3. Theoretical Foundations of the DEA Method

The Data Envelopment Analysis (DEA) is one of the most widely used non-parametric methods for measuring production efficiency. It facilitates the comparison of the relative performance of units operating under similar resource conditions, referred to as Decision-Making Units (DMUs). The theoretical foundation of DEA is based on linear programming, aiming to define an efficiency frontier against which the performance of individual units can be assessed. Initially developed by Charnes, Cooper, and Rhodes (1978), the methodology and its application areas have expanded substantially in subsequent decades.

The original CCR model assumes constant returns to scale (CRS), while the later BCC model introduced by Banker et al. (1984) allows for variable returns to scale (VRS). The choice between these models significantly influences the results of efficiency assessments, especially in sectors characterized by a wide range of firm sizes, such as the food industry. One of the key strengths of DEA lies in its flexibility: it requires no prior assumptions about the form of the production function and can simultaneously accommodate multiple input and output variables. These characteristics make it particularly suitable for complex, multi-criteria performance evaluations.

As Emrouznejad and Yang (2018) highlight, the widespread adoption of DEA is due not only to its methodological flexibility but also to its applicability across diverse sectors, including healthcare, public services, and the agriculture and food industries. However, Luo et al. (2012) caution that DEA's effectiveness may be limited by dataset size and by an imbalanced ratio of variables to observations. An excessive number of input-output variables relative to the sample size can reduce discriminatory power and lead to biased efficiency estimates.

The DEA is often compared to Stochastic Frontier Analysis (SFA), another prominent method for evaluating efficiency. Unlike DEA, SFA is a parametric model

that incorporates statistical noise. As Zhu (2021) notes, DEA's advantage lies in its freedom from distributional assumptions; however, its main limitation is its inability to distinguish between random error and inefficiency, making it sensitive to data variability.

The application of DEA is particularly appropriate for analyzing enterprises in the food industry, where production processes are complex, firm sizes vary widely, and performance must be assessed across several dimensions, including efficiency, quality, and innovation. According to a comprehensive literature review by Dutta, Jaikumar, and Arora (2022), DEA has been extensively used between 2000 and 2020 to evaluate the efficiency of food industry producers and suppliers, often segmented by region or firm size.

4. Presentation of the Analyzed Database and the Input-Output Variables

One of the critical aspects of applying the DEA method lies in the careful selection of input and output variables, as well as the use of a reliable and representative dataset to populate the analytical framework. This study is based on data from 611 Hungarian food industry enterprises drawn from the financial records provided by the EMIS (Emerging Markets Information Service) database. The sample includes companies classified under code 311 of the North American Industry Classification System (NAICS), corresponding to the food manufacturing sector. The data spans the financial years 2018 to 2023, enabling an assessment of temporal changes in corporate efficiency.

The success of a DEA analysis depends heavily on the appropriate choice of input and output variables. Luo et al. (2012) emphasize that this is not merely a technical consideration but a conceptual one, as the selected variables fundamentally define the scope and interpretive framework of performance assessment. Poor variable selection can distort results, diminish the model's discriminative capacity, and lead to misleading conclusions.

The input variables used in this study are:

- Value of tangible assets,
- Material-type expenditures,
- Personnel-type expenditure,
- Other expenditures,
- Value of interest paid.

These variables represent the resources employed in the companies' production processes and can be objectively quantified using financial statements. The inclusion of interest paid allows for the consideration of financial efficiency, which is particularly relevant in capital-intensive sectors.

The output variables are:

- Total revenue,
- Gross value added (GVA).

Total revenue is a commonly used output metric in corporate performance evaluation (Cook & Seiford, 2009), while Gross Value Added (GVA) has gained increasing prominence in recent years, especially in sectors where final profitability may not accurately reflect operational efficiency (Zhu, 2021).

As noted by Emrouznejad and Yang (2018), DEA model variables must be both economically meaningful and statistically sound, and they must also be accessible. Accordingly, the variable selection in this study reflects not only data availability but also the structural characteristics of the food industry, such as its high proportion of material costs, labour intensity, and capital-intensive requirements.

An additional consideration is the ratio between the number of variables and the sample size. Cooper, Seiford, and Zhu (2011) recommend that the total number of input and output variables should not exceed one-third of the number of decision-making units to avoid an inflated number of efficient observations. According to this guideline, the current study utilizes five input and two output variables across 611 DMUs, ensuring both proportionality and adequate discriminatory power.

5. Research Objectives and Analytical Dimensions in the Application of DEA

One of the primary objectives of this research is to assess the technical efficiency of Hungarian food industry companies using the Data Envelopment Analysis (DEA) method and to facilitate a comparison of their relative performance across different structural dimensions. The study aims not only to generate aggregate efficiency indicators but also to identify the structural and environmental factors influencing performance, thereby serving both theoretical and practical purposes.

A key advantage of DEA lies in its ability to accommodate multiple input and output variables simultaneously, making it particularly well-suited for multidimensional performance analysis (Cook & Seiford, 2009; Zhu, 2021). This feature makes DEA especially suitable for complex sectors, such as the food industry, where outputs are not solely financial and where diverse structural factors shape operations.

The present study examines DEA-based efficiency along four key dimensions:

- Regional location,
- Industry sub-sector,
- Company size (measured by number of employees),
- Company age.

This structured analytical framework aligns with contemporary research trends that emphasize the role of environmental and organizational context in DEA studies (Färe et al., 2007; Emrouznejad & Yang, 2018). The regional dimension is particularly relevant in the context of national economic development strategies, given the strategic objective of reducing regional disparities (Lengyel & Rechnitzer, 2013). A central aim of the study is to determine whether infrastructural, economic, and institutional differences across regions influence technical efficiency.

Analyzing performance by industry sub-sector (e.g., meat processing, bakery, dairy, and beverage production) enables the identification of vertical differences in efficiency. As highlighted by Jamasb and Pollitt (2003), efficiency scores can vary significantly across sectoral contexts due to differences in operational logic, technology, and input intensity.

The analysis by company size is among the most frequently applied dimensions in DEA, as it facilitates the examination of returns to scale (Banker et al., 1984). This is particularly relevant in the food industry, where SMEs often operate under

structurally different conditions compared to capital-intensive, vertically integrated large enterprises.

Company age, while less frequently examined in DEA literature, is also included as a relevant dimension. Drawing on the findings of Rossi (2016), it is hypothesized that accumulated experience, organizational routines, and capital formation capacity may influence firm-level efficiency. The inclusion of this factor adds novelty to the research framework.

Thus, the purpose of this study is not only to identify efficiently performing companies but also to establish a foundation for benchmarking and to uncover structural, regional, and managerial determinants of performance. By doing so, the findings will provide both scientific insights and practical support for informed strategic decision-making and the formulation of economic policy.

6. Results of the Analysis

6.1. Distribution of the Sample by NAICS Code, Regional Location, and DEA Score

The dataset analyzed in this research contains data from 611 food industry companies over six financial years, making the database complex both in terms of time and structure. Presenting the composition of the sample is an essential step in establishing the foundations for the DEA-based efficiency analysis, as performance measurement can only be meaningfully interpreted if the types of companies included in the study are clearly understood. Figure 1 illustrates the distribution of the sample according to NAICS codes.

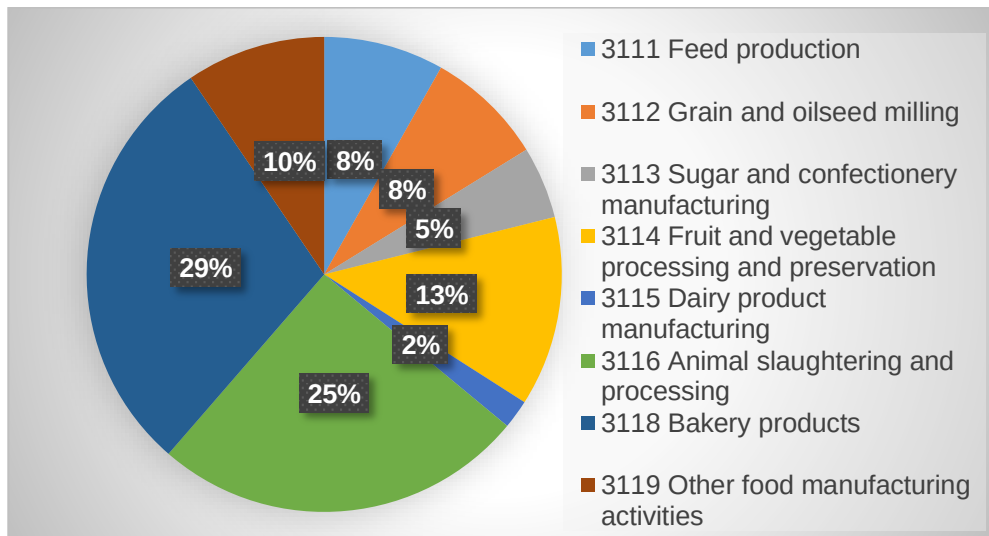


Figure 1: Distribution of the Sample by NAICS Code

Source: Own compilation based on the conducted analysis

Based on Figure 1, it can be concluded that in terms of sub-sector distribution by NAICS code, the largest portion of the sample belongs to the Bakery Products sub-sector (3118), which comprises 178 companies, representing 29.13% of the entire dataset. This is followed by Animal Slaughtering and Processing (3116), with 155 companies (25.37%), and Fruit and Vegetable Processing and Preservation (3114), with 79 companies (12.93%). Other components of the food industry structure appear in smaller proportions, such as Feed Production (3111), with 8.18%, Grain and Oilseed Milling (3112), with 8.02%, and Sugar and Confectionery Manufacturing (3113), with 4.91%. The Dairy Product Manufacturing sub-sector (3115) represents the smallest share, comprising only 1.96% of the sample. This distribution reflects the structural characteristics of the domestic food industry, where bakery and meat processing dominate, while underrepresented sectors such as dairy may influence the outcomes of comparative efficiency analyses.

Figure 2 illustrates the regional distribution of the sample.

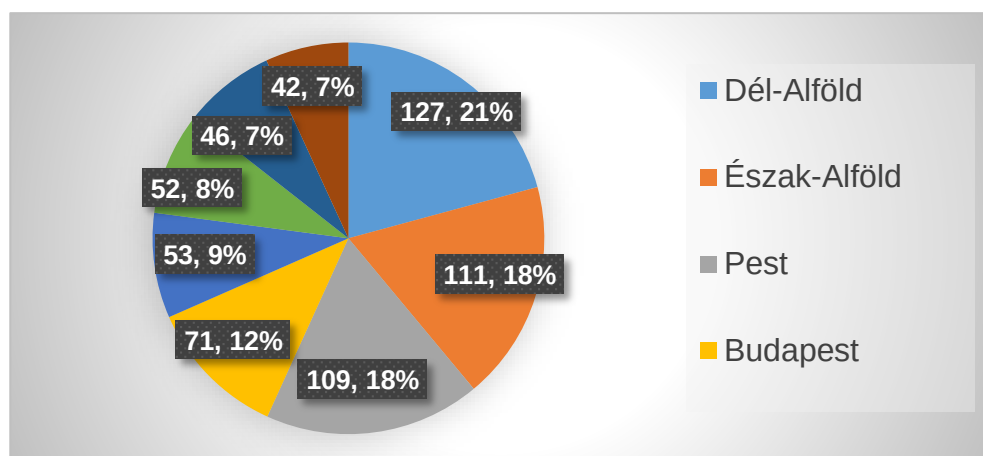


Figure 2: Regional Distribution of the Sample

Source: Own compilation based on the conducted analysis

From a regional perspective, the majority of the sample is linked to the Alföld regions: most companies are located in Dél-Alföld (20.79%), Észak-Alföld (18.17%), and Pest (17.84%), while Budapest accounts for 11.62%. The Dunántúl regions - Közép-Dunántúl, Nyugat-Dunántúl, and Dél-Dunántúl - together represent 24.7%, while Észak-Magyarország has the smallest share (6.87%). Based on this regional concentration, a crucial question arises as to whether economic performance and efficiency are related to geographical location and whether the dominance of the Alföld areas could skew the results. The examination of such questions is fully enabled by the relative efficiency indicators calculated using DEA models, which provide a valuable basis for comparison not only at the company level but also at the regional level.

Table 1 shows the distribution of the sample according to DEA scores.

Table 1: Distribution of the Sample by DEA Scores

Efficiency coefficient intervals		2018	2019	2020	2021	2022	2023
	=1.0	79	77	81	84	97	57
>= 0.9	< 1.0	55	43	41	54	74	15
>= 0.8	< 0.9	109	112	102	82	101	21
>= 0.7	< 0.8	138	128	156	130	139	32
>= 0.6	< 0.7	116	112	122	145	107	37
>= 0.5	< 0.6	69	78	53	74	57	48
>= 0.4	< 0.5	23	40	35	32	23	52
>= 0.3	< 0.4	13	12	13	6	10	99
>= 0.2	< 0.3	9	8	8	2	3	111
>= 0.1	< 0.2	0	1	0	2	0	100
>= 0.0	< 0.1	0	0	0	0	0	39
Average		0,7488	0,7368	0,7457	0,7445	0,7740	0,4343
Sample size		611	611	611	611	611	611

Source: Own compilation based on the conducted analysis

Based on the DEA results presented in Table 1, it can be concluded that the technical efficiency of Hungarian food industry companies remained relatively stable between 2018 and 2022, with annual average efficiency values ranging from 0.7368 to 0.7740. This suggests that the sector's operations were considered balanced, even during the COVID-19 pandemic period. The moderate improvement in efficiency in 2022 (average: 0.7740) may suggest that companies successfully adapted to the post-pandemic economic environment. However, the year 2023 brought a significant decline in efficiency: the average DEA score dropped to 0.4343, while the number of companies with technical efficiency below 0.3 increased dramatically. The number of companies achieving full efficiency (DEA=1) also fell to 57, marking the lowest figure over the six years analyzed. The decline in efficiency is likely attributable to several interrelated economic factors, particularly the inflationary pressures emerging after 2022, the rise in energy and raw material costs, and the increase in interest rates, which directly impacted the results through the "paid interest" input variable. The extreme dispersion of efficiency values also highlights that the adaptability of individual companies varied significantly: while some firms maintained high-performance levels even in the face of difficulties, others experienced marked declines. The radical drop observed in 2023 thus reflects not only the worsening external economic environment but also reveals internal vulnerabilities of the sector, particularly in terms of financing structures, operational efficiency, and innovation capabilities. All of this underscores the

importance of benchmarking and efficiency-enhancing measures to sustain the future competitiveness of food industry companies.

6.2. Regional Efficiency Ranking Based on DEA Scores

Table 2 presents the regional efficiency ranking based on DEA scores. The table aims to provide a comprehensive overview of which regions operated more efficiently in technical terms based on the average performance between 2018 and 2023.

Table 2: Regional Efficiency Ranking Based on DEA Scores

Region	2018	2019	2020	2021	2022	2023	Aver.	Rank.
Észak-Magyarország	0,7140	0,7009	0,7273	0,7307	0,7160	0,4189	0,6680	8
Észak-Alföld	0,7305	0,7164	0,7151	0,7055	0,7534	0,4029	0,6706	7
Dél-Alföld	0,7708	0,7658	0,7597	0,7658	0,8019	0,4763	0,7234	2
Pest	0,7435	0,7293	0,7325	0,7372	0,7573	0,3906	0,6817	6
Budapest	0,7585	0,7578	0,7886	0,7936	0,8126	0,4660	0,7295	1
Közép-Dunántúl	0,7574	0,7408	0,7698	0,7746	0,7487	0,4697	0,7101	3
Nyugat-Dunántúl	0,7543	0,7350	0,7526	0,7257	0,7913	0,4343	0,6988	4
Dél-Dunántúl	0,7453	0,7221	0,7274	0,7209	0,7892	0,4223	0,6879	5
Average	0,7488	0,7368	0,7457	0,7445	0,7740	0,4343	0,6974	

Source: Own compilation based on the conducted analysis

Based on Table 2, it can be concluded that the efficiency of Hungarian food industry companies showed significant regional disparities between 2018 and 2023. The best performance was achieved by Budapest, which consistently recorded high DEA values, while Észak-Magyarország proved to be the weakest region, with the lowest average efficiency scores. The Dunántúl regions—especially Közép-Dunántúl and Nyugat-Dunántúl—demonstrated moderate performance, while the Alföld regions, despite the outstanding results of Dél-Alföld, were generally positioned in the lower half of the ranking. The year 2023 brought a sharp decline in every region, as reflected by the marked drop in DEA values and the dominance of red color codes in the table. This overall deterioration can be attributed to adverse changes in the economic environment—particularly rising inflation, energy prices, and interest costs. It is particularly concerning that the eastern regions (Észak-Alföld, Észak-Magyarország, Pest) not only maintained persistently low efficiency indicators, but also experienced further decline during the crisis year, highlighting weaknesses in adaptability and limited capacity to leverage internal resources. Overall, the results indicate that regional differences stem from deeply embedded structural and developmental disparities, and that stable organizational operations, technological advancement, and financial flexibility play a critical role in mitigating economic shocks.

6.3. Industry Efficiency Ranking Based on DEA Scores

Table 3 presents the industry efficiency ranking based on DEA scores. The table examines the average performance of each sub-sector between 2018 and 2023, providing an opportunity to identify which sectors operate with relatively higher resource efficiency.

Table 3: Industry Efficiency Ranking Based on DEA Scores

Industry sub-sector	2018	2019	2020	2021	2022	2023	Aver.	Rank.
3111	0,8114	0,8051	0,8052	0,7842	0,8197	0,4300	0,7426	2
3112	0,7662	0,7466	0,7789	0,7929	0,8447	0,4291	0,7264	4
3113	0,6207	0,6259	0,5951	0,6684	0,6336	0,3653	0,5848	8
3114	0,7072	0,7033	0,6918	0,7141	0,7519	0,3852	0,6589	7
3115	0,7794	0,7608	0,7748	0,7894	0,8436	0,6289	0,7628	1
3116	0,8099	0,7946	0,7805	0,7747	0,8075	0,4016	0,7281	3
3118	0,7060	0,6887	0,7203	0,7028	0,7336	0,4690	0,6701	6
3119	0,7575	0,7544	0,7914	0,7848	0,7906	0,4495	0,7214	5
Average	0,7488	0,7368	0,7457	0,7445	0,7740	0,4343	0,697	

Source: Own compilation based on the conducted analysis

Based on the industry DEA scores, it can be observed that there are significant differences in technical efficiency among the various food industry sub-sectors. Dairy product manufacturing (3115) proved to be the most efficient, with an average DEA score of 0.7628. This outstanding performance is primarily attributable to the highly mechanized and regulated processing operations in the dairy sector, combined with a high level of technological advancement, resulting in optimized input-output ratios. Feed production (3111) and animal slaughtering and processing (3116) also show high efficiency, where the benefits of mass production and industrial-scale economies are strongly evident. Grain and oilseed milling (3112) and other food manufacturing activities (3119) also perform well, although they slightly lag behind the top three sectors, indicating greater technological diversity and varying company sizes.

Bakery products manufacturing (3118), fruit and vegetable processing and preservation (3114), and sugar and confectionery manufacturing (3113) are positioned in the lower third of the efficiency ranking. These sub-sectors are typically characterized by smaller-scale, labour-intensive production, higher specific labour costs, and less standardized technologies, which may reduce technical efficiency. The particularly low-efficiency score of the sugar and confectionery sector (0.5848) may also suggest that this industry finds it more challenging to adapt to the changing economic environment, including fluctuations in raw material and energy prices, as well as rapidly shifting consumer demands. Overall, it can be concluded that sub-sectors with higher technological intensity, mechanization, and economies of scale are more competitive and operate more efficiently, whereas traditional, labour-intensive areas exhibit greater efficiency variability and higher development potential.

6.4. Efficiency Ranking Based on Number of Employees

Table 4 presents the efficiency ranking of the analyzed companies based on the number of employees. The goal is to explore the relationship between company size specifically the number of employees - and technical efficiency.

Table 4: Efficiency Ranking of the Analyzed Companies Based on Number of Employees

Employee category	2018	2019	2020	2021	2022	2023	Aver.	Rank.
1. <5	0,8101	0,7808	0,7976	0,8285	0,8082	0,3529	0,7319	3
2. 5-10	0,7167	0,7188	0,7282	0,7598	0,7462	0,2417	0,6371	7
3. 11-20	0,7218	0,7156	0,7149	0,7116	0,7118	0,2989	0,6502	6
4. 21-50	0,7413	0,7007	0,7221	0,7100	0,7316	0,3774	0,6628	5
5. 51-100	0,7190	0,7153	0,7141	0,7172	0,7889	0,4715	0,6888	4
6. 101-250	0,7630	0,7841	0,7845	0,7820	0,8578	0,6536	0,7709	2
7. >250	0,8802	0,8908	0,9088	0,8782	0,9130	0,8526	0,8872	1
Average	0,7488	0,7368	0,7457	0,7445	0,7740	0,4343	0,6974	

Source: Own compilation based on the conducted analysis

Based on Table 4, it is evident that the technical efficiency of Hungarian food industry companies shows a strong correlation with the size of the workforce. Companies with more than 250 employees have the highest average DEA score (0.8872), indicating that large enterprises are more capable of operating with economies of scale, better utilizing input resources, and likely possess more advanced technologies and organizational structures. Similarly, high efficiency is observed in the 101-250 employee category (average: 0.7709), suggesting that some medium-sized companies already reach an operational scale where the combination of resources becomes optimal. In contrast, the smallest categories (5-10, 11-20, and 21-50 employees) achieved average efficiency scores between 0.6371 and 0.6628, indicating that micro- and small enterprises are less capable of efficiently converting available inputs into outputs. This may be attributed to limited technological capabilities, the lack of specialized labour, and underdeveloped internal management systems. Interestingly, the smallest companies with fewer than five employees showed slightly better efficiency (0.7319) compared to small businesses, which may suggest that these firms benefit from more flexible operations, lower fixed costs, or specialized production. One of the key lessons from the analysis is that in the food industry, company size growth - up to a certain point - favours efficiency as economies of scale emerge, which the DEA method reliably detects. However, the year 2023 brought a decline across all categories, particularly among small businesses (e.g., the DEA score for companies with 5-10 employees fell to 0.2417), indicating that economic shocks—such as inflation, rising energy, and interest costs—most adversely affected smaller enterprises. In contrast, the relatively stable efficiency scores of large enterprises (e.g., 0.8526 for companies with more than 250 employees even in 2023) suggest that these players were better able to cope with the negative market environment. Overall, the results indicate that company size is a key determinant of technical efficiency in the food industry and that without targeted support and development programs, smaller firms may struggle to achieve competitive operations.

6.5. Efficiency Ranking Based on Age Category

Table 5 illustrates the efficiency ranking of the analyzed companies based on age category. It is worth noting that company age is a less frequently examined yet relevant factor in performance-based comparisons, as firms operating for a longer period may possess greater experience, established process systems, and accumulated capital, while newly founded companies may exhibit greater flexibility and a higher propensity for innovation.

Table 5: Efficiency Ranking of the Analyzed Companies Based on Age Category

Age category	2018	2019	2020	2021	2022	2023	Aver.	Rank.
1. 0-5 y.	0,8057	0,7708	0,7516	0,7689	0,6927	0,4666	0,7609	1
2. 5-10 y.	0,7429	0,7439	0,7698	0,7864	0,8321	0,5101	0,7421	3
3. 10-20 y.	0,7435	0,7365	0,7557	0,7559	0,7815	0,3707	0,6959	4
4. 20-50 y.	0,7467	0,7303	0,7323	0,7297	0,7650	0,4464	0,6841	5
5. over 50 y.	0,6959	0,7709	0,8229	0,7640	0,8060	0,7067	0,7607	2
Average	0,7488	0,7368	0,7457	0,7445	0,7740	0,4343	0,6974	

Source: Own compilation based on the conducted analysis

Based on Table 5, it can be concluded that the technical efficiency of food industry companies shows a strong yet non-linear relationship with company age. The highest average DEA score was achieved by companies aged 0-5 years (0.7609), closely followed by companies older than 50 years (0.7607). This duality suggests that both young, dynamic enterprises and long-established, experienced companies can achieve high levels of technical efficiency, albeit through different operational logic. Young companies may benefit from flexible adaptation, an innovative mindset, and the rapid adoption of modern technologies, while older companies can leverage their stable operations, well-established processes, and greater capital resources to gain efficiency advantages. In contrast, mid-aged companies - particularly those aged 20-50 years - show lower average DEA scores (0.6841), indicating that they often struggle to maintain innovation while not yet thoroughly enjoying the advantages of stability characteristic of older firms. The average efficiency of companies aged 10-20 years (0.6959) is also lower compared to the full sample, reinforcing the assumption that mature but not veteran firms may be especially sensitive to external economic changes. Interestingly, companies aged 5-10 years demonstrate outstanding efficiency (0.7421), indicating that they have surpassed the initial learning phase but have not yet reached a plateau in growth. Overall, the age-related trends suggest that technical efficiency does not increase linearly with experience but rather follows an inverted U-shaped curve: the youngest and oldest companies perform best, while mid-aged segments are more prone to technical lag. In the 2023 data, a decline is observable across all age categories; however, the oldest companies experienced the smallest decrease (0.7067), while the lowest annual DEA score was recorded among companies aged 10-20 years (0.3707). This suggests that economic shocks—such as inflation, rising interest rates, and energy costs—have had the most significant impact on companies with moderate levels of experience, while companies in the extreme age

categories have been better able to adapt. Overall, the results suggest that while company age is a significant factor in technical efficiency, it is not the sole determinant; innovation capacity, strategic flexibility, and capital resources collectively influence how companies perform in the DEA model.

7. Conclusions

The results of the study reveal that the technical efficiency of Hungarian food industry companies has exhibited significant structural differences in recent years - by region, industry sector, company size, and age. The application of the DEA method enabled an objective evaluation of firms' relative performance across multiple dimensions. The analysis indicates that technical efficiency remained generally stable between 2018 and 2022; however, in 2023, a marked decline was observed, primarily due to unfavorable macroeconomic conditions - most notably inflation, rising energy prices, and increasing interest costs - which disproportionately affected smaller and less capital-intensive enterprises.

It can also be observed that there are significant regional differences in the efficiency of Hungarian food industry companies, which intensified dramatically in 2023. While Budapest and Dél-Alföld consistently performed well, Észak-Magyarország and Észak-Alföld produced persistently low efficiency scores. In 2023, all regions experienced a substantial decline, clearly illustrated by the dominance of red color codes, indicating the negative impact of economic shocks - particularly inflation and rising interest costs - on the sector's performance.

In terms of industry sub-sectors, firms engaged in dairy production, feed manufacturing, and animal slaughtering and processing achieved the highest DEA scores. In contrast, companies operating in sugar and confectionery manufacturing, as well as in fruit and vegetable processing, showed lower efficiency - likely due to differences in technological advancement and input structures.

The analysis by company size revealed a strong positive correlation between technical efficiency and firm size. Enterprises employing more than 250 people performed significantly better than smaller firms, underscoring the role of economies of scale in improving operational performance.

Concerning company age, the youngest (0-5 years) and oldest (over 50 years) firms achieved the highest efficiency scores, while mid-aged companies tended to perform less efficiently. This pattern suggests that both the dynamic growth phase and the accumulated stability of mature firms are more conducive to efficient operations than the plateau often experienced by middle-aged enterprises.

Overall, the findings demonstrate that corporate performance in the Hungarian food industry is strongly influenced by regional, sectoral, size-related, and age-related factors. Accordingly, future development strategies should take these dimensions into account. The practical application of DEA-based benchmarking can help define company-level development pathways, enhance competitiveness, and inform more effectively economic policy decisions within the food industry.

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THE IMPORTANCE OF INDEBTEDNESS AND PROFITABILITY INDICATORS IN ASSESSING THE PERFORMANCE OF SMEs

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Abstract: *This study aims to present the importance of the information provided by financial accounting in assessing the performance of economic entities in the form of SMEs. In this regard, a study was conducted that presents structural data on the economic and financial indicators of the largest SMEs, by turnover in 2023, from each of the five Counties of S-W region of Oltenia, Romania. Subsequently, the assessment of the performance of these SMEs was taken into account by calculating and analyzing the main debt and return indicators. The research methodology used was based on the analysis of the documents available on the website of the Ministry of Finance in Romania. The research question was: Is the financial and accounting information provided by the annual financial statements relevant in assessing the performance of SMEs? The results showed that the annual financial reports of SMEs facilitate the monitoring and evaluation of performance with the help of economic and financial indicators. Knowledge and use of financial and accounting information relevant to the economic entity represents the fundamental raw material in the adoption of the managerial decisions. Financial and accounting information represents the starting point of any form of analysis used to establish the realistic, objective and useful economic and financial situation of a SME, at a given time. The path to achieving performance by SMEs is directly connected to the quality and relevance of the financial and accounting information provided by the annual financial statements. The dynamics of the economy, the current social and economic conditions, the complexity of the activities of SMEs in competitive economic circumstances with major influences on managerial decisions, require the abandonment of routine and force the identification of new possibilities for increasing the relevance of financial and accounting information in the context of performance evaluation.*

Keywords: *financial-accounting information; profit and loss account; performance; financial statements; indebtedness indicators, return indicators.*

JEL Classification: M41

1. Introduction

The financial and accounting information provided by the financial statements is of interest, in particular, to users who make final decisions within economic entities. The information in the financial and accounting statements is the final product of accounting. Due to the clear, reliable, complete and operational nature of the financial and accounting information, it represents the main support for decisions made inside and outside the entity. The quality of the annual financial statements of SMEs significantly affects their performance, while improving competitiveness, transparency and reputation (Auliyah I., et al., 2024).

The balance of the profit and loss account highlights the performance of the economic entity transposed into its ability to generate, in the future, cash flows using the resources it has (Țilică E., V., et al, 2019). The role of the balance sheet is to present information about the financial position of the economic entity, namely about assets - known as controlled economic resources and about debts and equity - known as financial structures through indicators such as liquidity and solvency (Petrescu S., 2010). Correct financial reporting reflects current performance and helps predict future performance, crucial for assessing value and sustainability (Zhou E., et al., 2022).

The relevance is the ability of financial and accounting information to influence the decision of end users, being influenced by its nature and the significance threshold (Drăgan O., 2019). The general conceptual framework of financial reporting mentions that relevant financial information can influence the adoption of decisions if it has predictive value, confirmation value or both. Predictive value allows the use of financial information as inputs in the processes applied by users to predict future results (Luță, 2021). High-quality annual financial statements are characterized by comparability, reliability, understandability, and relevance, all of which are essential for stakeholders to make informed decisions (Tanjaya A., et al., 2022).

2. Debt and Return Indicators

In order to carry out this study, two categories of indicators were used, namely debt indicators and return indicators. The two categories of indicators are further discussed along with the identification of the main indicators in each group. Debt and return indicators are of particular importance for managers as their knowledge allows for the adoption of much more assertive decisions regarding cost savings and investments. The most relevant debt indicators are the total debt ratio and the equity solvency. The total debt ratio expresses the ratio between debts and total assets and is a risk indicator that is of particular interest to credit institutions. SMEs with a debt ratio below 0.50 can benefit from external funds to support their activity. Equity solvency is calculated according to the ratio $\text{Equity} / (\text{Debt} + \text{Prepaid Income} + \text{Provisions} + \text{Equity})$. The most common return indicators in the specialized literature are the net profit margin, the financial return (Return on Equity-ROE) and the return on total assets (Return on Assets-ROA). The net profit margin is calculated according to the relationship $\text{Net Profit} / \text{Turnover}$. A net profit margin

between 1% and 15% reflects a stable situation of the economic entity. ROE is calculated according to the relationship Net Profit/Equity and measures the profit made from the investment made by the administrators. ROA is calculated according to the relationship Net Profit/Total assets and measures the efficiency of the capitals allocated to total assets, being independent of the financing policy.

3. Study on the importance of financial and accounting information in assessing the performance of an SME

3.1. Research methodology

The study used a descriptive, evaluative research method, which covered 5 SMEs in Romania. For the purpose of the research, the largest SMEs in the S-W region of Oltenia, Romania were selected by accessing the website <https://membri.listafirme.ro/pagini/p1.htm>. The selection of SMEs was made after applying the following filtering criteria: selecting SMEs from each of the five counties of the region and classifying them according to the size of their turnover in 2023. Thus, the selected SMEs are: S.C. MARIGAB COM S.R.L. (<https://www.listafirme.ro/marigab-com-srl-15094917/>), S.C. NURVIL S.R.L. (<https://www.listafirme.ro/nurvill-srl-8517267/>), S.C. FLAGAS S.R.L. (<https://www.listafirme.ro/flagas-srl-10066630/>), S.C. BIZ SOLUTIONS S.R.L. (<https://www.listafirme.ro/biz-solutions-srl-11057665/>) and S.C. CONVALARIA S.R.L. (<https://www.listafirme.ro/convalaria-srl-7015688/>). The economic and financial indicators were presented and the performance of these SMEs was assessed by calculating and analyzing the main debt and return indicators.

3.2. The results of the research

The annual financial statements provide information that allows highlighting the positive and negative aspects of financial management, aspects that can be used to substantiate managers' decisions. The most important indicators found in the annual financial statements for the five SMEs are presented in Table 1, as follows:

Table 1. Structured data on economic and financial indicators

	SME Name	Heritage component elements	Year			
			2023		2019	
			lei	euro	lei	euro
1	S.C. MARIGAB COM S.R.L.	Equity	35231026	7082183	9105457	1905186
		Debts	15624987	3140953	1930475	403924
		Net turnover	145041513	29156417	39788660	8325207
		Gross profit	13271700	2667893	3259338	681970
		Net profit	11625434	2336959	2758185	577111
		Average number of employees	198	198	77	77
2	S.C. NURVIL S.R.L.	Equity	64175527	12900641	26603215	5566341
		Debts	58752153	11810428	53517824	11197837
		Net turnover	432605891	86962950	315020738	65913573
		Gross profit	21328499	4287480	13216265	2765314
		Net profit	18897449	3798788	11430284	2391623
		Average number of employees	166	166	158	158
3	S.C. FLAGAS S.R.L.	Equity	55215986	11099583	11812930	2471686
		Debts	67827469	13634758	10884989	2277528
		Net turnover	738978158	148550267	112561114	23551799
		Gross profit	20240563	4068782	10200693	2134349
		Net profit	17434729	3504750	8786605	1838471
		Average number of employees	143	143	117	117
4	S.C. BIZ SOLUTIONS S.R.L.	Equity	94174243	18931018	26535558	5552185
		Debts	70517216	14175455	72134861	15093185
		Net turnover	304240850	61158857	210177508	43976630
		Gross profit	1024925	206032	7071157	1479538
		Net profit	958016	192582	6167582	1290478
		Average number of employees	36	36	47	47
5	S.C. CONVALARIA S.R.L.	Equity	10047565	2019773	6552746	1371068
		Debts	33749110	6784286	24444476	5114656
		Net turnover	85942303	17276224	55423572	11596588
		Gross profit	718642	144462	2125864	444807
		Net profit	548275	110215	1847550	386573
		Average number of employees	129	129	102	102

Source: own processing based on the annual financial statements of the analyzed SMEs

The values in the table are expressed in lei and euros, the exchange rate for the euro on 31.12.2019 being 4.7793 lei, and on 31.12.2023 4.9746 lei.

For S.C. MARIGAB COM S.R.L., the turnover registered a jump of 365%, from 39.79 million lei to 145.04 million lei. Total revenues increased by over 100 million lei, which also determined a favorable evolution of profit in the analyzed period.

S.C. NURVIL S.R.L. registered a 138% increase in turnover with the increase in total revenues from 319979642 lei in 2019 to 434644139 lei in 2023. Net profit increased by 7467215 million lei, which indicates that the entity is performing in the field of activity.

For S.C. FLAGAS S.R.L. Turnover registered significant increases, by over 600 million lei, reaching 738978158 million lei in 2023. During the analyzed period, increases were noted in all assets, which is also reflected in the value of net profit, which in 2023 reached 17434729 million lei. S.C. BIZ SOLUTIONS S.R.L recorded significant decreases in net profit, by over 5 million lei compared to 2019. S.C. CONVALARIA S.R.L. recorded an increase in turnover, by over 30 million lei, proportional to total revenues that show significant increases. Net profit fluctuated throughout this period, the most unfavorable year being 2023, when the entity recorded only 548,275 lei.

The situation of the last two SMEs analyzed requires long-term attention in terms of contracting loans to maintain the activity.

In order to assess the performance of the analyzed SME, the main financial balance indicators were analyzed, according to Table 2, as follows:

Table 2. Financial balance indicators

Crt. np.	SME name	Indicator name		Year	
				2023	2019
1.	S.C. MARIGAB COM S.R.L.	Debt indicators	Total debt ratio	0.28	0.17
			Asset solvency	0.64	0.82
		Return indicators	Net profit margin	8.02	6.93
			Financial return (Return on Equity-ROE)	0.33	0.30
			Return on total assets (Return on Assets-ROA)	0.21	0.25
2.	S.C. NURVIL S.R.L.	Debt indicators	Total debt ratio	0.46	0.63
			Equity solvency	0.51	0.33
		Return indicators	Net profit margin	4.37	3.63
			Financial return (Return on Equity-ROE)	0.29	0.43
			Return on total assets (Return on Assets-ROA)	0.15	0.14
3.	S.C. FLAGAS S.R.L.	Debt indicators	Total debt ratio	0.54	0.47
			Equity solvency	0.45	0.51
		Return indicators	Net profit margin	2.63	7.81
			Financial return (Return on Equity-ROE)	0.32	0.74
			Return on total assets (Return on Assets-ROA)	0.14	0.38
4.	S.C. BIZ SOLUTIONS S.R.L.	Debt indicators	Total debt ratio	0.43	0.73
			Equity solvency	0.57	0.27
		Return indicators	Net profit margin	0.31	2.93
			Financial return (Return on Equity-ROE)	0.01	0.23
			Return on total assets (Return on Assets-ROA)	0.01	0.06
5.	S.C. CONVALARIA S.R.L.	Debt indicators	Total debt ratio	0.77	0.79
			Equity solvency	0.23	0.21
		Return indicators	Net profit margin	0.64	3.33
			Financial return (Return on Equity-ROE)	0.05	0.28
			Return on total assets (Return on Assets-ROA)	0.01	0.06

Source: own processing based on data provided by the website listefirme.ro

Taking into account the information in Table 1, the analysis of the situation of SMEs is presented as follows:

Debt indicators:

a) *The total debt level* is a risk indicator that is of interest especially for institutions that grant loans. SMEs that have a debt level below 0.50 can benefit from external funds that allow supporting the activity. SMEs that have the lowest debt level is S.C. MARIGAB S.R.L, an SME that presents credibility and stability (Figure 1). At the opposite pole is the economic entity CONVALARIA S.R.L., which leads to a reservation on the part of banking institutions regarding the granting of loans.

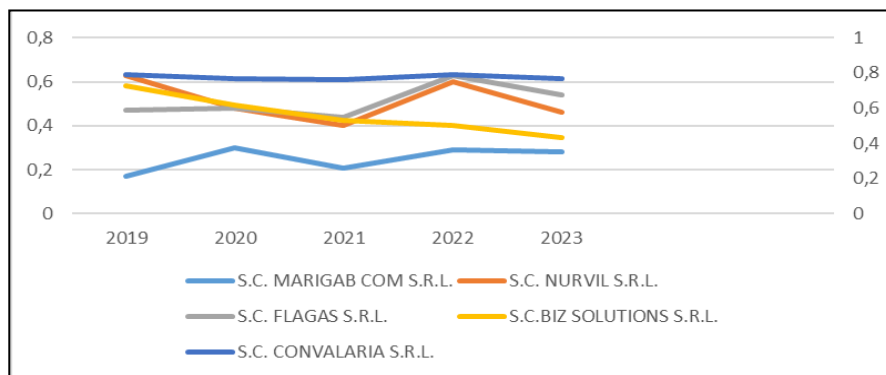


Figure 1. Total debt ratio

Source: own processing based on data provided by the listefirme.ro website

b) Good *equity solvency* is observed in four of the five SMEs, S.C. CONVALARIA S.R.L. failing to exceed the 50% threshold in any of the years analyzed (Figure 2). The highest equity solvency is recorded by S.C. MARIGAB COM S.R.L. with 0.82 in 2019 and 0.64 in 2023, which means that there is a financial balance that allows long-term debt to be covered from equity.

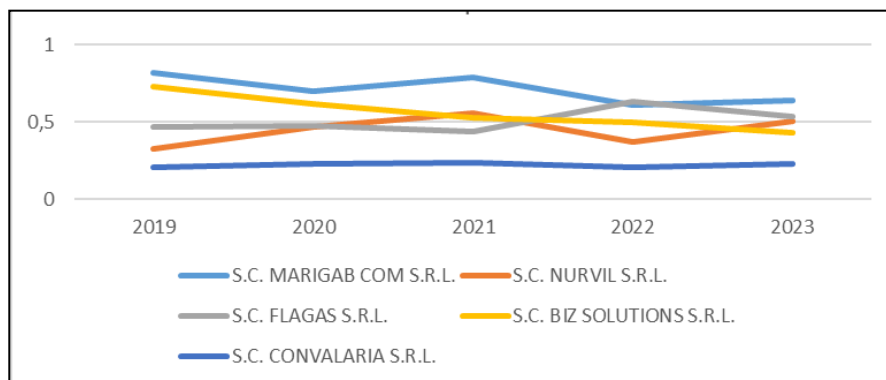


Figure 2. Asset solvency

Source: own processing based on data provided by the listefirme.ro website

Return indicators:

a) The net profit margin between 1% and 15% reflects a stable situation of the economic entity. The highest net profit margin is 8.02 recorded by S.C. MARIGAB COM S.R.L. in 2023, and the lowest value of this indicator of 0.31 is held by S.C. BIZ SOLUTIONS S.R.L. also in 2023 (Figure 3). A net profit margin between 1% and 15% reflects a stable situation of the economic entity.

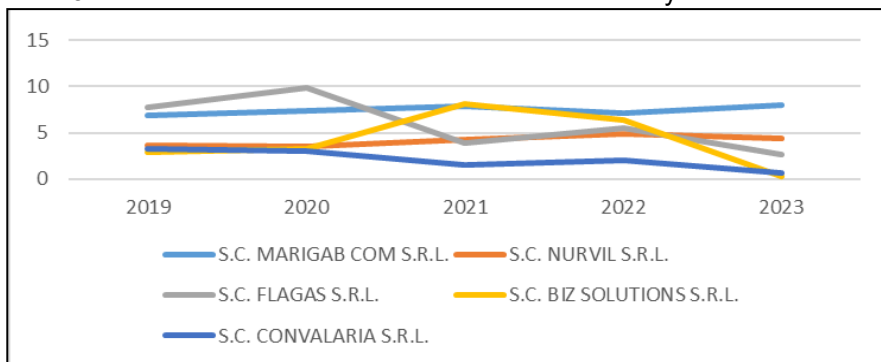


Figure 3. Net profit margin

Source: own processing based on data provided by the listefirme.ro website

b) *Financial return (Return on Equity-ROE)* measures the profit made from the investment made by the administrators. ROE provides a view of the performance of the economic entity in terms of how the assets are used to generate profit. In general, a high ROE indicates that the respective economic entity generates a high return on assets, and a low ROE may indicate a low return or even losses. All of these SMEs manage to have a good performance on equity (Figure 4).

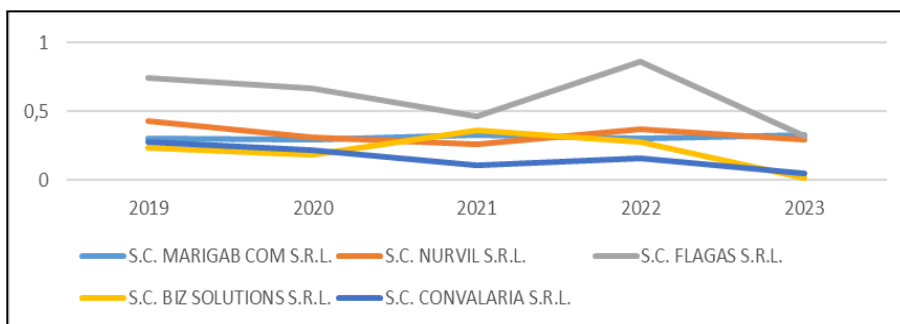


Figure 4. Financial return

Source: own processing based on data provided by the listefirme.ro website

c) *Return on total assets (Return on Assets-ROA)* measures the efficiency of capitals allocated to total assets, being independent of the financing policy. The rate level must be positive and as high as possible. The optimal reference interval is

between 5% and 15%, and the SMEs presented above mostly fall within the interval, thus recording a good economic performance (Figure 5).

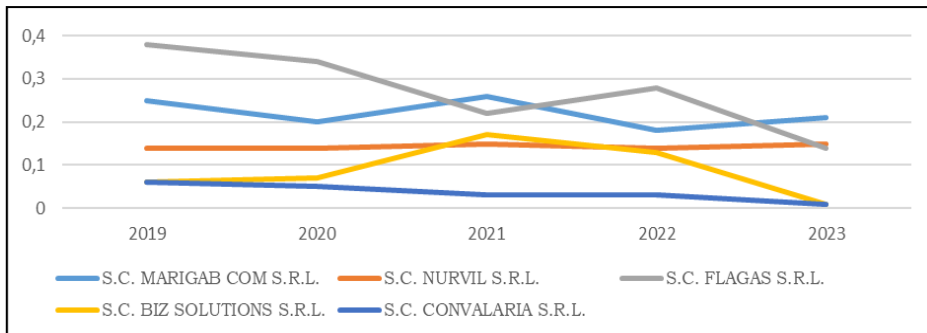


Figure 5. Return on total assets

Source: own processing based on data provided by the listefirme.ro website

4. Conclusions

The results of this research have highlighted that determining the performance of SMEs is directly related to the influence of the quality and relevance of financial and accounting information in the annual financial statements. The superior use of financial and accounting information involves informing administrators about the performance, efficiency, effectiveness and economy with which SMEs' resources were managed.

Analyzing the results obtained by applying the indicators to the financial situation of the five SMEs analyzed, we can observe the following aspects:

- the values of the debt ratio indicator reflect a positive evolution in the analyzed period, with three of the five SMEs managing to register values below 50%, which confers stability on business risk in the following period;
- in terms of asset solvency, we note an improvement in this indicator with values above the 50% threshold in over half of SMEs, compared to 2019 when only two of them were above this level. These values indicate a financial balance that allows long-term debt to be covered from equity;
- compared to 2019, in 2023 S.C. MARIGAB COM S.R.L. and S.C. NURVIL S.R.L. record increases in net profit margin, which reflects stability and the achievement of the established objectives. At the opposite pole, SMEs S.C. BIZ SOLUTIONS S.R.L. and S.C. CONVALARIA S.R.L. fail to record values above the 1% threshold, thus presenting an unstable future situation;
- financial return is positive throughout the period 2019-2023, the SMEs analyzed managing to have a good return on equity;
- the optimal reference interval for the return on total assets is between 5% and 15%, and the SMEs presented above mostly fall within the interval, thus recording a good economic performance.

Following the research conducted, the answer to the research question - *Is the financial and accounting information provided by the annual financial statements relevant in assessing the performance of SMEs?* is affirmative, since the information

contained in the annual financial statements allows for knowledge of the financial balance, establishing the return of the economic activity and implicitly assessing the performance. Annual financial statements represent the most important means by which financial and accounting information is made available to managers in order to assess their performance. In the study conducted, we aimed to synthesize a model for analyzing the performance of SMEs using debt and return indicators. The limits of the research were represented by the availability of data contained in the annual financial statements. Future research directions can be extended to the analysis of the structure of assets, liabilities and equity. Also, the performance of an SME can be assessed using the self-financing capacity, liquidity and solvency, but also by establishing rates of return.

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A STUDY OF PEOPLE'S PERCEPTION OF ARTIFICIAL INTELLIGENCE IN FINANCE AND SOCIETY

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Abstract: *This paper investigates how people perceive artificial intelligence (AI), using both original survey data and insights from recent academic and policy literature. As AI technologies become increasingly embedded in daily life—from banking and healthcare to education and justice systems—it is important to understand public sentiment in order to better guide ethical integration and the implementation of effective legislative frameworks. We conducted a survey of 60 individuals with diverse backgrounds to assess their familiarity with AI, perceived benefits and risks, and level of comfort with AI making decisions across various domains. While respondents generally expressed openness toward AI in areas such as transportation and finance, some concerns have emerged around its application in legal proceedings and hiring practices. Some of the key issues included algorithmic bias, erosion of human oversight, and threats to privacy. These results highlight the importance of transparency, public education, and robust governance to correctly align AI deployment with societal expectations and ethical standards.*

Keywords: *artificial intelligence (AI); fintech; public perception; ethics; automation; regulation; technology adoption*

JEL Classification: O33; G41; Z13

1. Introduction and background

Artificial intelligence (AI) has gone from a sci-fi idea to something that's actively shaping our daily routines. It's now involved in everything from healthcare to banking to transportation. But with this rapid growth come a lot of questions—especially about ethics, control, and trust. This paper digs into how people currently perceive AI—what they're excited about, what makes them uneasy, and how ready they feel for its growing presence in society.

Public perception plays a pivotal role in determining how smoothly and responsibly AI technologies are adopted. As Daugherty and Wilson (2024) note, AI's impact is no longer speculative—it is already transforming job roles, decision-making processes, and social interactions. However, despite the growing presence of AI in daily life, there remains a lack of clarity around how individuals understand and evaluate this transformation. Concerns about bias, transparency, and the

erosion of human agency are increasingly cited both in academic literature (Brankovic and Frey, 2023; Stanford HAI, 2024) and public discourse.

The analysis in this study is grounded in theories about technology acceptance and ethical considerations surrounding AI deployment. Some of the most influential works in this study are Davis's Technology Acceptance Model (TAM), which posits perceived ease of use and perceived usefulness as core factors influencing people's attitudes toward new technologies. This theoretical lens helps explain why individuals express varying degrees of comfort depending on AI's application domain. Building on the TAM, our study also integrates insights from Russell's (2019) Human Compatible framework, emphasizing the critical balance between technological capabilities and human control.

Recent studies extensively explore public skepticism toward AI, especially highlighting ethical concerns such as algorithmic bias, transparency, and human agency erosion (Brankovic & Frey, 2023; Stanford HAI, 2024). These concerns align with Scardovi's (2019) warnings about the "dream turning into nightmare" when unchecked AI implementations in sensitive domains like finance and law might start acting against the benefit of humanity instead of for it. There is an overarching emphasis throughout the studied literature on the necessity for transparency and robust ethical governance structures, which will allow society to stay on top of the challenges AI poses.

Gilchrist (2020) argues that public preparedness and institutional agility are essential in mitigating anxieties surrounding AI-driven disruptions in the labor market. This perspective underscores the urgency of proactive policy responses, echoing the Tony Blair Institute's (2024) recommendation for significant investment in workforce retraining.

This study aims to explore several key questions: How familiar are people with AI, and what influences their attitudes toward it? Which domains do people find AI most acceptable or trustworthy in, and why? What ethical concerns dominate public thinking, and how do these align with current regulatory debates? How do generational, educational, or professional backgrounds influence perception and comfort with AI technologies? Building on existing studies (e.g., Gkartzonikas and Gkritza, 2021; Arntz et al., 2024), we explore a number of hypotheses:

Q₁: Individuals are more likely to accept AI in domains where outcomes are perceived as low-stakes or assistive, such as transportation and finance.

Q₂: Trust in AI systems decreases in high-stakes scenarios involving legal judgment or employment decisions due to perceived risks of bias and lack of accountability.

Q₃: The higher the level of familiarity with AI, the more nuanced (rather than uniformly positive or negative) the perceptions tend to be.

Discussing our survey findings with what the latest research says about AI ethics and governance, this paper takes a closer look at how people's views are shaping the future of technology. In the end, the aim is to better understand the social and psychological hurdles that stand in the way of AI adoption and to show why open conversations and ethical design matter more than ever.

2. Methodology

This study employed a mixed-methods research design, integrating both quantitative and qualitative approaches to explore public perceptions of Artificial Intelligence (AI) across various domains. The methodology was structured in three main phases: survey design and distribution, data collection and analysis, and interpretative synthesis with existing literature. We used a 23-question online survey answered by 60 participants. The survey included both multiple-choice and open-ended questions—participants were asked about their general familiarity with and their level of comfort with AI applications across different sectors (e.g., "How comfortable would you be with AI systems making hiring decisions?") and their perceptions of the benefits and risks associated with AI (e.g., "Which of the following concerns you most about AI: bias, loss of human control, privacy issues, or other?"). Questions were grouped into thematic blocks covering familiarity with AI technologies, trust and perceived risks/benefits, comfort with AI making decisions in specific sectors, ethical concerns like bias, accountability, or privacy. Several questions explored attitudes toward AI governance, such as opinions on whether AI technologies should be more strictly regulated and trust levels depending on the domain in which AI operates. The open-ended answers helped paint a clearer picture of the personal hopes and fears people associate with AI.

The survey was distributed online over a two-week period and gathered responses from 60 participants from different countries. The sample included individuals from various age groups, educational backgrounds, and professional sectors (e.g., finance, academia, healthcare, IT). While the sampling strategy was non-probabilistic (convenience sampling), efforts were made to ensure demographic diversity to capture a range of perspectives. Gender and age were monitored to avoid skewness, though no stratified quotas were imposed.

Quantitative data were analyzed using basic descriptive statistics to identify trends in familiarity, attitudes, and domain-specific trust levels. This included frequency and percentage distributions, mean scores for Likert-scale items (e.g., comfort level ratings per domain), and comparative analysis across demographic groups (e.g., age vs. trust in AI).

Qualitative data from open-ended questions were subjected to thematic analysis, identifying recurring patterns and sentiments such as fear of bias, concerns about AI displacing human empathy, and desire for greater regulation. Responses were coded iteratively, and themes were triangulated with findings from existing literature. In addition to primary data, the study systematically integrated secondary sources from peer-reviewed journals, policy reports (e.g., Stanford HAI, IMF, UNESCO), and industry perspectives. This triangulation allowed for validation of key survey findings (e.g., job market concerns, transparency issues), contextual comparison to identify whether public sentiment aligns or diverges from expert assessments and interpretation of complex issues like ethical design and regulatory gaps.

Participation was voluntary and anonymous. Informed consent was obtained digitally before beginning the survey. Participants were made aware that their responses would be used for academic research purposes. Data were stored securely and used in aggregate form only, in accordance with GDPR-compliant data protection practices.

3. Results and Discussion

3.1 General Familiarity and Attitudes

Most respondents said they were at least somewhat familiar with AI, with over 40% describing themselves as "very familiar." This suggests that AI is no longer something distant or abstract—people recognize it in things like voice assistants, Netflix recommendations, and chatbots.

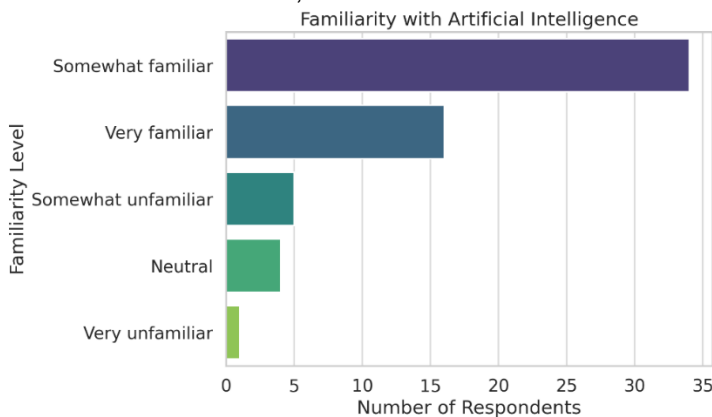


Figure 1: Familiarity with Artificial Intelligence

Source: Survey results, 2025.

Attitudes were mostly positive, with more than 70% of people expressing either a somewhat or very positive view. Some praised AI's potential to boost efficiency and enable breakthroughs in science and technology. Phrases like "compute fabulous data," "enable innovation," and "scientific progress and innovation" popped up in responses. Still, there was a bit of a split. A few people were hopeful yet clearly uneasy—supportive of AI in banking but wary of its use in legal settings. This mix of excitement and discomfort probably reflects deeper uncertainties and maybe even a sense that we're not quite prepared. Some voiced doubts about whether our institutions—like schools, infrastructure, and public policy—can keep up with AI's pace.

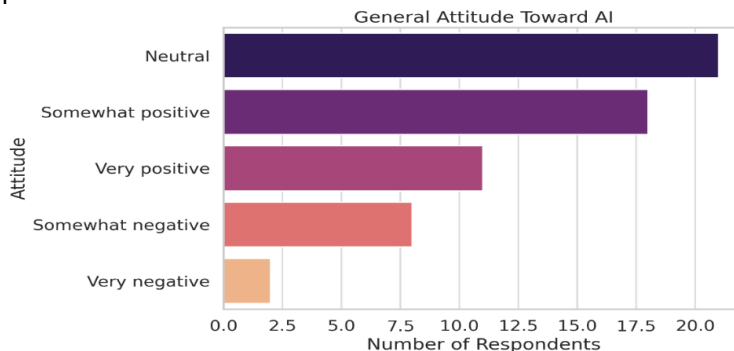


Figure 2: General Attitude Toward AI

Source: Survey results, 2025.

Huddelston (2020) puts it well: "AI is analogous to the internet but even more complex and impactful than its predecessor has ever been."

3.2 Impact on Jobs

A major worry is that AI will cost more jobs than it creates. In our survey, 55% said they believe AI will eliminate more jobs than it adds. This fits with Shah's (2023) warning that "AI will displace hundreds of millions of jobs" and that we're just not ready for this shift. Gilchrist (2020) stresses that "the impending AI revolution is something completely different, nothing like we have ever seen."

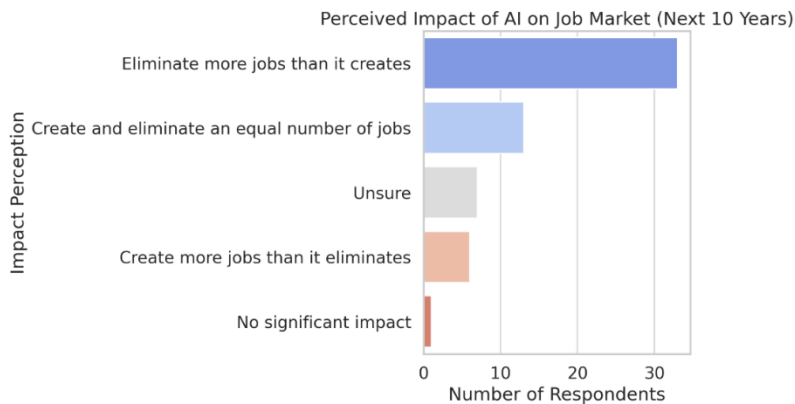


Figure 3: Perceived Impact of AI on Job Market

Source: Survey results, 2025.

According to the IMF (2024), around 40% of global jobs will be affected by AI, either being replaced or significantly altered. Daugherty and Wilson (2024), writing in the Harvard Business Review, explain that generative AI has the potential to touch every job sector because it keeps getting better, which changes not just the amount but the kind of work people do. This won't impact everyone equally. A Gallup poll, as cited by Business Insider (2025), found that 40% of Gen Z feel nervous about AI, and nearly half worry it might hinder their ability to think critically. A big part of this anxiety comes from having to figure out AI on their own, with little formal guidance. That said, some experts are more hopeful. A study in Nature (Arntz et al., 2024) suggests AI can boost productivity by taking over boring, repetitive tasks, letting workers focus on more valuable skills. Daniel Dines, CEO of UiPath, made a similar point in a Verge interview (2024), picturing a future where AI acts more like a support tool than a replacement.

Of course, even if the outcome is positive, getting there will take effort. The Tony Blair Institute (2024) estimates that AI could free up nearly a quarter of private-sector work hours in the UK—equal to the output of around 13 million workers. That makes it clear we'll need serious investment in retraining and transition programs.

3.3 Quality of Life and Trust

Job worries aside, over half the people surveyed said they think AI could make life better, especially in healthcare and transit. Some praised AI tools that help diagnose diseases faster or optimize public transportation. People showed moderate comfort with AI in areas like self-driving cars (average score: 3.07 out of 5) and finance (2.82). This lines up with other studies suggesting that when people see direct benefits and get used to the tech, their trust grows (Gkartzonikas and Gkritza, 2021).

But that trust drops sharply in situations like courtroom decisions (2.03) or hiring (2.22), where fairness and human judgment matter more. The lack of transparency and potential for bias make people hesitate. Brankovic and Frey (2023) argue that building public trust in these high-stakes uses means addressing these concerns directly.

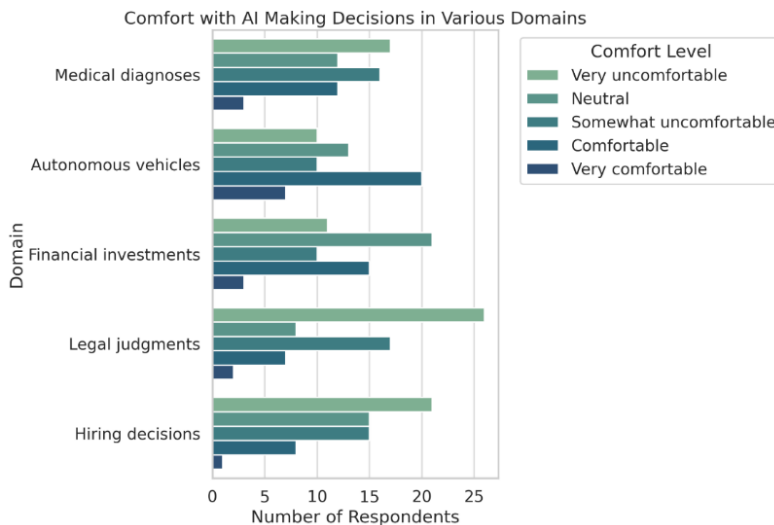


Figure 4: Comfort with AI Making Decisions in Various Domains

Source: Survey results, 2025.

It's clear that trust in AI is very context-dependent. People seem more accepting when AI is used to assist and more skeptical when it replaces human judgment, especially in sensitive matters. Creating more transparency and accountability in these areas is going to be crucial.

3.4 Ethical Concerns and Regulation

More than 70% of respondents believe AI should face tighter regulation. People raised issues like data privacy, bias, and the risk of AI systems running unchecked. One summed it up simply: "Pre-set references (bias), escaping control, manipulation." These themes are echoed in academic and policy discussions. A 2024 *Frontiers in Human Dynamics* review outlines just how difficult it is to build AI that's both transparent and accountable. Similarly, the *Journal of Artificial Intelligence Research* (2025) emphasizes that fairness, privacy, and ethics need to be central to AI from the very beginning.

Stanford HAI (2024) points out that as AI systems rely more on user data, keeping that data safe is more important than ever. Without proper safeguards, AI could easily expose sensitive personal info. Bias remains a serious worry. DataGuard (2024) warns that biased algorithms could reinforce existing inequalities and erode public trust. That's why ethical design needs to be built into AI tech from the ground up.

Governments are starting to catch up. The EU's AI Act is a good example—it focuses on "high-risk" AI and aims to ensure things like transparency and human oversight. But not everyone's convinced it goes far enough (Financial Times, 2024). In the U.S., states like Colorado are passing their own laws, such as the Colorado AI Act, which requires transparency and bias audits (Reuters, 2024). All this shows a growing global push for regulation, even if it's still a bit disjointed.

3.5 Areas of Impact

Survey respondents often pointed to healthcare, education, and finance as areas where AI could really make a difference. Examples ranged from quicker diagnostics to personalized learning and better financial planning. Healthcare stood out, with many noting how AI might help with early diagnosis or treatment strategies. In education, people liked the idea of AI tailoring lessons to students' unique needs, making learning more adaptive and responsive.

At the same time, worries about social interaction and ethics popped up. One person said AI might "erode social interaction and replace human empathy with algorithms." Others warned about black-box systems making important decisions in areas like hiring or law. As Scardovi (2019) points out, "the same intelligence that gives AI its power can also amplify harm if it's left unchecked in sensitive domains."

3.6 Preparing Society for AI

Participants regularly mentioned the need for better education, clearer information, and ethical guidelines to help people deal with AI's rapid rise. One even wrote, "Programe de informare, acces facil la noile descoperiri" that is in English translation: "Information campaigns, easy access to new discoveries." Schools and universities have a key part to play. Programs like MIT's RAISE (Responsible AI for Social Empowerment and Education) are already helping younger students understand both the technical and ethical sides of AI (Breazeal, 2024).

On a global level, guidance is also being developed. UNESCO's 2021 recommendation on AI ethics gives a framework for governments to build responsible AI policies, grounded in transparency, human rights, and accountability. Then there's public engagement. Organizations like the Algorithmic Justice League are pushing to expose bias in algorithms and promote community-led solutions. These bottom-up efforts show that everyday people can help shape AI's future too (Buolamwini, 2023).

4. Conclusion

Public opinion on AI is a mix of excitement and worry. People recognize its potential but are cautious about the risks. Our results affirm Hypothesis One: people are more accepting of AI in low-stakes scenarios, like transportation and finance, compared to high-stakes domains. Respondents consistently cited transparency and accountability concerns in critical areas such as legal judgments and hiring processes. These findings corroborate earlier studies highlighting the profound influence of perceived ethical risks on public acceptance (Gkartzonikas & Gkritza, 2021).

Concerning H_2 , our findings illustrate a clear discomfort regarding AI's involvement in high-stakes decisions, aligning closely with concerns expressed by Brankovic and Frey (2023). The main apprehension noted with our respondents was about fairness and potential bias, pointing to a necessary improvement in AI system transparency and human oversight to foster public trust.

Regarding H_3 , our study indicates that greater familiarity with AI indeed leads to nuanced perceptions rather than extreme positive or negative attitudes. This aligns with insights from Russell (2019), who emphasizes the importance of informed public dialogue in shaping balanced perspectives on AI.

Going forward, the goal should be to develop AI that earns trust—through fair rules, clear design, and education. For developers, that means creating tech that meets real needs. For policymakers, it means listening to the public and shaping regulations that reflect what people actually care about.

Our findings highlight the need for structured governance and inclusive dialogue around AI technologies. Over 70% of respondents advocated for stronger regulatory measures, particularly regarding data privacy and bias mitigation. This signals a growing public demand for accountability frameworks that go beyond technical innovation to address broader ethical and social implications. Participants also stressed the importance of human-centered design and ethical training for developers, pointing toward a future in which social values must be embedded into technical architectures from the ground up.

In practical terms, the results suggest that any strategy to scale AI must consider not only efficiency and performance but also societal readiness, institutional support, and public trust. This includes investing in workforce transition and retraining programs to counteract labor market disruptions, supporting schools and universities in integrating ethical AI education, and encouraging public engagement through accessible information and participatory policymaking.

This study affirms that while the potential of AI is vast, its successful integration into society depends on how well we align its deployment with human values, democratic principles, and ethical foresight. For policymakers, technologists, and educators alike, the message is clear: build with transparency, regulate with care, and communicate with the public—because the future of AI is not just a technical issue but a societal one. AI has huge potential, but it won't solve its own problems. We'll need to be thoughtful and proactive if we want to get the best out of it without falling into the traps it could create.

5. Acknowledgements

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REFLECTIONS ABOUT THE ECHO OF THE EMPLOYEES IN THE ECONOMIC ENTITY'S SOUND

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Abstract: *The importance of the employee's contribution to the development of the business of an economic entity starts from the quality of the work performed and the quantity of the object of activity achieved, culminating in the efficiency of the work performed. This research aims to present the information contained in various reports regarding employees and the activities they carry out in the company. The analyzed reports concern the echo of the financial indicators felt by employees (salary, rewards, loyalty, etc.), as well as by the company (labor productivity, turnover, etc.). Information on the professional training of current and future employees is tracked and collected from non-financial reporting. Information on achieving the Sustainable Development Goals is analyzed from sustainability reporting. The analysis of the annual reports is carried out by companies in the energy sector and concerns only the 2023 annual reporting. The conclusions drawn refer to the way in which companies choose to disclose the role of employees in the company, the importance of the activity carried out by them, but also the actions they take to motivate and retain employees.*

Keywords: *employees; annual reporting; sustainability; professional training.*

JEL Classification: *M41*

1. Introduction

In recent years, discussions about employees' contribution to an economic entity's soundness and overall success have gained substantial attention. As organizations increasingly recognize their workforce as vital assets rather than mere cost centers, the impact of employee performance, engagement, and satisfaction has become a critical factor influencing organizational outcomes.

Employee engagement, defined as the psychological commitment of individuals to their employer, has been identified as a key factor in organizational success. Studies indicate that engaged employees demonstrate higher productivity and contribute to increased organizational loyalty and reduced turnover rates (Baño et

al., 2024). The link between employee engagement and profitability is significant as it is increasingly recognized that an organization's financial performance is closely linked to the well-being and satisfaction of its staff (Baño et al., 2024). By examining how employees perceive their roles and contributions to their organizations, we can gain valuable insights into the mechanisms that drive performance and sustainability.

Through this research, we aim to deepen the information contained in various reports on employees and their activities within the company, thus highlighting their vital role. Examining sustainability reports and integrating non-financial aspects will allow us to explore how employee-related factors such as salary, rewards, and loyalty reflect financial indicators for employees and the organization, including labor productivity and turnover. By collecting employee information – as their contribution to companies and as the company's appreciation of employees – we will assess how these organizations choose to disclose the importance of employees in the context of their operations, the importance they attach to employee contributions, and the strategic measures they implement to motivate and retain their workforce. The results will provide valuable insights into the relationship between employee engagement and organizational performance, informing academic discourse and practical applications in human resource management.

The question that guides this research concerns how companies disclose information from a temporal point of view. Do companies present past, realized information, and the present state of affairs, or do they also look to the future? Are they prepared to provide information on motivating and attracting employees to stay in the company with financial and emotional satisfaction fulfilled?

2. Literature review

Employees' contributions to the development of an economic entity are significant, as they correlate with the quality and efficiency of the work performed. Employees are essential to any organization, driving productivity, innovation, and financial success.

Previous studies have highlighted the need to understand employees' perceptions of financial and non-financial rewards, establishing a link to their job performance and overall satisfaction (Hainš & Bockaj, 2018; Idris et al., 2020). Additionally, the role of training and professional development in improving employee engagement, retention, and performance has been widely recognized, highlighting the need for comprehensive reporting on these issues (Bhakuni & Saxena, 2023). In particular, organizations are increasingly realizing that sustainable practices and achieving the Sustainable Development Goals (SDGs) are closely linked to employee engagement and motivation. Therefore, information on current and potential employees' training and professional development, as derived from non-financial reports, will be critically analyzed.

In addition, employee engagement's psychological and social dimensions emphasize the importance of a supportive organizational culture. Research has shown that when organizations cultivate an inclusive and equitable environment, employees are more likely to positively identify with their roles and the company's

broader goals (Blader & Tyler, 2009). This alignment often leads to the rise of extra-role behaviors, where employees go beyond job descriptions to contribute to organizational goals. In this sense, the principles of fairness and recognition play a key role in shaping employee engagement (Anindita & Seda, 2018).

In analyzing the reflections on employee contributions, non-financial factors such as professional development opportunities, recognition incentives, and the relationship between management and staff must also be considered. For example, employees who perceive that their organizations support their career progression are generally more dedicated and perform better (Khan et al., 2020). This connection highlights the need for organizations to prioritize the economic aspects of work and promote a sense of belonging and advancement in the workplace.

Considering the current state of knowledge on this topic, we aim to comprehensively understand how employee contributions resonate in the fabric of organizational health through this research. By evaluating these contributions through the lens of engagement and satisfaction, this study will explore strategies that companies can implement to improve their relationship with their employees, thus reinforcing a positive feedback loop that ultimately leads to improved organizational outcomes. This reflection on employee contributions will shed light on the critical role that human capital plays in achieving sustainable business success while identifying best practices for fostering a dedicated and engaged workforce.

3. Research Methodology

The main objective of this research is to determine the echo of employees' work in the activity of companies in areas that influence and are influenced by the care for sustainability and sustainability of business. Thus, we have turned our attention to companies in the energy sector and submitted three companies listed on the Bucharest Stock Exchange to the case study: Nuclearelectrica SA, Hidroelectrica SA, and Transelectrica SA.

For the analysis of the financial influence of the employees in the company and of the company on the employees, indicators were selected from the financial statements, which we considered relevant to our research approach. These indicators were calculated from various perspectives and compared in the case of the three companies. These were the basis of the conclusions regarding echoing the financial indicators felt by employees and companies.

We analyzed the sustainability reports for 2023 to analyze the presentation and achievement of the Sustainable Development Goals, which concern or are influenced by employees. From these reports, information was collected on the professional training of current employees, the perspective through the granting of scholarships and other benefits to employees, and other elements presented by the companies, thus making a qualitative analysis of the sustainability reports.

Therefore, this research is quantitative by evaluating the financial indicators presented in the financial statements, but at the same time, qualitative by identifying the sustainability aspects that companies choose to present in their reports on employees. The ranking of companies according to the availability of non-financial

information in their reporting was achieved through a disclosure quality index, which also allowed us to assess the transparency of companies in relation to the workforce.

4. Financial data in annual reporting

Figure 1 compares the indicators that can form an initial image of the role and the employees' appreciation for the companies studied to form an image of the companies' achievements and the situation of the employees in the analyzed period.

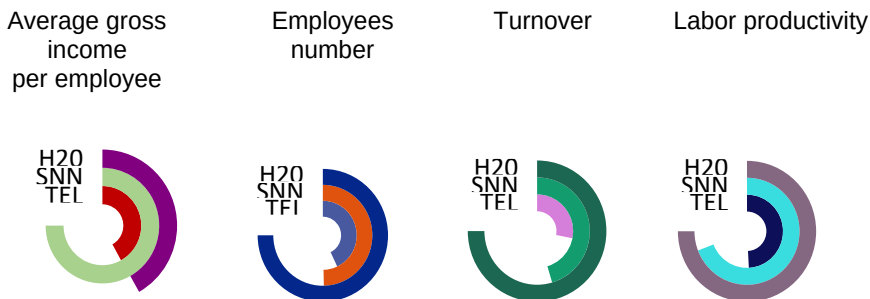


Figure 1: Comparison of financial indicators

Source: Projection of authors based on financial statements

We note that in the case of three indicators – number of employees, turnover, and labor productivity – the hierarchy is the same compared to the average gross income per employee. The company with the highest turnover and the most significant number of employees appreciates their effort through an average annual salary ranked second. The company in second place in terms of turnover rewards employees with the highest average annual salary income. The investment it is making now in its employees will be seen in future results. Employees with a high level of education, extensive professional experience, or scarce skills are more expensive, but they create the premise of the competitive advantage that the employer wants.

The benefits granted to employees are diverse and in different numbers. The third-place company has the lowest number of benefits in all three indicators; with double the number of benefits being granted by the first-place company in terms of average gross annual salary. It goes without saying that a company that offers higher financial rewards to employees is also willing to offer them significant salary benefits, putting the satisfaction and well-being of its employees first. The employer who understands this aspect has the chance to retain, motivate, and attract valuable personnel. The differences could reflect variations in company policies, reporting concentration, or benefit program structures. However, the hierarchy of the three companies in terms of labor productivity – calculated as the ratio between turnover and the average number of employees – is the same as that achieved by turnover and number of employees.

Regarding the coverage of personnel expenses from the turnover, Figure 2 shows the comparative situation of these two indicators achieved in 2023. This figure will help us understand how significant payroll costs are in the context of each company's total revenue.

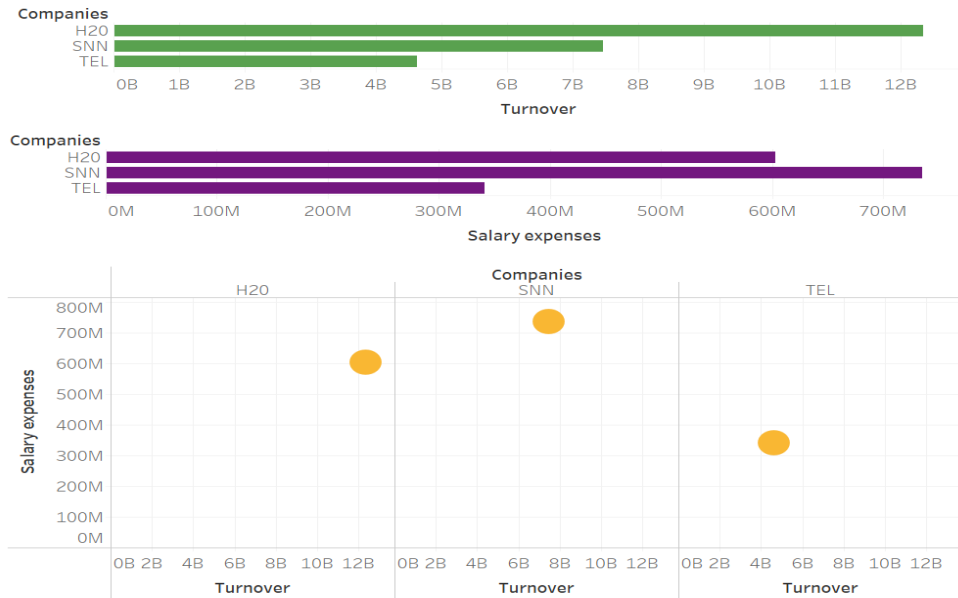


Figure 2: Comparison of turnover versus salary expenses
Source: Projection of authors based on financial statements

We note that the highest level of salary expenses in relation to turnover, 9.86%, is found in the case of the company that achieved a turnover that places it in second place in the hierarchy. For the company, this means that almost 10% of the revenues go to cover salary expenses. The company with the most efficient ratio allocates less than 5% of its revenues to cover salary expenses.

From the information presented in the financial reporting, we notice that in the case of a company, the high level of high costs is determined by the average salary rather than by the workforce size, which places it first in the hierarchy generated by this indicator. A company gives generous benefits to its employees, which raises the level of personnel expenses. This company is also attentive to future actions, constituting generous provisions for employee benefits. The third company achieves efficiency in terms of turnover necessary to cover personnel expenses by providing minimal benefits. Even if it does not provide high salaries, they are competitive. Suppose we have analyzed the degree of turnover used to cover salary expenses, looking at the future. Will we find the same concern of companies for risk protection regarding employee benefits coverage?

Figure 3 compares salary expenses and provisions for employee benefits in an attempt to answer this question

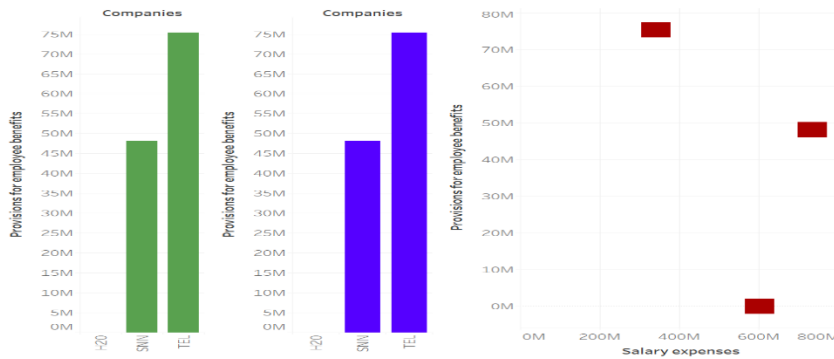


Figure 3: Comparison of salary expenses versus provisions for employee benefits
Source: Projection of authors based on financial statements

We note the different degrees of risk coverage achieved by the companies studied; one company does not constitute such provisions. Therefore, financial information is multiple and diverse, and the availability of information disclosure is different, even if these companies operate in the same field of activity.

4. Qualitative and non-financial considerations in annual reporting

Employee motivation is key to achieving high labor productivity and staff stability. In the case of the companies analyzed, the company with the highest level of labor productivity recorded the lowest staff turnover rate. The staff turnover rate reflects the percentage of employees who leave the company during a given period. The effects of staff turnover are found in potential disruptions to employee productivity and salary costs, which can be generated by the loss of experienced employees and the recruitment and training of inexperienced new employees. In the case of the companies analyzed, we found that in the case of the company with the lowest staff turnover rate, we find the lowest total cost per employee. The other two companies have a higher, but close to each other, level of staff turnover but higher costs per employee. This relationship suggests that greater fluctuation may be associated with rising salary costs and benefits, likely due to recruitment, onboarding, and retention efforts.

Starting from this consideration, the study of the reports prepared by the three companies identifies the diversity of benefits granted to employees, as well as the educational support needed to attract future employees. All three companies provide private scholarships for students and provide them with internship opportunities. Regardless of the company's size, these benefits are constantly presented, although the implementation mode and details vary slightly from company to company. Thus, one company combines them with a program that links the results of the subsequent employment internship; another similarly offers both

benefits, with an emphasis on enabling applied study experiences. The third company reports these benefits but focuses on facilitating the practice within its specialized operations.

Another important element in the development of the activity through human resources is the investment in professional training courses and the granting of scholarships or other forms of support to young people in vocational education. In this regard, the companies have reported the following information:

- number of scholarships at the high school level,
- number of scholarships for the financial support of students,
- number of employed graduates from those who benefited from private scholarships,
- annual training program for employees and the number of hours accumulated by them,
- collaborations with universities for internships
- the average number of hours of professional training per employee is provided by companies.
- Companies present information about the types of leave that employees receive, for example:
 - parental and childcare leave,
 - gender structure of employees who have benefited from parental and childcare leave,
 - leave for family reasons,
- number of employees, by gender, who returned to work after parental leave.
- The diversity of information provided by employers regarding working conditions and professional training differs from one company to another, even if they are part of the same field of activity.

Employee Echo in Business Sustainability and Sustainability

The main Sustainable Development Goals pursued are reducing inequalities, decent working conditions, economic growth, and gender equality (<https://www.eca.europa.eu/ro/sustainable-development-goals>). The ESG pillars analyzed are organizational culture and occupational health and security.

All three companies attach great importance to occupational health and safety, an aspect that emerges from the information presented in the sustainability reports, respectively, the implementation of various prevention and protection programs, which may reflect either the importance of employees for the activity of each company or a necessity due to the strict controls of the state authorities regarding employees, for example, Territorial Labour Inspectorates.

The information presented by the analyzed companies suggests periodically assessing OSH risks through specific committees and reporting dangerous situations to workplace managers and designated OSH specialists. One of them presents the three stages of OSH worker training: introductory-general, on-the-job, and periodic.

Regarding the risks of the activity carried out and possible accidents at work, each company reported information, to a certain extent, referring to:

- accidents at work that led to temporary incapacity for work,

- the overall level of risk of the activity,
- number of days of sick leave caused by accidents at work,
- accidents with serious consequences,
- deaths at work.

In the trend of eliminating discrimination and gender equality, a link has been made with the salary part, as it tries to align women's salaries with those of men and vice versa, or the salary of a person with disabilities with the salary of a healthy person. In the companies studied, information on the fight against discrimination and the salary system is presented as follows:

- positions held by women in top management, executive or middle management,
- incidents of discrimination between women and men,
- the income gap between women and men has been reduced,
- internal equity was ensured by eliminating differentiated salaries according to years of service,
- the introduction of principles based on equality, equal pay for equal work, and professional criteria,
- the existence of persons with disabilities and presentation in a gender-based structure,
- methodology for granting salaries.

To form an overview of the generosity of the information provided in the sustainability reports, we decided to assign scores to each company according to the characteristics/defining elements of human resources, obtaining a final score based on which we will classify the companies from the most "generous/giving" to the most "frugal/sober."

Criteria for awarding grade/ element:

- 1 – no information
- 2 – mention/appointment
- 3 – brief presentation
- 4 – detailed presentation

Table 1 presents these notes on the type of items that we expected companies to disclose in their sustainability reports. We calculated the arithmetic average of the degree of disclosure and/or information disclosed as the final grade.

Table 1: Company rating

Elements/society	H20	SNN	TEL
Private scholarships, practice, internship	3	2	4
Parental leave	4	4	3
Professional development	4	3	4
Gender equality and the elimination of discrimination	3	3	3
Performance evaluation	4	2	2
Consultations with employees	2	2	2
OHS services	4	3	4
Work accidents	3	4	2
Staff turnover	4	2	2
Staff organization	4	4	3
Payroll system	2	2	3
Activity risks	3	2	2
Remuneration reports	4	4	1
Employment conditions	2	3	1
Final note- grade point average/item	3,29	2,86	2,57

Source: authors' processing based on sustainability reports.

We note the identification of 14 defining elements of human resources, and the final grades obtained, through the arithmetic average of the grades for each element, are between 3.29 and 2.57. These results indicate a good way of presentation, with information disclosed rather than enumerations, many of which are short descriptions.

5. The Future with employees in annual reporting

A final aspect sought in sustainability reports is the plans of these companies concerning their staff and the sustainable development goals in this regard. Nuclearelectrica has set several objectives related to the management of significant impacts and risk management. These will be achieved by implementing codes of conduct and management systems to ensure the protection of employees, compliance with legal requirements on OSH, ensuring staff health, and compliance with the OSH training program. Another commitment is to respect human rights through zero tolerance for rights violations. Regarding health indicators, Nuclearelectrica has set target values of 100% for compliance with OSH requirements, achievement of OSH objectives, compliance with the training program, and 95% for compliance with the OSH program.

Transelectrica mentions in the report that in December 2023, 7 more scholarship contracts were signed, and they will be awarded starting in January 2024.

Hidroelectrica mentions commitments related to organizational culture, including a minimum of 20 hours per employee per year of training for TESA staff and a minimum of 96 hours per employee per year of training for operational staff, a decrease in the staff turnover rate by at least 3% and the occupation of at least 50% of the places approved annually related to programs to attract young professionals.

In terms of diversity and equality, the company has set itself a goal of having no incidents of discrimination annually and for management to be 100% trained in this regard. It also commits annually to no serious work incidents or fatalities and a lost-time accident rate of no more than 1%.

6. Conclusions

The contribution of employees to the company's economic dynamics is undeniable. This fundamental resource contributes to turning strategies into concrete results. Investing in employee development, satisfaction, well-being, and appreciation is not just an expense but rather a strategic investment that can generate significant returns in the long run.

In short, lower turnover rates are linked to both lower total employee costs and higher revenue efficiency. This highlights the value of workforce stability: companies with less employee loss tend to spend less per employee and get more value from each staff member.

As organizations recognize their employees as key assets, we believe our research contributes to the growing body of literature highlighting the need for effective communication of employee-related indicators in annual and sustainability reports. In this sense, highlighting the critical interrelationship between employee satisfaction, corporate transparency, and sustainable business practices in pursuit of organizational and social objectives represents a faithful echo of the employees' contribution to generating benefits for the employer to the extent that they hear the company's echo in motivating and recognizing their merits.

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INTEGRATED CONTROLLING APPROACHES AND THEIR IMPACT ON WORKING CAPITAL EFFICIENCY AND CORPORATE PROFITABILITY

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Abstract: *This paper explores the relationship between controlling and working capital management in the context of increasingly globalized and dynamic economic environments. As companies face growing demands for timely and high-quality information from both internal and external stakeholders, the role of controlling has become more vital than ever in supporting managerial decision-making. The research question addresses how controlling approaches and systems contribute to the efficient use of working capital and, ultimately, corporate profitability. This is a theoretical and literature-based study, supported by numerous empirical findings cited in the literature, and it applies a qualitative analytical framework to examine various controlling models and their relevance in financial decision-making. Specifically, the paper compares major international controlling approaches – including the German coordination-oriented, the Anglo-Saxon performance-focused, the Scandinavian sustainability-integrated, and the Japanese efficiency-centered systems – emphasizing how each framework supports financial planning, monitoring, and performance optimization. Moreover, the paper focuses on the role of financial controlling in managing liquidity and cash flow, particularly through the lens of working capital components such as inventories, receivables, and short-term liabilities. Key financial indicators such as the Cash Conversion Cycle (CCC), Net Trade Cycle (NTC), Return on Assets (ROA), Gross and Net Operating Profits (GOP, NOP) are also presented to measure the efficiency of working capital use. The study concludes that efficient working capital management is strongly correlated with higher profitability, and highlights the trade-offs between liquidity and profitability that decision-makers must manage. The findings underscore the importance of implementing a hybrid, data-driven controlling system that incorporates precision, strategic alignment, sustainability, and continuous improvement, ensuring long-term competitiveness and financial stability in an uncertain economic landscape. This study will be especially relevant to financial managers, controllers, and organizational decision-makers seeking to align financial operations with broader corporate goals.*

Keywords: *working capital, current assets, controlling, financial controlling, financial planning, liquidity management*

JEL Classification: G12, G15, G32

1. Various Conceptual Interpretations of Controlling

It is undeniable that in today's increasingly globalized and rapidly changing economic environment, the information demands of all stakeholders associated with businesses are continuously intensifying. As highlighted by Lukács (2005), both internal and external stakeholders seek information concerning the likelihood of a business being able to meet higher expectations in the future. Focusing particularly on internal stakeholders – specifically corporate management, which is interested in achieving optimal company performance – it is evident that sound decision-making requires access to timely, accurate, and high-quality information.

Several academic works (Körmendi & Kresalek, 2006; Birher et al., 2009; Paár et al., 2021) identify economic analysis as a crucial method that serves as an indispensable tool for business leaders to meet these rising informational demands. One of the key areas of economic analysis is the management of current assets, which has a significant impact on overall corporate performance (Pupos et al., 2009; Fenyves et al., 2016). Furthermore, it is important to emphasize that effective management of current assets is inconceivable without the application of controlling principles and methods, which also exert a substantial influence on corporate value (Kiss, 2016a; 2016b).

The definition of controlling has undergone continuous development over the past decades in both international and domestic literature. It can be stated that the interpretation of the concept of controlling varies significantly across different countries, depending on their economic and cultural characteristics. Among the most well-known approaches are the German and Anglo-Saxon models; however, the French, Scandinavian, Japanese, and Eastern European perspectives also play an important role. These systems emphasize different focal points, such as financial control, strategic planning, flexibility or quality improvement.

1.1. The Classical German Approach to Controlling

The scientific definition of controlling originated in Germany and continues to play an important role in corporate governance throughout German-speaking countries. Horváth (1993) was among the first to define the concept, stating that controlling represents a subsystem of corporate management, ensuring the coordination of planning, control, and information supply. This interpretation clearly presents controlling not as an independent decision-making function, but rather as a supporting tool for management, whose primary task is the integration of various management functions.

Later, Horváth and his co-author refined the definition further: “controlling is a functional subsystem of management that ensures the integrated operation of planning, control, and information functions to achieve corporate objectives (Horváth & Mayer, 2011, p. 6)”. This approach introduced the concept of goal-oriented corporate governance, which has become one of the defining features of the later development of controlling.

It is evident that the German model emphasizes coordination and the support of managerial decision-making. This approach remains dominant in Europe, particularly in German-speaking regions. In enterprise management systems (such as ERP – Enterprise Resource Planning), which play a crucial role in data collection,

analysis, reporting, and planning for controlling, this precise, rule-based, and financially focused method provides a strong foundation – especially for manufacturing and industrial companies, where cost control, planning, and accurate accounting are essential (Tasi, 2011). However, due to digital transformation and the rise of data-driven decision-making, German controlling is also undergoing change, increasingly incorporating modern analytical tools such as Business Intelligence (BI) and Big Data analytics, as highlighted by Szabó (2018). While its rigid structures may pose challenges for agile organizations, the German model is becoming progressively more flexible in response to contemporary demands.

1.2. The Anglo-Saxon Management Control Approach

In Anglo-Saxon literature, the term “controlling” is less commonly used; instead, the concept of “management control” has become dominant. According to Anthony and Govindarajan (2007), management control refers to a process that ensures organizational resources are used efficiently and effectively in order to achieve organizational goals. This definition clearly differs from the German understanding of controlling, as it emphasizes the efficient use of resources and performance evaluation, whereas the German approach focuses on supporting management and coordination.

Over time, the concept of management control has further evolved, and controlling has come to be defined as a tool for influencing organizational behavior - ensuring that managers and employees act in a way that supports the strategic objectives of the organization (Merchant & Van der Stede, 2017). This behavior-oriented approach marks a clear distinction from the coordination-focused German model.

The Anglo-Saxon model of controlling has become a global standard in the business world, particularly among multinational corporations. This model is centered on market and shareholder value, dominated by analysis, forecasting, and rapid strategic decision-making. Unlike the German model, it places less emphasis on micro-level cost control.

The Anglo-Saxon system continues to be highly influential worldwide, especially in the service and technology sectors. However, its strong financial orientation has drawn significant criticism (Musinszki, 2013). In recent years, growing sustainability and ethical challenges – such as ESG guidelines, environmental responsibility, and corporate transparency – have driven a transformation in the model, as more and more companies aim to integrate sustainability considerations into their controlling systems.

1.3. Other Approaches

The French approach to controlling lies between the German and Anglo-Saxon models. Its primary characteristic is a strong emphasis on strategic planning, support for managerial decision-making, and performance management. In the French system, the term “contrôle de gestion” refers not only to financial control but also to the comprehensive supervision of business processes, which is often closely integrated with corporate governance functions. Although globally less widespread, the French model relies heavily on budgeting and cost control systems and, similar to the German approach, tends to be less flexible and struggles to adapt to rapidly

changing business environments. Therefore, it is necessary to incorporate sustainability considerations more explicitly into its operations (Bollinger, 2020).

In the Scandinavian countries (e.g., Sweden, Norway, Denmark, Finland), controlling systems are notably flexible and people-centered. One of the key features of the Nordic model is that, in addition to financial and operational controlling, it places great emphasis on organizational culture, collaboration, and trust-based corporate governance. Controlling in this context is not limited to cost control and performance measurement but also serves as a tool for supporting managerial decision-making. Ethical corporate governance, sustainability, and corporate social responsibility (CSR) principles are deeply embedded in the controlling systems of Scandinavian countries (Gond et al., 2012). As a result, Nordic companies frequently implement Balanced Scorecard (BSC) and other strategic management tools that account not only for financial indicators but also for employee satisfaction, innovation, and sustainability metrics (Sharma, 2009).

The Scandinavian controlling model has grown increasingly popular in recent years, as companies focus more on sustainability, ethical business practices, and agile operations. It aligns well with modern trends in corporate governance. Scandinavian countries play a leading role in the development of green controlling, ESG (Environmental, Social, and Governance), and CSR systems, making this approach increasingly adopted by international companies.

The Japanese corporate governance and controlling model is closely linked to various management methodologies that promote efficiency and continuous improvement. These include Kaizen (continuous improvement), Lean Management, Total Quality Management (TQM), and Just-in-Time (JIT), all of which significantly influence both controlling and working capital management.

The Kaizen philosophy is based on gradual, continuous improvement across all levels of the organization. In terms of controlling, this means companies regularly analyze performance indicators, resource utilization, and costs, identifying areas where efficiency gains can be made. Kaizen principles are embedded in both financial and operational controlling, as the continuous monitoring of metrics and small-scale interventions help prevent larger financial issues (Muradov, 2024).

Lean Management aims to optimize resource utilization and reduce wasteful processes (e.g., overproduction, excessive inventory, waiting times). From a controlling perspective, implementing Lean means monitoring not only financial but also operational metrics to enhance efficiency. Martínez-Jurado & Moyano-Fuentes (2014) highlight that the connection between Lean and financial controlling is particularly important in working capital management, as Lean practices reduce inventory levels, optimize cash flow management, and enable faster turnover.

TQM focuses on quality assurance and a company-wide quality-oriented mindset. This applies not only to products and services but also to business processes. In this case, controlling involves continuous monitoring of measurable quality indicators, identifying underperforming areas, and analyzing the financial impact of quality-improvement actions (Talha, 2004). A well-functioning TQM system can lead to cost reductions through lower defect rates, fewer reworks, and fewer customer complaints.

The Just-in-Time (JIT) system centers on producing or procuring goods only when needed, thus minimizing inventory costs. One of JIT's most important impacts

on financial controlling is its optimization of working capital utilization, reduction of capital tied up in inventories, and improvement of liquidity (Lander & Liker, 2007). However, it also involves risks, as supply chain disruptions can lead to production halts.

While Japanese controlling was traditionally dominant in manufacturing, in recent years, it has gained increasing attention due to the rise of data-driven controlling, Lean management, and Industry 4.0 systems. As a result, global companies are increasingly integrating Japanese methods into their corporate governance frameworks to remain competitive.

In Eastern European countries, including Hungary, Poland, the Czech Republic, and Slovakia, controlling systems represent a hybrid between the German and Anglo-Saxon models. In this region, controlling has traditionally had a strong financial orientation, focusing primarily on accounting and cost control functions.

In Hungary, controlling became a key area following the political and economic transition. As previously noted, the conceptual foundations of controlling were based on the German model, as reflected in the definitions provided by Horváth (1993) and Horváth & Mayer (2011). Later, Blumné & Zéman (2014) emphasized the strategic role of controlling, defining it as a system that supports corporate management – not only as a tool for planning and control but also for achieving strategic objectives.

This approach is closer to the Anglo-Saxon performance management perspective, as it integrates strategic management into the controlling system.

In recent decades, modern controlling tools such as Big Data analytics, Business Intelligence (BI) systems, and data-driven decision-making have gained increasing prominence, while growing attention is being paid to sustainability and innovation as well (Demeter et al., 2019).

2. The Structure and Process of Controlling, and Its Functional Subsystems

Due to the complexity of controlling, its integration at a system level is essential. This integration enables a deeper understanding and analysis of corporate processes, clearly illustrating the logical connections between planning, control, and information flow, as emphasized by Chikán (2003). Within corporate operations, the controlling system functions as a coordination tool, creating alignment among the planning, controlling, and information supply functions. Figure 1 illustrates the position of the controlling system within the organization, as well as its role in ensuring the connection between the various functional areas.

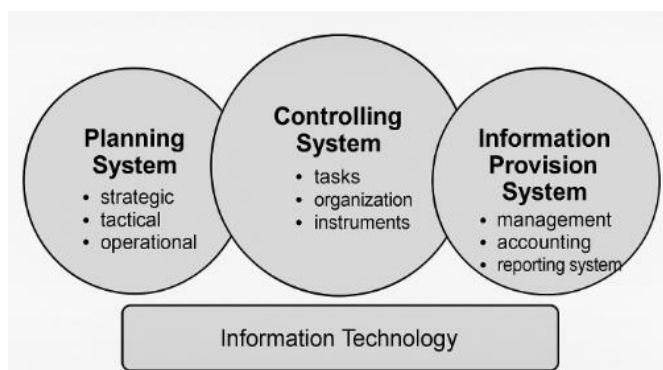


Figure 1: The Integrated Position of the Controlling System

Source: Own editing based on Horváth & Partners (1997)

As illustrated in Figure 1, the controlling system connects the strategic, tactical, and operational planning systems within the organization to the information provision system, which includes both the management accounting and the reporting system supported by financial accounting. The controlling system also provides the necessary tools for effective coordination and encompasses the execution of specific tasks (Körmendi & Tóth, 1998). Moreover, the controlling system is closely linked to the IT infrastructure, as supporting software – such as ERP (Enterprise Resource Planning) systems – manage corporate process-related data in an integrated manner and provide a vast informational base for controlling. The controlling system operates as a feedback-driven process, which is illustrated in Figure 2.

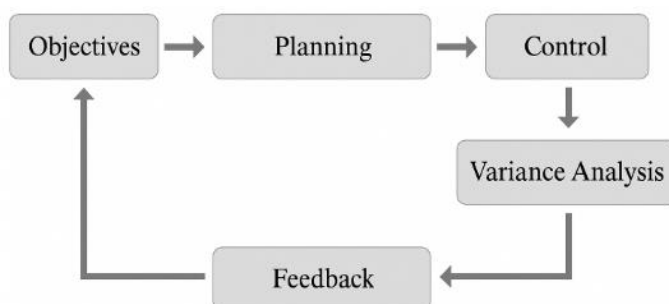


Figure 2: The Process of Controlling Activities

Source: Own editing based on Schmalen (2002)

Based on Figure 2, the process-oriented nature of controlling activities becomes evident. The foundation of the process lies in the definition of goals, and the role of controlling in this regard is to support the establishment of realistically achievable objectives for the organization. Controlling also plays a key role in the planning phase, both in terms of methodological foundation and professional oversight.

During implementation, controlling continues to be essential by monitoring the success of plan execution through the use of performance indicators. Controllers conduct variance analyses between planned and actual outcomes and formulate proposals for the necessary interventions. Continuous feedback is a particularly important element of the controlling process (Chikán, 2003).

Véry (2004) emphasizes that managers of the various functional areas within a company also carry out controlling tasks, which gives rise to the concept of so-called functional controlling areas – each focusing on a specific domain.

According to Fenyves (2020), the functional subsystems of controlling include the following:

- human resource controlling,
- logistics controlling,
- marketing controlling,
- financial controlling.

Human resource controlling is a distinct area due to its close link with the human factor, which is of strategic importance. It can create value, is subject to motivation, capable of decision-making, but also driven by individual goals. Logistics controlling covers areas such as logistics operations, supply, lead times, and product structure. Marketing controlling is concerned with situation analyses, defining marketing objectives, identifying market segments, and preparing marketing budgets and sales programs. Financial controlling involves the planning and analysis of financial processes, the identification of negative financial trends, and the formulation of improvement proposals.

3. Financial Controlling in the Service of Working Capital Efficiency

Financial controlling is a management tool that focuses on monitoring, analyzing, and optimizing a company's financial performance, supporting management in making financial decisions (Zéman, 2016). Its objectives include improving the company's financial position, controlling costs and revenues, and minimizing financial risks (Böcskei et al., 2015). Within this framework, the controller continuously monitors financial data, analyzes it, and provides recommendations regarding the company's financial strategy.

3.1. The Areas and Significance of Financial Controlling

According to Hágen & Méhesné (2014), the main areas of financial controlling are the following:

- cost controlling,
- revenue and profit controlling,
- financial planning and forecasting,
- liquidity and cash flow management,
- investment decisions and capital raising,
- risk management.

Cost controlling focuses on monitoring company costs and expenditures. The controller tracks production costs, sales-related expenses, and administrative costs, and identifies excessive or unjustified expenditures. One of the goals of cost

controlling is to increase cost efficiency, thereby supporting profit maximization. Revenue controlling focuses on monitoring sales performance, tracking sales and turnover, while profit controlling evaluates the extent to which revenues contribute to profitability and analyzes the balance between profits and costs.

Financial planning and forecasting serve to determine expected financial results. The controller supports the development of budgets and annual financial plans and continuously monitors deviations between actual and projected outcomes. Forecasting helps the company anticipate financial risks, as well as identify opportunities and threats.

Liquidity and cash flow management are also essential areas of financial controlling. Their goal is to ensure the company's liquidity – meaning that the business has sufficient cash to cover day-to-day operations. Cash flow management supports the proper flow of funds so that obligations are met on time. In addition, financial controlling monitors the efficiency of investments and capital raising, and it handles financial risks such as exchange rate fluctuations, credit risk, and interest rate risk.

The significance of financial controlling lies in its ability to:

- ensure financial stability,
- promote efficient resource allocation,
- support decision-making,
- contribute to minimizing and managing risks,
- optimize financial performance (Boda & Szilávik, 2005).

As previously highlighted, one of the key areas of financial controlling is liquidity and cash flow management, which is closely linked to working capital management. Adequate liquidity means that the company is able to meet its short-term obligations, which are primarily covered by current assets - those that can be converted into cash in the short term, such as inventories, receivables, securities, and cash holdings (Pupos et al., 2009).

Efficient management of current assets ensures the company's daily operations. For example, keeping inventory and receivables at optimal levels directly affects liquidity. If the company ties up too much capital in inventories or fails to collect receivables in a timely manner, it may result in a shortage of available cash, leading to liquidity problems.

Cash flow management refers to the planning and control of a company's cash inflows and outflows. Working capital management directly influences cash flow, as changes in current assets impact the movement of funds. Effective working capital management is a key element of cash flow management because the quick conversion of inventories, receivables, and securities into cash helps maintain the cash flow necessary for daily operations. If a company manages inventory procurement and sales efficiently and collects receivables promptly, cash flow remains stable and financial difficulties can be avoided.

Essentially, the indicators used to measure the efficiency of working capital are key metrics within financial controlling, particularly in the area of liquidity and cash flow management.

3.2. Indicators for Measuring the Efficiency of Working Capital Management

Working capital management is one of the most important areas of decision-making for managers, as it significantly influences a company's liquidity and profitability (Appuhami, 2008; Mullins & Komisar, 2009; Padachi et al., 2012). In addition to managing inventories, receivables, securities, and cash, it is also reasonable to examine short-term liabilities that are not subject to interest charges. Guthmann & Dougall (1948) defined working capital as the difference between current assets and short-term liabilities.

The growing importance of this topic is also reflected in the increasing number of empirical studies focusing on working capital management.

The reviewed literature on the efficiency of working capital management addresses the following key topics:

- the relationship between working capital efficiency and corporate profitability;
- the link between working capital investment and capital expenditure by firms (Lazaridis & Tryfonidis, 2006; Vishnani & Shah, 2007; Mathuva, 2010; Abuzayed, 2012; Deloof, 2003; Raheman & Nasr, 2007; Sharma & Kumar, 2011);
- other aspects, such as working capital across different industries and in SMEs, the relationship between working capital and supply chain management, the link between working capital and operating cash flow, and complex indicators of working capital efficiency (Ghosh & Maji, 2004; Nazir & Afza, 2007; Mohamad & Saad, 2010; Aktas et al., 2015; Singh, 2008; Hofmann & Kotzab, 2010).

Numerous researchers have used the CCC – Cash Conversion Cycle – to measure working capital efficiency (Deloof, 2003; Padachi, 2006; Gill et al., 2010; Mathuva, 2010; Enqvist et al., 2014), while many other studies applied the NTC – Net Trade Cycle – to assess the length of the operating cycle. Additional metrics include the ratio of current assets to total assets, the ratio of short-term liabilities to total assets, as well as various liquidity indicators (Smith & Begemann, 1997; Singh & Pandey, 2008; Danuletiu, 2010).

Profitability is most commonly measured using ROA – Return on Assets – (Shin & Soenen, 1998; Padachi, 2006; Singh & Pandey, 2008; Ching et al., 2011; Sharma & Kumar, 2011), though GOP – Gross Operating Profit – (Shin & Soenen, 1998; Deloof, 2003; Gill et al., 2010) and NOP – Net Operating Profit – (Raheman & Nasr, 2007; Zariyawati et al., 2009; Raheman et al., 2010) are also prominently used.

Several academic studies have found a significant relationship between working capital efficiency and profitability, indicating that efficient working capital management is often associated with higher profitability (Shin & Soenen, 1998; Deloof, 2003; Narware, 2004; Padachi, 2006; Raheman & Nasr, 2007; Zariyawati et al., 2009; Raheman et al., 2010; Enqvist et al., 2014).

4. In conclusion

In today's rapidly changing, digitalized, and sustainability-challenged economic environment, controlling and corporate governance systems must simultaneously ensure financial stability, strategic flexibility, and data-driven decision-making. The German controlling model offers strong financial control and precise cost management; the Anglo-Saxon model focuses on strategic performance

management and resource efficiency; while the Scandinavian system integrates sustainability and ethical considerations. The Japanese approach promotes continuous improvement and efficiency enhancement, which is becoming increasingly relevant in the age of digital transformation and Industry 4.0. In light of globalization, ESG requirements, high inflation, and market uncertainty, I believe there is a need for a flexible, data-driven, and sustainability-oriented hybrid controlling system – one that combines German precision, Anglo-Saxon strategy, Scandinavian sustainability, and Japanese efficiency.

Meeting these emerging trends, preserving competitiveness, and ensuring long-term sustainable operations increasingly require the conscious and efficient management of financial processes. Growing information needs, ongoing pressure from internal and external stakeholders, and rapidly changing market conditions have all contributed to the rising importance of financial controlling. Relevant research clearly supports the view that the integrated operation of a financial controlling system is indispensable for effective corporate governance and the maintenance of financial stability. One particularly important area is working capital management, as its efficiency directly influences a company's liquidity and profitability.

Based on the reviewed sources, it can also be concluded that there is a strong correlation between working capital management and corporate profitability. Numerous empirical studies (Deloof, 2003; Shin & Soenen, 1998; Padachi, 2006; Raheman & Nasr, 2007) confirm that effective working capital management contributes to increased profitability. However, the necessary trade-off between profitability and liquidity must also be considered, as overly cautious inventory and receivables management may negatively affect liquidity, while the overly aggressive collection of receivables may lead to a decline in sales. Therefore, optimizing working capital is essential – it is one of the keys to maximizing corporate value. The primary task of financial controlling is to support corporate management in navigating this trade-off through the application of appropriate indicators. The indicators presented in this study – such as the Cash Conversion Cycle (CCC), the Net Trade Cycle (NTC), various liquidity ratios, and profitability metrics (ROA, GOP, NOP) – facilitate the continuous monitoring and evaluation of the financial efficiency of business operations.

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LEVEL UP! THE AI ACCOUNTING COMPETENCY MATRIX. A PROPOSAL FOR DEVELOPING THE SKILLS OF MODERN ACCOUNTING PROFESSIONALS

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Abstract: *This article explores the key skills needed for the effective integration of artificial intelligence (AI) into accounting. Against the backdrop of digital transformation, accounting professionals need to develop technical and analytical skills to capitalize on the opportunities offered by AI. Following rigorous qualitative research, a comprehensive competence matrix has been developed serving as a potential guide for accounting practitioners in the process of AI implementation at the level of the accounting system. In the first stage of the qualitative research, a content analysis of online publications belonging to IFAC and Big4 companies was conducted, focused on investigating the profile of AI skills needed in modern accounting. As a result of this analysis, twelve competencies were found, of which five were technical, five were soft, and two were related to legal compliance and management. The results of the qualitative investigation of IFAC and Big4 publications revealed that advanced data analysis, critical thinking, and adaptability are unanimously recognized as fundamental pillars in the development of AI competencies in accounting and financial reporting. In the second research stage, based on the content analysis of the aforementioned publications, an integrated competence matrix was developed which encompasses the key competencies required for adopting and leveraging AI in accounting. The integrated matrix is structured on four levels and contains fifteen competencies. This matrix, built on four levels of competencies, fundamental, technical, psycho-socio-emotional, and strategic, synthesizes the fundamental directions of professional development and outlines a conceptual framework for the adaptation of accounting professionals to new technological challenges. This integrated approach allows for a clear understanding of how these competencies interconnect and support each other in the successful implementation of artificial intelligence in accounting.*

Keywords: *artificial intelligence; accounting; skills; digital transformation; accounting professionals.*

JEL Classification: M41; O33; C88.

1. Introduction

Digital transformation has become an essential process in all economic fields, including accounting. The integration of artificial intelligence (AI) allows for the automation of repetitive tasks, the reduction of errors, and the optimization of decision-making. However, this transition requires the development of specific technological skills among professional accountants and also a consolidation of other soft competencies. Competencies are a complex and dynamic set of individual attributes such as theoretical and practical knowledge, facts, concepts, and principles relevant to a specific field. This complex set also includes the abilities to apply knowledge in practice, to use tools and techniques, to solve problems, and to make decisions. At the same time, competencies also include the way of thinking, feeling, and behaving, including values, beliefs, motivations, and personality traits that influence performance. These three components are interconnected and influence each other, forming a unique competency profile for each individual. Competencies can be developed through education, training, experience, and practice, and represent what we know, can, and are capable of doing in various professional or personal situations (Badicu, et al., 2024; PWC, 2024).

In the context of rapid technological evolution, the integration of AI into accounting represents an important step in transforming the way professionals in this sector conduct their work. The skills required to successfully navigate this ever-changing landscape are varied and complex, including both technical skills and a deep understanding of regulations and ethical issues. The integration of AI into accounting brings both challenges and significant opportunities. While the potential benefits are clear, the lack of a formal, global competency matrix makes it difficult to develop a clear professional profile for accountants of the future. Various prestigious organizations, such as Deloitte, PwC, EY, and KPMG, have significantly contributed to shaping the technological skills required for integrating AI in the field of accounting. These companies (Big4) have developed numerous guides and resources that explore essential aspects, such as programming skills, data analysis, and understanding of advanced algorithms. These materials highlight the importance of professionals adapting to new technological demands by providing clear directions for developing relevant skills. However, these resources are not structured in a way that facilitates a systematic and coherent approach, such as through the use of a skills matrix. The lack of such a structure limits the ability of professionals and organizations to assess and strategically plan for the development of the skills needed to implement AI. Therefore, an integrated matrix of key competencies would provide an organized and detailed framework, allowing the correlation of needed competencies with existing ones and the identification of gaps. In this study, we aim to identify whether such a need exists and, if so, how it could be designed and used for the benefit of accounting professionals.

This study aims to identify the key competencies needed for the effective use of AI and other emergent technologies in accounting and to propose a conceptual framework in the form of an integrated skills matrix. In this respect, first, a content analysis of IFAC and Big4 online publications focused on AI competencies in accounting and financial reporting was employed seeking to find the dominant key skills unanimously agreed upon by the aforementioned organizations followed by a

proposal for an integrated competencies matrix as a conceptual framework that that could guide accounting professionals in the process of adapting to the implementation of emerging technologies in the accounting information system.

2. Background of the study

The literature emphasizes the importance of acquiring technological skills to enable the effective integration of artificial intelligence (AI) in accounting. Competencies represent the set of knowledge, skills, and abilities necessary to cope with professional and personal demands (Badicu et al., 2024; PWC, 2024). In this context, preparing accounting professionals for the transformations brought by AI is a hot topic, given the significant impact of new technologies on the financial sector (Bunget & Lungu, 2023). In an era where automation and data analytics are booming, the accounting profession is going through a period of fundamental transition. Adapting to these changes is essential for maintaining the relevance and efficiency of accounting activity (Grosu et al., 2023). Recent studies indicate that AI can optimize financial processes by automating repetitive tasks and improving data analytics. Machine learning algorithms allow massive volumes of financial data to be examined to identify patterns and trends, thus facilitating strategic decision-making. For example, a report by the World Economic Forum (2025) shows that more than 60% of accounting tasks can be automated with the help of AI. To substantiate the research, we analyzed the main trends in the literature related to the topic, and five such trends were identified.

The Impact of AI on Accounting Processes. Artificial Intelligence promises a revolution in accounting (Fülöp et al., 2023). Automating tasks such as recording financial transactions, reconciling data, or generating accounting reports can lead to increased efficiency and reduced human error (Bhimani & Willcocks, 2014). This transformation frees up accountants' time for value-added activities such as detailed analysis of financial data, forecasting economic indicators, and strategic consulting. Accountants need to learn new skills to interact with AI effectively. In addition to using specialized software, they must understand advanced data analysis techniques to extract relevant information from large financial data sets. Continuing education and training play a crucial role in this regard (Bunget and Lungu, 2023), and vocational training can no longer be considered an occasional process, but a constant necessity for maintaining competitiveness in the market.

Transforming the role of accountants in the age of AI. The use of AI and other intelligent systems is driving profound changes in the traditional structure and roles in the field of accounting (Ștefan et al., 2024). Although many repetitive tasks are automated, functions related to advice, strategic evaluation, and customer relationship management remain essential. Thus, accountants must develop interdisciplinary skills, combining technical knowledge with communication, critical analysis, and problem-solving skills (Morandini et al., 2023). Artificial intelligence and other advanced technologies do not replace professional accountants, but amplify and diversify their role, providing them with tools to bring value in areas that require fine human judgment and complex economic and financial understanding. A crucial aspect of the use of AI is ethical responsibility (Ahmad, 2024; Chao et al.,

2023; Vărzaru, 2022). Accountants need to be aware of the legal and ethical implications of AI, especially in terms of data protection (Stoica and Ionescu-Feleagă, 2024), algorithmic transparency, and the fairness of automated decisions. Current and future regulations will need to be rigorously complied with to protect clients' interests and ensure professional integrity (Solaimani et al., 2020; Jackson et al., 2023).

The need to redefine accounting skills. Preparing accounting professionals for the AI era is not only an opportunity to improve accounting processes but also a challenge in terms of adapting to new technological realities. Accountants need to redefine their role, integrating technological skills while retaining fundamental analytical and strategic advisory skills (Morandini et al., 2023). The AI revolution does not eliminate the need for accountants, but transforms their work (Deliu and Olariu, 2024), providing them with the necessary tools to face the challenges of the modern economy. The implementation of AI algorithms requires a deep understanding of fundamental concepts, like mathematics, programming, and data analysis, but also a careful approach to ethical aspects and regulations specific to the field (Tambiana, 2024). Mathematics and statistics are essential for the correct interpretation of AI algorithms. Machine learning is based on principles of linear algebra, probability, and statistics, which enable the processing and analysis of financial data. In addition to this knowledge, programming skills become indispensable. Languages such as Python and R, along with dedicated AI libraries, are widely used for the implementation of advanced models (Ding et al., 2020; Kumar et al., 2024; Bertomeu, 2014). In addition, advanced techniques such as deep learning enable the development of solutions capable of analyzing images, processing natural language, and detecting financial fraud (Cho et al., 2020).

The importance of data processing and ethical regulations. Data processing is a critical step before the application of AI algorithms. Financial data must be cleaned, transformed, and structured properly to achieve valid results. A lack of solid data management skills can lead to wrong or distorted results, affecting financial decisions. At the same time, professionals need to be aware of the ethical implications of using AI, especially in terms of data privacy and avoiding algorithmic bias (Tiron-Tudor et al., 2024).

Developing a competency matrix. The competency matrix is an essential tool for identifying, analyzing, and planning the competencies needed within an organization (Lacurezeanu et al., 2020). It provides a visual representation of the key competencies assigned to different professional roles. Although, there is currently no official competency matrix for the use of AI in accounting, existing studies highlight the importance of developing technological competencies in this area (Gușe & Mangiuc, 2022). Various international organizations, such as Deloitte, PwC, EY, and KPMG, have published guidelines on the technological skills needed to integrate AI, but have not developed a detailed matrix. It highlights the need for a clear competence framework for the accountants of the future to ensure effective adaptation to the professional requirements of the AI era.

3. Data and methodology

In this work, a qualitative investigation was conducted based on data publicly available online, disclosed through various publications by Big4 companies and IFAC on the topic of AI skills and abilities in accounting and financial reporting. The research methodology used in this study followed a systematic approach, structured in two major stages. In the first phase, a comprehensive review of the literature was carried out, including publications, articles, and reports prepared by Big4 companies and IFAC, focusing on the skills needed to use artificial intelligence in the field of accounting. Subsequently, a content analysis was employed on selected publications and the five recurring competencies within the analyzed works were identified and extracted, for each mentioned company. Following this step, a synthesis of the skills identified for each company was carried out, to determine the common and relevant skills for all the analyzed entities. Further on, based on the collected data we proceeded to design a competency matrix, structured on several levels as an original contribution meant to complement the existing works in the literature. As an outcome of the qualitative content analysis, we proposed an integrative framework for the competency matrix which facilitates a rigorous comparative analysis and synthesis of research results, providing a clear insight into the essential skills for the use of artificial intelligence in accounting.

4. Results and discussion

The Big4 companies (Deloitte, PwC, EY, KPMG) have contributed significantly to defining the competencies for integrating AI into accounting and finance, by developing guides and resources that explore programming skills, data analysis, and advanced algorithms. These materials highlight the importance of adapting professionals in the field to new technological requirements, providing clear directions for the development of relevant skills. Integrating AI into accounting requires varied and complex skills, including both technical skills and a deep understanding of regulations and ethical issues. Professional accountants need to develop strong digital skills. These require not only fundamental knowledge of AI-based technology but also familiarity with specialized software and platforms that are used for financial data analysis (Jackson et al., 2023; Stoica & Ionescu-Feleagă, 2024). Another significant aspect is the development of competencies in data analysis. Professional accountants must have the ability to interpret and analyze large amounts of financial information, using AI-specific algorithms. By applying these technologies, accountants can uncover subtle patterns and relationships in financial data, providing valuable insights for accurate forecasting and predicting financial trends. The use of AI in accounting involves ethical and regulatory challenges, requiring ethical skills to protect integrity and transparency. According to the legislation in force and the fundamental principles of the accounting profession, professionals must be familiar with the regulations and ethical standards that govern the use of advanced technologies in this field. Accounting organizations are investing in the continuous training of professionals, with a focus on AI-related skills. The first part of the research examines the Big4 and IFAC publications to

identify the skills needed to implement AI in accounting and auditing. Within this section of the research, the aim was to qualitatively examine the relevant official publications of the last few years of the Big4 and the International Federation of Accountants (IFAC). Thus, relevant documents were identified and analyzed that explicitly addressed the skills needed for the successful implementation of artificial intelligence in the field of accounting, financial reporting, and auditing.

Over the past five years, rapid technological developments and transformations in the financial sector have imposed a profound change in the way accounting and auditing professionals conduct their work. During this transition period, artificial intelligence (AI) has become an indispensable tool, and its effective integration into accounting processes requires a specific set of skills. As a leader in the field, KPMG stressed the importance of developing these skills to respond to the challenges and opportunities generated by technology (KPMG, 2024). In this context, a holistic approach is required that includes fundamental, technical, psycho-socio-emotional, and strategic skills, each of which plays an essential role in the success of AI implementation.

4.1. The AI competence matrix in accounting. The Big4 and IFAC perspective

To determine the profile of the skills needed to implement AI in accounting, a qualitative content analysis of published articles, newsletters, and reports on the websites of IFAC and the largest audit firms (PwC, KPMG, Deloitte, and EY) was carried out. Deloitte states that AI is more than an emerging technology, it is a catalyst for redefining labor relations and the way auditing and accounting are done. In a recent study, Deloitte highlighted that eight out of ten global leaders anticipate that AI will fundamentally transform their organizations in the next three years (Deloitte, 2024). In an ever-changing landscape, the future of the accounting and audit profession is closely linked to the interconnected understanding of advanced technologies and human skills. KPMG promotes a continuous professional skills development model that combines technical skills with soft skills (KPMG, 2024), like empathy, creativity, and the ability to work in diverse teams. These skills will be essential to build trusting relationships with clients and to effectively respond to future challenges, such as the rapid adoption of new technologies and the management of emerging risks. Integrating AI into accounting and auditing requires a combination of advanced technical skills, soft skills, and a strategic vision for the future. KPMG emphasizes that success in using AI depends not only on the technology itself but also on the continuous development of professional skills and the adaptability of professionals in the field to new challenges and opportunities. PwC, one of the world's leading consulting firms, highlights the growing relevance of skills related to the use of AI in the finance and accounting sector. PwC's 2024 Global AI Jobs Barometer report highlights a 3.5% faster growth in demand for AI skills jobs compared to other jobs (PWC, 2024). PwC emphasizes that as AI technologies evolve, financial professionals must become strategic partners, capable of combining technological analysis with a deep understanding of the economic and regulatory context (PwC, 2024). Our analysis aimed to identify the essential skills promoted by these organizations, necessary for the successful implementation of AI-based solutions in accounting processes. According to the EY Upskilling Survey Romania 2024 (EY, 2024), reskilling and developing professional

skills are essential to remain competitive in the labor market. The study highlighted a convergence of views on skills essential for professional development over the next decade. Cybersecurity, digital skills, and green technologies were identified as the most sought-after, reflecting current labor market trends (EY, 2024). In parallel, analytical skills, such as data analysis and critical thinking, have strengthened their position, highlighting the importance of informed decision-making in an increasingly complex environment. Also, interpersonal skills like emotional intelligence and leadership have maintained their relevance, indicating that professional success still depends on the ability to collaborate and influence. Finally, the interest in AI and innovation indicates a desire to master cutting-edge technologies and contribute to the development of innovative solutions.

The integration of AI in accounting is redefining the skills needed for professional accountants. The International Federation of Accountants (IFAC) emphasizes the importance of adapting to new technological requirements and highlights the essential role of education and continuous professional development in this transformation. The accounting profession is undergoing accelerated digitalization, and understanding advanced AI technologies is becoming essential. The current analysis aimed to identify the hard-core skills promoted by these organizations, necessary for the successful implementation of AI-based solutions in the accounting processes. Thus, as a result of the focus-oriented content analysis, a competency matrix was built, presented in Table 1, which allowed us to identify the intersections between these competency profiles and highlight the most demanded skills in the industry.

Table 1. The AI competence matrix. Big4 and IFAC perspective

Nr.crt.	Competence	KPMG	PwC	EY	Deloitte	IFAC
1.	Advanced data analytics	1	1	1	1	1
2.	Critical thinking	1	1	1	1	1
3.	Process automation	1	0	0	1	0
4.	Predictive analytics	1	1	1	0	0
5.	Risk management	1	0	0	1	0
6.	Compliance with current regulations	1	0	0	0	0
7.	Creativity	0	1	0	1	0
8.	Adaptability	0	1	1	1	1
9.	Digital skills	0	0	1	0	1
10.	Ethics	0	0	0	0	1
11.	Foreign languages	0	0	1	0	0
12.	Cybersecurity	1	1	0	0	1

Source: own projection following content analysis of Big4 and IFAC publications

Note: In designing the matrix, the presence of competence in a published article was coded with the value 1, while its absence was represented by the value 0.

The competency matrix provides a multidimensional perspective on the competency profile in terms of the skills needed in a dynamic and complex professional environment. In the current context presented, the analysis of the skills prioritized by internationally recognized firms, as KPMG, PwC, EY, and Deloitte, together with IFAC, reveals not only convergences but also significant differences in their approach. This matrix constitutes a systematic model for organizing information, with a structure that facilitates the identification and comparison of critical competencies depending on the entity that promotes them.

By examining the data, it can be seen that advanced data analysis and critical thinking are unanimously recognized as essential by all entities, reflecting the importance of analytical skills in an environment characterized by an increased volume of information. Instead, process automation is a top priority for KPMG and Deloitte, highlighting these firms' focus on operational efficiency and the use of emerging technologies. Predictive analytics, a skill that involves using advanced statistical models to predict trends, is considered important by KPMG, PwC, and IFAC, but is not promoted by EY or Deloitte. This aspect reflects a diversity in organizational priorities, influenced by the specifics of the services offered. Another area of focus is creativity and adaptability, considered fundamental for PwC, EY, and IFAC, but absent from the KPMG list. Creativity, along with adaptability, is essential to respond to the challenges generated by the rapid changes in the global economic environment. In the same direction, digital skills and cybersecurity appear as priorities for certain entities, such as EY, Deloitte, KPMG, and IFAC, which reflects the increasing dependence on digital solutions in consulting and auditing activity. The ethical dimension is highlighted exclusively by IFAC, emphasizing the role of this organization in promoting global professional standards. At the same time, foreign language, a skill necessary for operating in an international environment, is only mentioned by EY, emphasizing intercultural communication skills. In terms of risk management and regulatory compliance, these competencies are essential for KPMG and Deloitte, indicating a constant concern for compliance with the regulatory framework. Therefore, this AI competency matrix provides a clear insight into the various priorities of the analyzed organizations. This approach allowed for an in-depth exploration of the perspective of these key actors on the key skills profile required in the context of the implementation of AI in the accounting profession.

4.2. The integrative AI competency matrix in accounting. A proposed framework

Starting from the previous focus-oriented content analysis of Big 4 and IFAC publications, an own matrix was developed, reflecting an integrated vision of the hard-core competencies needed for the adoption and capitalization of AI and other advanced technologies in the field of accounting and financial reporting. This matrix, detailed in Table 2, summarizes the fundamental directions of professional development and outlines a reference framework for the updating process of accounting professionals to the new technological challenges.

Table 2. The integrative AI competency matrix in accounting

Level	Competence	Short description
Fundamental	Basic accounting knowledge	Understanding the basic principles of accounting, its methods, techniques, and objectives.
	Accounting law, accounting, and tax regulations knowledge	Knowledge and understanding of accounting, tax regulations, and legislation in the field to comply with the rules in the use of AI in accounting processes.
	Professional ethics	Skills of knowing and considering the ethical implications of AI implementation, including data protection and automated decisions.
Technical	Machine Learning (ML) for Automation	Knowledge of the use of machine learning algorithms to automate accounting processes (e.g. recognition of financial documents, validation of transactions).
	Natural Language Processing (NLP)	Ability to apply NLP techniques for interpreting and extracting information from accounting texts, such as invoices or contracts.
	Big Data and Data Analytics	Ability to analyze and interpret large volumes of financial data to support financial forecasting and risk analysis.
	Accounting Robotic Process Automation (RPA)	Using Robotic Process Automation (RPA) to perform repetitive tasks and improve the efficiency of accounting processes.
	Integrating AI with ERP systems	Configuring and optimizing AI-integrated ERP systems to improve accounting workflows and financial reporting.
Psycho-socio-emotional	Ability and flexibility	Ability to accept and manage change, openness to continuous learning and innovation, and resilience in the face of uncertainty and technological challenges.
	Emotional intelligence	Self-knowledge, stress and anxiety management related to digital transformation, empathy towards colleagues and clients affected by technological changes.
	Leadership and influence	Ability to lead digitalization initiatives. Inspiring and motivating the team to adopt new technologies. Ability to manage resistance to change
Strategic	Digital change management	Ability to manage organizational transitions and ensure the endorsement of AI technologies in accounting departments, including staff training.
	Strategic thinking	Ability to develop an AI deployment strategy that aligns technology with the company's financial and operational goals.
	Interdisciplinary collaboration	Collaborate effectively with IT, software development, and AI teams to implement innovative solutions in accounting.
	Risk and fraud management	The application of AI for the detection and prevention of financial risks, including identification of fraudulent or criminal activities, as well as anomalies in accounting data.

Source: own projection

The four levels of the integrative competency matrix – *fundamental*, *technical*, *psycho-socio-emotional*, and *strategic* – are so named because each level reflects a distinct set of skills and knowledge required at different levels of implementation and use of artificial intelligence (AI) in the field of accounting.

Fundamental or hard-core competencies are the first, vital level of competencies. These skills are basic to understand and navigate correctly in the context in which AI will be implemented. They provide a solid foundation for compliance with accounting and legal regulations. Without these competencies, the risks of non-compliance with the rules and creating dysfunctions in internal processes are high. In addition, these skills are essential to understand the overall impact of AI on accounting activities and to anticipate possible compliance challenges. Without these competencies, we can no longer talk about the competencies regarding the implementation of AI in accounting.

Technical skills are the second level of the integrative competency matrix and here are the specific skills related to AI technology and other systems and how it can automate and optimize accounting processes. Technical skills include the ability to use AI to process accounting documents, analyze financial data, and integrate AI solutions into existing systems, such as ERPs. It is also important for professionals to understand how to implement and maintain technological solutions so that they bring a real benefit to the efficiency and accuracy of accounting processes.

Strategic competencies are level three. These are important to ensure the long-term integration of AI into the organization's accounting structures and to create a coherent vision of how AI can support business objectives. These competencies focus on change management and developing an effective framework for implementing and adopting AI in all accounting processes. They are necessary to ensure a sustainable and adaptable use of AI, which contributes to the long-term success of the business and accounting teams.

In the current era, characterized by accelerated technological dynamics, *psycho-socio-emotional skills* become fundamental for successfully adapting to the profound changes imposed by digital transformation. The ability to navigate uncertainty, accept and manage change, as well as openness to continuous learning and innovation, are critical. Emotional intelligence, manifested through self-knowledge, stress management, and empathy, facilitates effective interactions with colleagues and customers, while leadership and influence are needed to drive digitalization initiatives and motivate teams to adopt new technologies. The ability to overcome resistance to change and inspire innovation are also key elements to ensure a smooth and efficient transition to a digital future. The integrative levels of competencies are presented in Figure 1.

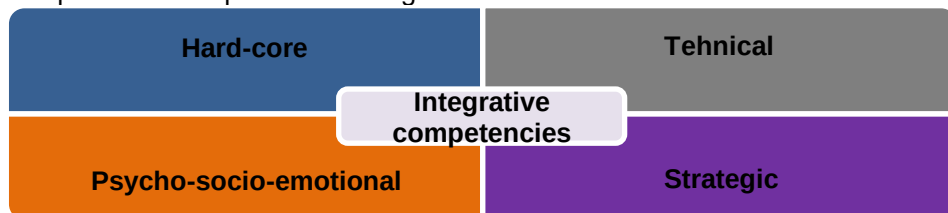


Figure 1. Levels of competence. Proposed framework

Source: own processing

The choice of colors to represent the main categories of competencies is based on their psychological meanings and the visual impact associated with each domain. Blue was selected for fundamental skills because of its association with stability, confidence, and conceptual clarity, essential for building a solid foundation. Gray represents technical skills, reflecting neutrality, precision, and analytical rigor, fundamental characteristics for the application of technology in accounting. For psycho-socio-emotional skills, green is the optimal choice, symbolizing balance, empathy, and emotional harmony, essential in managing interpersonal relationships and adapting to change. At the strategic level, purple is considered more appropriate, being associated with strategic thinking, leadership, and innovation, reflecting the complexity of decisions and the vision required for the implementation of AI in the accounting profession. This color scheme provides a logical and visually coherent progression of skills needed in the digital transformation process (Elliot & Maier, 2013, Hatos, 2024; Haryati et al., 2024).

Further on, we employed a competency analysis by importance using a simplified mathematical model by employing a weighted scoring system. In this respect, first, we defined the fifteen competencies identified previously structured on four levels, we assigned weights for each competency, to each competency received the weight reflecting its perceived importance, these weights sum to 100%, and using a 7-point scale (where 7 is the highest importance) we rated each competency based on its impact and significance. In the last step, we determined the weighted scores by multiplying each competency's score by its weight, and we considered this value as the overall or general score. Figure 2 captures the competency analysis by importance.

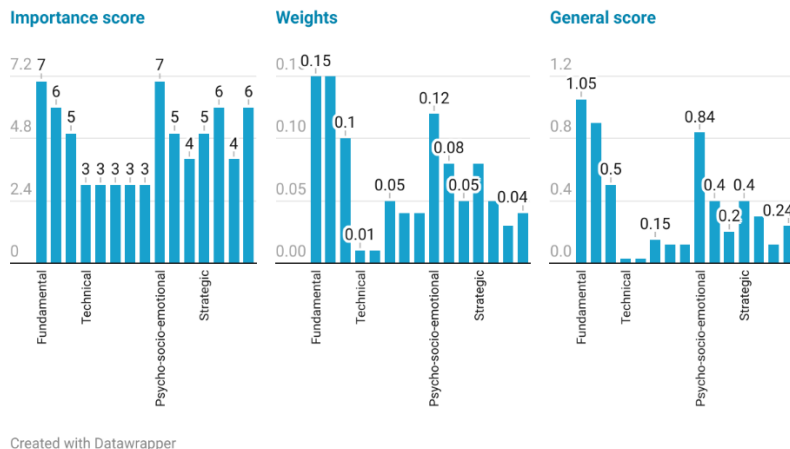


Figure 2. Competency analysis by importance
Source: own processing using *Datawrapper*

This competency analysis by importance allows a ranking of the fifteen selected AI skills in accounting and financial reporting based on the weighted scores or the general score obtained for each competence. The competencies ranking is shown in Figure 3.

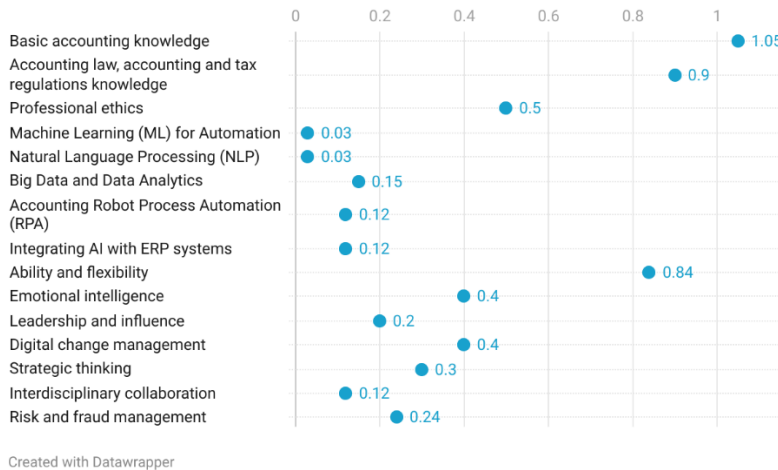


Figure 3. Ranking of competencies by importance
Source: own processing using *Datawrapper*

As can be seen from Figure 3 the first five positions in the hierarchy of competencies are occupied by basic accounting knowledge, accounting and tax regulations, ability and flexibility, professional ethics, emotional intelligence, and digital change management. Although AI skills occupy the last positions, it does not mean that they should not be acquired and developed, but rather the competency matrix should be analyzed in an integrated way, meaning that these AI skills in correlation with other skills like strategic thinking, interdisciplinary collaboration, and digital change management, as well as with the skills in levels one and three provide a holistic and modern perspective. The integrative competency matrix designed in four levels represents a coherent and homogenous framework and can be successfully adopted in the accounting practice. Moreover, this integrative approach allows for a clear understanding of how these skills interconnect and support each other in the process of AI and advanced technologies implementation in accounting and financial reporting.

5. In conclusion

Competencies are key items in updating professional accountants to the AI and advanced technologies revolution, as they combine hard-core knowledge with technical knowledge, practical skills, and ethical values. The permanent development of these skills is significant for integrating new technologies into

practice, ensuring an effective transition to a financial environment transformed by AI systems. The focus-oriented content analysis of Big4 and IFAC online publications revealed a strong consensus on the key competencies needed for the successful implementation of AI and advanced technologies in accounting and financial reporting. It turned out that advanced data analytics, critical thinking, and adaptability are unanimously recognized as fundamental pillars. Thus, these skills underline the need for a strategic and flexible approach to technological transformations, ensuring a smooth and efficient transition to a digital future in accounting. Although AI automates many accounting processes, human input remains indispensable in strategic analysis and complex decision-making. In this context, continuing education and training become fundamental pillars for accounting professionals' development in an era marked by fast technological transformations.

The present study contributes to enriching knowledge on the topic of AI skills needed in accounting for a modern evolution of professionals by proposing a framework in the form of an integrative matrix that reveals the interconnectivity between skills stratified into four levels and ensures a holistic approach. The implications of the study are two-way. The results of the analyses may represent premises for more in-depth or niche academic research, and the practical implications concern the possibility of creating a managerial tool or adapting an existing one by implementing the integrative competency matrix. The limitations of the study concern the data used but also create a bridge to future research that aims to expand the analysis of the integrative matrix of AI competencies in accounting in the context of using a larger volume of data and involving real subjects in the study.

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ANALYSIS OF THE IMPACT OF EUROPEAN FUNDS ON REGIONAL, ECONOMIC, AND SOCIAL DEVELOPMENT IN CENTRAL AND EASTERN EUROPEAN COUNTRIES

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Abstract

The present research aims to analyze the impact of European funds on regional, economic and social development among Central and Eastern European states, a useful analysis in the framework of future financial exercises.

The purpose of this research is to explore ways to enhance the standard of living and improve the absorption rate of European funds in Central and Eastern Europe by: identifying how these countries manage European funds, including the funds in which they co-finance projects, analyzing the main shortcomings of the current systems, and proposing viable solutions to optimize the fund absorption model.

Keywords: *European funds, impact of European funds, regional development, economic and social development*

JEL clasification: *F62, F63, F65*

1. Introduction

Access to European Structural and Investment Funds has often been seen as one of the main benefits of joining the European Union. Despite this, the first years of implementation of European Union funding have been plagued by several difficulties, from weak state capacity to administer and implement EU aid, to legal loopholes and excessive politicisation.

Economic and social policy plays a dual role in driving economic growth and promoting social progress, particularly in addressing income inequality and reducing poverty. Research shows that cohesion policies have a positive effect on both economic performance and social advancement, with significant outcomes in reducing income inequality and alleviating poverty. However, the economic benefits related to poverty reduction take time to materialize, reflecting the gradual nature of policy impacts and the time required for investments to deliver tangible results.

The theory of economic growth is a central topic in economics, and its significance lies in the fact that the pursuit of development is one of humanity's primary driving forces. While economic growth is only one aspect of this broader development, it not only has direct impacts but can also support other dimensions of social progress. A key principle of the European Union is the convergence between Member States, specifically the reduction of development disparities, which can be achieved through faster economic growth in less developed countries.

The ultimate objective of the European Social Model is to ensure the simultaneous achievement of economic growth and social cohesion. One of the central objectives of the European Union, stipulated in the Maastricht Treaty, is to promote social and economic progress by strengthening these two essential pillars. It is widely recognized that the promotion of cohesion is one of the most prominent and important of the many political responsibilities of the European Union.

Cohesion policy has significantly contributed to accelerating the growth of prosperity in the European Union, reducing certain economic, social and territorial disparities.

Analyses of the impact of cohesion policy on European regional performance mainly focus on the economic dimension, measured by GDP per capita and, occasionally, by the employment rate or the level of education and health.

Contradictory trends can be observed in national investment policies. On one hand, there are measures aimed at liberalizing, promoting, and facilitating investment. On the other hand, there are regulations governing foreign direct investment (FDI). Countries have the authority to regulate FDI, and this uncertainty can negatively impact the volume of foreign investment. In less developed countries, there is a significant demand for foreign direct investment.

The practice of foreign direct investment (FDI) has advanced well beyond theoretical approaches. It is important to note that the theories surrounding FDI primarily focus on the cooperation of Western economies. Subsequently, the trend toward a more open economy and globalization emerges. In less developed countries, there is a significant demand for foreign direct investment.

The most important factors of economic growth are GDP per capita, activity rate, employment rate, unemployment rate, foreign investment in development (FDI) and openness of foreign trade.

2. Literature review

This part of the presentation of the methodology used has the role of facilitating the reading of the following passages of the research paper, through the presentation of the sources of information that were used in the following.

The starting point of this research was the bibliographical and webliographic documentation from books, national and international articles or various current studies in the specialized literature. I will take into account both the national and European context. I took into account the statistical reports made available by local, national and last but not least those at the European level. I used the "Web of Science" platform to obtain bibliographical information.

Sabău-Popa (2010) briefly presents the budgetary developments of the European Union, since its establishment, the budgetary process at the level of the European Union, the budgetary impact of the member states on the European Union. In the last chapter of the work "The European Union Budget and Community Funds" he analyzes in detail the financing provided to the member states through the community funds allocated to the various common policies of the European Union. The main contributions of the paper are clarifications regarding the European Union's own resources, common policies and community funds, graphic and descriptive

analysis of European Union payments on the territory of the Member States, their contributions to the community budget, analysis of the absorption capacity of structural and cohesion funds in Romania, the conclusion reached being that facilitating the fastest possible absorption of funds allocated to Romania could be achieved by improving administrative capacity, in order to increase the eligibility of projects, establishing shorter deadlines for evaluation and response to funding applications, ensuring an adequate level of co-financing and using the expertise of commercial banks to access community funds.

Davidescu, A., Nae, T., & Florescu, M.-S (2024), "From Policy to Impact: Advancing Economic Development and Tackling Social Inequities in Central and Eastern Europe". This article highlights that cohesion policy covers a very wide range of EU policy activities, including infrastructure, telecommunications, research and development, competitiveness, vocational training, employment and social inclusion, as well as objectives to promote environmental sustainability and digitalisation — objectives that are in line with the perspectives of the green and digital transition.

Krajewska A., and Krajewski S. (2020), in their work *"The Labor Market in Poland and the Social Responsibility of the State and Business: Comparative Aspects"*, emphasize that in some countries, employment-related costs account for more than 50% of GDP, with relatively high long-term stability. They argue that high unemployment can lead to the proliferation of unethical activities. The authors conclude that the current labor market conditions in many countries require reform and the introduction of legal measures that strengthen employees' positions in their relationships with employers.

Farrell, M. (2004), in *"Regional Integration and Cohesion—Lessons from Spain and Ireland in the EU"*, explores the positive impact of structural funds on regional economic growth in Ireland and Spain. The main aim of the article is to analyze and highlight the contributions of these funds to regional development in both countries. Calejari, Elena, Enrico Fabrizi, Gianni Guastella, and Francesco Timpano (2021), *"EU regional convergence in the agricultural sector: Are there synergies between agricultural and regional policies?"*. This article analyzes the impact of cohesion policy on GDP per capita and societal well-being through a modified version of the adjusted human development index. The results of the study indicate that this cohesion policy significantly increased overall well-being in low-performing regions that used cohesion funds, with the results being particularly visible in improving education levels.

Maucorps, Ambre, Stefan Jestl, and Roman Romisch (2020), in *"The Effects of the EU Cohesion Policy on Regional Economic Growth: Using Structural Equation Modelling for Impact Assessment"*. analyzed the effects of EU cohesion policy on economic growth for 276 European NUTS-2 regions between 2008 and 2016, using a structural equation consisting of a measurement component (with two latent variables) and a structural one. The results of the study support the existence and purpose of cohesion policy, where EU funding is essential for the economic development of European regions without other abundant sources of funding, focusing on alleviating structural deficiencies that hinder the efficient use of convergence investments.

3. The impact of European funds on regional, economic and social development in Central and Eastern European countries

The literature attempts to critically analyze the issues of EU regional development. In terms of context, apart from impact, the management of EU funds has attracted considerable attention from researchers. There have been several contributions that emphasize the importance of administrative and political factors and how they moderate the implementation of the process. In this sense, both factors could moderate not only the management of funding, but in the longer term, their impact as well.

Economic growth in Central and Eastern Europe over the past 25 years is a controversial topic in any country, but the debate is even more intriguing in developing nations. One of the core principles of the European Union is convergence among member states, which involves reducing development disparities. This can be achieved through faster economic growth in less developed countries.

Central and Eastern European countries exhibit diverse economic performances across different social landscapes. Prior to the COVID-19 pandemic, many countries, including Poland, Hungary, the Czech Republic, Slovakia, and Romania, recorded annual GDP growth rates between 3% and 5%, reflecting their growing economic significance relative to Western Europe. However, different levels of unemployment persist, with rates of around 6.1% in Poland, 4.1% in Hungary, 3.6% in the Czech Republic, 7.7% in Slovakia and 4.3% in Romania as of 2021.

Income disparities remain a challenge, especially between rural and urban areas, with economic inequalities widening. In some countries, health and social systems are outdated, welfare is affected, demographic changes are ongoing, population ageing and outward migration are increasingly common, these topics are of ongoing concern. EU funding has helped develop infrastructure and education, and digital transformation efforts are underway to support innovation and competitiveness. The COVID-19 pandemic has had mixed economic impacts on Central and Eastern European countries. Some nations have experienced significant contractions due to lockdowns and disruptions in global supply chains, while others have shown resilience. These countries face challenges in managing income disparities, unemployment and demographic changes while striving to modernize infrastructure, improve healthcare and enhance digital capabilities.

In terms of economic convergence, it is still difficult to qualify whether or not EU funds have led to an increase in national and per capita GDP (PPS). This is despite the fact that EU funds have been the main source of domestic investment and are cushioning, in both countries, the effects of the 2008 economic and financial crisis. As for spillover effects, there is some evidence of learning and adaptation of EU strategic frameworks, instruments and templates at national and local institutional levels. However, there have been several unintended consequences derived from the use of EU funds.

The aim of cohesion policy is that EU funding is essential for the economic development of European regions without other abundant sources of funding, focusing on alleviating structural deficiencies that hinder the effective use of convergence investments.

Cohesion policy has had a positive and significant impact at the EU level,

contributing to both regional economic growth and employment. Specifically, it has shown a positive effect on regional employment, helping to mitigate the effects of the Great Recession and supporting less developed regions during their recovery.

Our research is based on a sample of 10 countries: Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovakia, and Slovenia. These countries were selected based on their Central-Eastern European positioning, and the indicators were analyzed over the period 2007-2020.

The dependent and independent variables analyzed are essential to study the impact of European funds on regional, economic and social development. They are outlined in:

Independent variables	Description
1.Sustainable growth (SGRTH)	European funds spent on sustainable economic growth
1.1.Competitiveness for growth and employability (COMPGE)	European funds spent on competitiveness and employability
1.2. Cohesion for growth and employability (COHGE)	European funds spent on cohesion and employability
1.2.1.Structural Funds (STRFND)	European Structural Funds
1.2.2.Cohesion Fund (COHFND)	Cohesion Fund
2.1. Market-related expenses and direct payments (MREDA)	European funds spent under the Common Agricultural Policy - direct payments
2.2. Rural development (RDVLP)	European funds spent under the Common Agricultural Policy - Rural Development
Dependent variables	
1. GDP/capita (GDP/CAPITA)	GDP/capita
2. Real GDP (REALGDP)	Real economic growth
3. GINI (GINI)	Economic inequality indicator

Compared to studies conducted in Central and Eastern European countries, regarding the use of European funds, we did not start the econometric model with the stationarity and autocorrelation testing methods, but by analyzing cluster data using the K-Means Method.

The algorithm using K for clustering creates clusters using the mean value of the cluster object. The standard K-means algorithm uses the cluster number as a user parameter to choose the cluster center from the data set arbitrarily. The K-means clustering algorithm is classified as a partitional clustering algorithm. Partitioning data sets into clusters involves assigning each data point to the closest cluster center after determining a minimum squared error rate between the different data points in the data set and the mean of a cluster. The K-means algorithm aims to reduce the smallest number of squared errors associated with each K group. The K-means algorithm randomly selects a number of centers from the data set. Depending on the distance from each data point, each center is evaluated, and then assigned and

embedded in the closest control. As a result, the center of the group is re-evaluated due to the integration of the new member. In other words, the algorithm indicated by the K-means method is executed until the quality of the cluster member is stable. The algorithm aims to minimize the sum of the squared error for each cluster of type k , which can be reduced to the following calculation formula:

$$J(c) = \sum_{k=1}^k \sum_{x \in C_k} \|x_i - \mu_k\|^2$$

Regarding the model developed, it is structured into 3 Clusters, depending on the link between GDP/capita and European funds spent on convergence, competitiveness and employability (indicators 1.1 and 1.2). The first cluster consists of the Czech Republic, Slovakia, Hungary, Estonia, Latvia and Lithuania and Slovenia, the second cluster consists of Romania, Bulgaria, and in the last cluster we included only Poland. This cluster presents the highest average level of GDP/capita and the lowest levels of European funds spent on competitiveness, cohesion or employability. Cluster 3, which includes only Poland, presents the lowest average level of GDP/capita and the highest values of European funds spent on competitiveness, cohesion or employability.

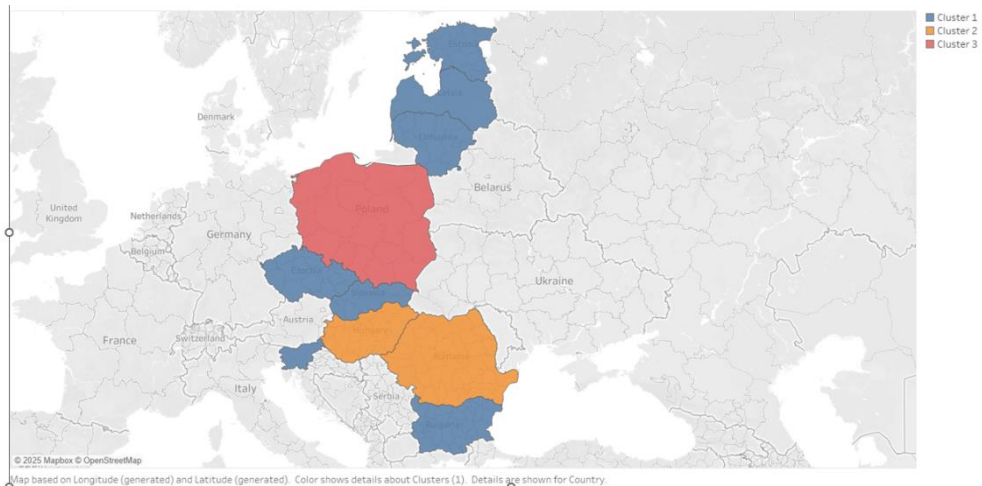


Figure 1. Clustering of CEE countries according to GDP/capita and European funds spent on sustainable economic development,
Source: author's processing

A series of control tests on variables were used in this model to assess the robustness of the results, while examining the social, economic and demographic aspects of the Central and Eastern European countries analyzed and the impact of European funds on them.

Table 1 presents the descriptive statistics for the analyzed variables. Although our sample includes 10 countries with emerging economies, the average values for the selected indicators are quite high.

Table no.1

Variables	Average	Minimum	Maximal	Standard deviation	Variant
SGRTH	2342.092	162.164	13588.828	2860.360	8181661.196
COMPGE	100.973	12.769	406.253	69.492	4829.149
COHGE	2197.823	111.398	13301.468	2752.133	7574236.682
STRFND	1474.879	60.792	9562.280	1890.907	3575526.199
COHFND	713.394	5.056	4573.755	899.913	809842.952
MREDA	772.111	0.928	3595.150	874.093	764038.936
RDVLP	412.696	0.001	1996.505	436.623	190639.208
GDP/CAPITA	13505.119	1389	27360	5023.584	25236393.89
REALGDP	2.008	-5.3	8.4	2.660	7.202
GINI	34.477	24.3	44.1	4.719	22.265

Source: author's processing

Compared to other variables, the variation of the GDP/capita variable is much larger. This indicates that we would have a nonlinear model. As a result, in the regression analysis the variables in absolute sizes will be logarithmic. To verify the robustness of the model and the clustering results, we changed the dependent variable to GINI. The description of the methodology used will provide a more precise detail of the regression form.

Table no.2

Clusters	Number of Items	Centers						
		Avg. Gini	Avg. Cohfnd	Avg. Cohge	Avg. Compge	Avg. Strfnd	Avg. Mreda	Avg. Rdvlp
Cluster 1	4	29.873	651.75	1992.0	98.056	1332.1	587.42	274.51
Cluster 2	5	38.335	318.52	985.23	78.696	659.05	501.09	333.3
Cluster 3	1	33.6	2934.4	9084.0	224.02	6125.1	2866.0	1362.5

Source: author's processing

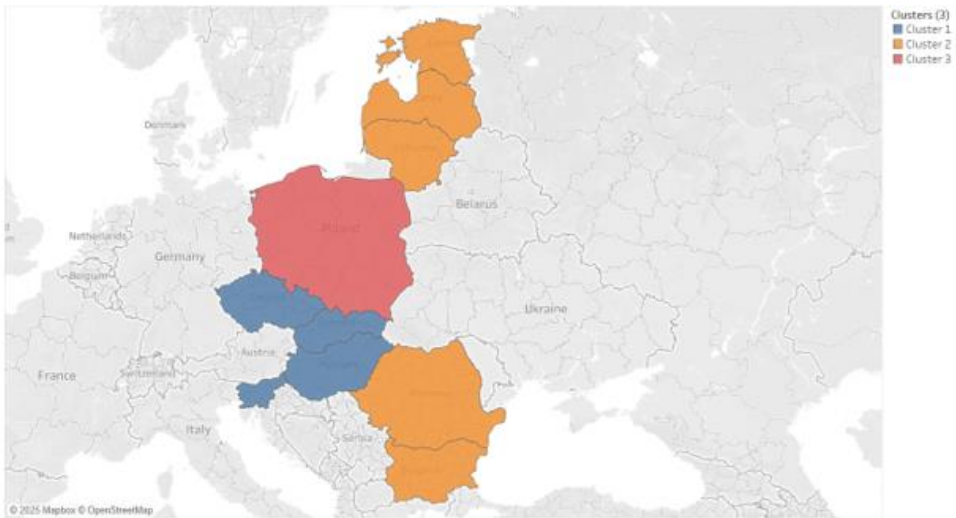


Figure 2. Clustering of CEE countries according to GINI and European funds spent on sustainable economic development,

Source: author's processing

Cluster 1 presents the lowest values of the GINI indicator and the highest values of European funds spent in the analyzed sample, compared to Cluster 2 which has the highest values of the GINI indicator and the lowest values of European funds spent.

4. Conclusions

EU funds have had a relatively significant and often visible impact on the economy, particularly in investments related to public, social, educational, and institutional infrastructure. However, the exact effects of these funds remain ambivalent, difficult to qualify, and challenging to measure precisely.

Regarding economic growth over the past 25 years, it can be divided into three distinct phases in each country in the region: transformational decline, the convergence period, and recession. The recession was followed by rapid growth in all countries, leading to convergence with Western European economies. Overall, the entire region experienced substantial growth during this period, which also contributed to significant convergence with more developed Western European nations. On the other hand, the main driver of this rapid growth was capital accumulation.

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**SECTION INTERNATIONAL BUSINESS, EUROPEAN
INTEGRATION, FOREIGN LANGUAGES AND BUSINESS
ENVIRONMENT**

**INTEGRATING HOFSTEDE'S INDIVIDUALISM–COLLECTIVISM DIMENSION
INTO ENGLISH FOR SPECIFIC PURPOSES: A FRAMEWORK FOR
INTERCULTURAL SKILLS**

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Abstract: *The globalization of professional communication has intensified the need for pedagogical approaches that connects language and culture in English for Specific Purposes teaching. This article proposes a comprehensive framework for integrating Geert Hofstede's individualism–collectivism cultural dimension into ESP teaching, with a particular focus on business students. It first outlines the theoretical framework of individualism and collectivism and their implications for communication styles, educational expectations, and workplace behaviors. The article then presents a range of practical tasks - including reading comprehension, case analysis, vocabulary matching, idiomatic interpretation, and multiple-choice exercises - designed to enhance both linguistic proficiency and intercultural competence. By using culturally sensitive teaching methods, this approach supports more meaningful learning and better prepares students for international professional settings.*

Keywords: *Intercultural Communication; English for Specific Purposes; Individualism–Collectivism; Cultural Awareness; Globalization*

JEL Classification: Z13

1. Introduction

The increasing globalization of professional communication has placed the relationship between language and culture at the center of English for Specific Purposes teaching. As learners engage more frequently in multicultural and international contexts, the development of intercultural communicative competences has become essential. Among the most influential models for examining cultural differences is Geert Hofstede's framework of cultural dimensions, particularly the individualism–collectivism cultural dimension. This dimension offers an important analytical tool for understanding how social orientation influences behavior, values, communication, and practices. In individualistic cultures, personal autonomy and self-expression are central, while collectivistic cultures emphasize

more social harmony, group loyalty, and interdependence. These differences have far-reaching implications not only for interpersonal interactions but also for pedagogical approaches in the ESP classroom, particularly in fields such as business, economics, and international relations.

This article explores how Hofstede's individualism–collectivism dimension can be methodologically integrated into ESP teaching through a series of linguistically meaningful and culturally adaptive activities. It offers a comprehensive overview of the theoretical frame, followed by practical applications - including reading-based tasks, case studies, vocabulary matching, idiomatic analysis, and structured response formats such as multiple-choice questions. Each task is assessed in terms of its pedagogical value, cognitive demand, and cultural relevance, with particular emphasis on its contribution to learners' linguistic proficiency and intercultural awareness.

2. Theoretical Framework of Geert Hofstede's Individualism versus Collectivism

Geert Hofstede's cultural dimension of individualism versus collectivism (Hofstede, 2011: 97) provides a framework for understanding the extent to which individuals within a society are integrated into social groups. In individualistic societies, emphasis is placed on the rights, autonomy, and accomplishments of the individual. On the other hand, collectivistic cultures prioritize the goals and needs of the group, often emphasizing harmony, cooperation, and social cohesion.

Individualistic cultures, such as those in the United States and Western Europe, value personal freedom and self-determination. Individuals are encouraged to think independently, pursue personal goals, and define themselves based on individual traits. This cultural orientation fosters independence and self-reliance, though it may also result in reduced social cohesion and increased competition. On the other hand, collectivistic societies - commonly found in many Asian, African, and Latin American countries - encourage individuals to subordinate personal interests to group goals. Individuals perceive themselves as parts of a collective, such as an extended family or community. This fosters mutual interdependence, loyalty, and cooperation, but may also constrain individual autonomy and promote conformity to group norms.

According to Hofstede "individualism describes societies in which the ties between individuals are loose; everyone is expected to look after him- or herself and his or her immediate family." (Hofstede, 2011: 97). In these societies, values such as self-responsibility, independence, self-confidence, and self-actualization are strongly emphasized (Schugk, 2004: 115). Families are predominantly nuclear, typically composed of parents and one or two children. From an early age, children are learned to perceive themselves in terms of „I,” emphasizing personal identity. In contrast, collectivistic societies are defined as: "Collectivism pertains to societies in which people from birth onward are integrated into strong, cohesive in-groups, which throughout people's lifetime continue to protect them in exchange for unquestioning loyalty." (Hofstede, 2011: 92). Collectivist family structures tend to be extended and include multiple generations. Children are raised with a strong

sense of belonging to a „we” group, which shapes their identity and provides social support. This generates a mutual relationship between the individual and the group, wherein loyalty and protection are expected.

Hofstede's individualism index ranks 76 countries and regions, with the United States (91), Australia (90), and the United Kingdom (89) scoring the highest in individualism. In contrast, countries such as Guatemala (6), Ecuador (8), and Panama (11) display strong collectivist tendencies. (Hofstede, 2011: 101-102) These rankings illustrate a general pattern: high-income nations often exhibit higher individualism scores, while lower-income countries tend to be more collectivist. Hofstede presumes that national wealth fosters individualism, though individualism itself is not necessarily a guarantee for economic prosperity (Treichel, Mayer, 2011: 245-246). Furthermore, countries characterized by high power distance often align with collectivist values, whereas those with low power distance are more likely to be individualistic (Treichel, Mayer, 2011: 246).

Hofstede also argues that geographical, economic, and historical factors contribute to the development of cultural orientations. For example, hunter-gatherer societies typically exhibit nuclear family structures, while agrarian communities often develop extended family systems. Urbanization tends to promote nuclear family structures and, consequently, more individualistic orientations. Despite modernization and industrialization, East Asian countries such as Japan, South Korea, and Taiwan maintain collectivist values rooted in Confucian teachings. Furthermore, geographic latitude correlates with individualism: populations in colder climates, where survival depends on personal initiative, tend to value independence. Larger populations are associated with greater power distance but do not necessarily predict collectivist values; however, higher fertility rates in poorer nations often contribute to collectivist socialization patterns (Ting-Toomey, 1999: 136).

Communication patterns also differ considerably: individualistic cultures rely on verbal interaction and perceive silence as uncomfortable, whereas collectivistic cultures value non-verbal presence and consider silence acceptable, or even respectful. Guilt and shame also function differently: individualistic cultures are guilt-oriented, whereas collectivistic cultures are shame-oriented. The concept of „losing face” is prevalent in collectivist societies and has no direct equivalent in many Western cultures. Communication in individualistic cultures is characterized by explicitness and assertiveness. Self-expression is a virtue, and the use of personal pronouns (e.g., „I”) is frequent. In contrast, collectivist cultures use indirect, nuanced communication aimed at preserving social harmony. In these cultures, pronouns may be omitted, and symbolic language is more common. For example, verbal affirmations such as „yes” may indicate acknowledgment rather than agreement.

The individualism-collectivism dimension also applies to educational practices. In collectivist societies, education prioritizes group goals, cooperation, and respect for authority. Students are often reluctant to speak without direct prompting, and teachers are viewed as authority figures. Discipline is maintained through group-based mechanisms, such as shaming. On the other hand, individualistic educational systems emphasize critical thinking, independence, and personal achievement. Students are expected to utter their opinions and engage in open debates. Education is viewed as a lifelong process that enables individuals to adapt to new

challenges. Diplomas serve not only as markers of qualification but also as symbols of personal accomplishment. In a collectivist society, a diploma is an honor to the holder and entitles the holder to associate with members of higher-status groups.

In professional environments, this cultural dimension influences organizational structures and employee behaviors. Collectivistic workplaces emphasize loyalty and interpersonal relationships. Career choices often follow familial patterns, and hiring decisions may favor relatives to reduce risk. Termination of employment is less common, even in cases of underperformance, due to the emphasis on maintaining social bonds.

In individualistic workplaces, emphasis is placed on personal initiative, meritocracy, and contractual relationships. Employees are assessed based on individual performance, and job mobility is common. Nepotism is generally discouraged to avoid conflicts of interest and to maintain fairness and transparency, and professional relationships are guided by formal rules and obligations rather than personal ties (Hofstede, 2011: 129).

These differences extend also into marketing and advertising strategies. In individualistic societies, marketing often highlights individual benefits, personal freedom, and self-fulfillment. In collectivist societies, advertisements focus on group experiences, relationships, and shared benefits. For instance, while a car commercial in the United States may depict a lone driver enjoying freedom, an equivalent advertisement in Japan might highlight a family or group travelling together to symbolize unity and harmony. Hospitality and social inclusion are highly valued in collectivist cultures; thus, being alone may be perceived negatively. Effective marketing strategies must therefore be culturally sensitive, accounting for diverse communication styles and social norms (De Mooij, 2011: 178).

3. Individualism versus Collectivism within ESP Classrooms

In the context of English for Specific Purposes, particularly within faculties of economics, the methodical focus must extend beyond the traditional restrictions of vocabulary acquisition and grammatical accuracy. The primary objective of ESP training in this domain is to train students' ability to communicate effectively and appropriately in professional economic and business environments. This requires the integration of a broad range of abilities, including functional language use, critical thinking skills, and, moreover, intercultural communication awareness.

Given the increasingly multicultural structure of student groups in economics programs, it becomes essential for language trainers to design and implement pedagogical strategies that are responsive to the diverse cultural orientations of learners. Cultural values and social norms significantly influence educational expectations, learning behaviors, and communicative preferences. As expressed in Hofstede's model of cultural dimensions, individualism and collectivism provides a useful tool for anticipating how students from different cultural backgrounds may engage with ESP content and teaching methods.

Students originating from collectivistic cultures, such as those in East Asia, Latin America, and parts of Africa and the Middle East, often exhibit a preference for collaborative learning environments. In such contexts, knowledge is frequently

understood as socially constructed and relational, and learners may be more comfortable engaging in indirect forms of participation, such as group consensus-building and peer-supported tasks. Authority figures, such as teachers, are highly respected, and questioning or challenging them may be perceived as inappropriate or confrontational. Accordingly, students from collectivistic backgrounds may respond more positively to structured group activities, cooperative tasks, and teaching methods that emphasize harmony, shared responsibility, and face-saving communication.

On the other hand, students from individualistic societies - such as those in North America, Western Europe, and Australia - tend to value independence, self-expression, and personal achievement. Educational settings in such cultures often encourage competition, critical inquiry, and assertive communication. Learners from these contexts may prefer individualized assignments, opportunities for self-paced learning, and pedagogical frameworks that reward originality and initiative. They may also expect a more egalitarian classroom dynamic, in which teachers act as facilitators rather than authority figures.

Teachers must be mindful of culturally influenced perceptions of success, feedback, and assessment. While some students may welcome direct, critical feedback as a tool for personal development, others may interpret it as a threat to interpersonal harmony or personal dignity. In such cases, feedback may need to be delivered with sensitivity to cultural norms. A culturally responsive teaching approach not only supports language development but also fosters a more respectful and engaging learning environment, thereby increasing students' understanding of international professional contexts.

4. Types of Activities and Exercises

To effectively bridge cultural differences in the English for Specific Purposes classroom, teachers must develop activities that are both linguistically meaningful and culturally adaptable. Hofstede's individualism-collectivism dimension serves as a valuable pedagogical tool for designing such tasks. By doing so, instructors not only enhance students' language acquisition but also strengthen their intercultural communication competence, a critical skill in global business environments.

4.1. Reading & Analysis Activities

Reading and analysis-based tasks not only reinforce reading comprehension and specific vocabulary, but also train analytical skills. Within the context of Hofstede's cultural dimension of individualism versus collectivism, such tasks provide learners with opportunities to apply theoretical knowledge to authentic, real-world business scenarios.

Learners are presented with a variety of texts, including news reports, academic case studies, and journalistic analyses that describe cross-cultural business challenges such as failed mergers, international market exits, or internal team conflicts. Examples might include the dissolution of the Daimler-Chrysler partnership, Walmart's withdrawal from the German market, or cultural integration issues in the Renault-Nissan alliance (Meyer, 2014: 63). The selected texts should

contain either explicit or implicit references to culturally rooted misunderstandings, particularly those arising from different value systems linked to individualism (e.g., personal initiative, autonomy, self-assertion, decentralized decision-making) or collectivism (e.g., harmony, consensus, hierarchical communication).

Students read the article with the aim of identifying specific examples where cultural differences - particularly those related to autonomy, hierarchy, team dynamics, or communication - led to misunderstanding between business partners. Working individually or in pairs, they annotate key passages, extract relevant vocabulary, and prepare summaries. This activity encourages language development, particularly in reading comprehension and vocabulary acquisition (e.g., terms like synergy, consensus, top-down management, or decentralization), as well as intercultural awareness, through recognition of cultural value clashes, and critical thinking, by encouraging learners to assess the underlying causes and consequences of intercultural misunderstanding in business contexts.

4.2. Case Studies in Cross-Cultural Environments

When integrated with intercultural content such as Hofstede's cultural dimension of individualism versus collectivism, case studies serve as particularly effective instruments for developing both linguistic competence and intercultural awareness. A representative example involves an American manager working in Japan who, after observing outstanding performance by a team member, chooses to offer public praise during a group meeting. While the purpose was to provide positive reinforcement, the response from the rest of the team was marked by visible discomfort and unease, a reaction that surprised the manager.

From a methodological point of view, this case study is particularly valuable in ESP and serves as a stimulus for both linguistic output (discussion, analysis, presentation) and intercultural interpretation. The task is authentic and culturally significant - ideal for raising awareness of the individualism versus collectivism dimension as proposed by Hofstede.

In societies characterized by high levels of individualism, such as the United States, public recognition is generally regarded as a motivating force. It reflects the cultural values of individual achievement, competitiveness, and self-esteem, with praise viewed as a means of reinforcing personal performance. In contrast, in strongly collectivistic cultures such as Japan, group harmony, modesty, and social cohesion is extremely important. In such contexts, publicly praising an individual may result in embarrassment for the person being singled out, as well as for other team members. This may disturb group stability, as well as the norm of modesty and equality. The American manager's action, while culturally appropriate in his context, fails to consider the face-saving and group-oriented values of the Japanese workplace.

This case study supports the development of several competences. In terms of intercultural competence, learners gain insight into how leadership, communication, and motivational practices vary significantly across cultures. Critical thinking is enhanced through the assessment of behavior within culturally specific frameworks. Language development is supported through the acquisition of terminology related to workplace communication and managerial practice. From a teaching and methodological perspective, it exemplifies how the abstract principles of Hofstede's

cultural dimensions can be transferred to accessible, real-world situations, enhancing the learners' linguistic, cultural, and reflective capacities, and preparing them for effective participation in international business environments.

4.3. Matching Exercises - Linking Language with Cultural Behavior

Vocabulary acquisition is a fundamental part of English for Specific Purposes, especially in business contexts where language use is often tied to culturally embedded values, idiomatic expressions, and pragmatics. Vocabulary-focused activities can be used not only to expand learners' lexical range but also to foster cultural awareness and encourage critical reflection on how language encodes norms and worldviews.

Such an approach involves presenting students with a series of behaviors (e.g. *expressing disagreement in meetings, avoiding public criticism, prioritizing personal goals, face-saving, decisions are made by consensus* etc.) and requiring them to identify the cultural value each behavior reflects (i.e., individualist or collectivist), as well as an appropriate business context in which it might be used. For instance, the behavior "maintains group harmony during meetings, avoids direct confrontation" corresponds to the cultural value of collectivism and may be exemplified within East Asian management styles.

This type of activity promotes both receptive and productive vocabulary development within meaningful contexts, while simultaneously reinforcing learners' understanding of cultural behaviors and specific value systems. Moreover, it strengthens learners' ability to associate abstract cultural dimensions with concrete business practices.

To extend the activity, learners may be asked to justify their responses orally or in written form. This not only fosters critical thinking and argumentation skills but also deepens engagement with the topic. Additionally, by linking new vocabulary to prior knowledge and cultural frameworks, the activity facilitates the development of intercultural competences. Discussions that encourage students to compare these behaviors and values with those of their own cultures further promote reflective learning and cross-cultural insight.

4.4. Idioms and Cultural Metaphors

Learners explore idiomatic and cultural expressions that reflect the values associated with either individualism or collectivism. Examples of such expressions include "The squeaky wheel gets the grease," which reflects an individualist emphasis on proactive assertiveness, and "The nail that sticks out gets hammered down," which reflects a collectivist orientation toward social conformity. Other examples such as "Go it alone" and "Pull your own weight" contrast with collectivist expressions like "Do not bring shame to the group," further illustrating the linguistic encoding of cultural values.

This task increases awareness of idiomatic and metaphorical language, illustrates how cultural values are embedded in everyday expressions, and provides pragmatic language tools for authentic communication in business contexts. Through a contextualized approach to language teaching, learners analyze idioms as they appear in realistic situations, such as dialogues, excerpts from business cases, or authentic video materials. Students then write a short email, dialogue, or

role-play incorporating the idioms in business-related contexts. This activity fosters pragmatic competence, a skill often underrepresented in English for Specific Purposes teaching.

4.5. True/False Statements for Cultural Reflection

True/False statements represent a familiar and versatile exercise that can be adapted from simple comprehension checks to complex cultural awareness tools. In the context of teaching individualism vs. collectivism, T/F activities can be used not only to verify students' understanding of Hofstede's model but also to challenge assumptions, stimulate discussion, and activate critical thinking about cultural behaviors in business contexts.

While traditionally considered a lower-order task (e.g., simple recall), their pedagogical value is significantly enhanced when they are integrated with follow-up discussions, reasoning activities, and opportunities for cultural reflection. Thus, T/F activities contribute to the development of thinking skills, including analysis, justification, and evaluation. When applied to the teaching of the individualism-collectivism topic, T/F statements function not only as linguistic exercises but as instruments for showing the complex interrelationship between language, cultural values, and behavior in international business settings. Learners critically examine in this way how cultural orientations manifest in workplace communication, social expectations, and organizational norms.

The following is an example of a culturally embedded True/False statement: „Individualistic societies prioritize the needs and goals of the group over the rights and achievements of the individual”. This is a false statement, because individualistic societies emphasize the rights, autonomy, and personal achievements of each individual rather than collective goals.

These examples highlight not only key distinctions between cultural orientations but also serve as an opportunity for deeper engagement with how cultural frameworks influence real-world behaviors in professional and educational settings.

4.6. Identifying Cultural Outliers

By identifying the culturally divergent country in a set of four, students are challenged to apply cultural theory to real-world geographical contexts. This activity facilitates critical thinking, vocabulary development, and intercultural sensitivity within English for Specific Purposes, particularly in business, international relations, and cross-cultural communication training.

Learners have to determine the “odd” country in each grouping based on its cultural orientation along the individualism–collectivism dimension. This approach offers an accessible yet intellectually stimulating way of connecting abstract cultural theory with practical cross-cultural knowledge. It not only reinforces students' understanding of cultural dimensions but also enhances their ability to analyze and classify countries using empirical cultural indices. The activity enhances intercultural competence, by prompting reflection on how national values differ, critical reasoning, by encouraging evaluation and justification of cultural classification, and lexical acquisition, as students engage with terminology related to cultural values and dimensions.

For each grouping, students are tasked with identifying the country that does not match in terms of individualism versus collectivism. They must then justify their selection using known or researched cultural data and reflect on the implications of these cultural orientations.

In the following example: “Great Britain, South Korea, Italy, and France”, the correct response is South Korea, which is considerably more collectivist in comparison to the predominantly individualistic European countries. This process is repeated, reinforcing learning through varied application.

The language component of the task focuses on functional vocabulary related to cultural dimensions, including terms such as *individual autonomy*, *collective identity*, *self-expression*, and *group loyalty*. In addition, the task encourages the use of descriptive structures such as “Country X is more collectivist because...” and “Compared to Y, Z ranks lower on the individualism index,” enabling students to articulate complex ideas with clarity and precision.

4.7. Cultural Framing in Advertising

Advertising, as a culturally embedded form of communication, mirrors the values, priorities, and relational norms of a certain society. It offers a valuable and authentic resource for examining cultural differences within the ESP classroom. In this context, students analyze several advertisement descriptions and assess whether they align more closely with individualistic or collectivistic values. This classification exercise serves as a bridge between abstract cultural theory and tangible real-world examples, promoting both linguistic competence and intercultural sensitivity. This activity enhances learners’ awareness of implicit cultural cues embedded in advertising discourse, including language, visual elements, slogans, and persuasive appeals. By interacting with authentic or contextually realistic advertisement scenarios, students develop their capacity to interpret pragmatic meaning and to understand how persuasive strategies are culturally framed.

Learners are presented with several advertisement scenarios. Each includes a description featuring key themes, imagery, and slogans. Students must analyze the content, determine whether the advertisement targets an individualistic or collectivistic audience, and provide a justification for their classification. For example, a luxury car advertisement with the slogan “Live Your Own Adventure” emphasizes personal freedom, self-expression, and achievement, aligning with individualistic cultural values. On the other hand, an advertisement for a food delivery service depicting friends or family dining together, with the slogan “Dine Together, Anytime,” reflects collectivistic values by highlighting group cohesion and shared experiences.

This activity engages learners at multiple cognitive and linguistic levels. Analytically, they interpret language and visual content to detect cultural orientation. They justify their interpretations using Hofstede’s framework. Synthetically, they compare advertising strategies across cultural dimensions, developing a nuanced understanding of how culture informs communication. From a linguistic standpoint, the task facilitates lexical development around key concepts such as autonomy, togetherness, achievement, and success. It also promotes the use of functional language for justification, such as “This slogan reflects individualism because...,”

and encourages pragmatic competence through interpretation of implied meanings and cultural values.

As an extension, learners may design their own advertisements - either as visual posters or scripts - targeted toward an individualist or collectivist culture, and then present and justify the cultural framing of their advertisements.

The advertisement classification task offers a culturally grounded, methodologically sound approach to developing learners' cultural literacy and pragmatic awareness within an ESP framework. By engaging with authentic advertising discourse, students learn to decode implicit cultural messages and reflect on how values such as autonomy, community, and success are framed differently across cultures.

5. Conclusions

The integration of Hofstede's individualism–collectivism dimension into ESP teaching provides a powerful pedagogical framework for developing learners' linguistic skills alongside their intercultural competences. Through the targeted use of discourse analysis, case studies, vocabulary development tasks, and structured reflection, learners not only internalize language relevant to business and professional contexts but also gain critical insights into how cultural values shape communication, behavior, and institutional norms. These activities support key educational goals: they facilitate meaningful language acquisition, promote higher-order thinking, and cultivate sensitivity to cultural diversity.

Incorporating culturally responsive teaching strategies enables teachers to address the diverse learning preferences and communicative expectations of both collectivist and individualist students. By aligning instructional design with intercultural theory, ESP teachers can more effectively prepare learners for the complexities of international collaboration. The systematic use of Hofstede's cultural dimensions, particularly individualism–collectivism, transforms the ESP classroom into a dynamic space for experiential learning, critical reflection, and the development of globally relevant communicative skills.

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THE IMPORTANCE OF TEACHING CROSS-CULTURAL COMMUNICATION: APPLYING HOFSTEDÉ'S POWER DISTANCE IN BUSINESS ENGLISH FOR SPECIFIC PURPOSES

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Abstract: In today's globalized and interconnected world, the ability to communicate effectively across cultures is a critical skill. This paper explores the importance of teaching intercultural communication to promote understanding, reduce conflict, and enhance collaboration in diverse social, educational, and professional environments. Central to this discussion is Geert Hofstede's theoretical framework, particularly the cultural dimension of Power Distance (PD), which examines how societies handle inequalities in power and authority. The paper analyzes how PD manifests in various cultural settings, including family dynamics, educational institutions, workplaces, and communication styles. It further investigates historical and linguistic roots of power distance differences and highlights their implications in modern interactions. Practical teaching strategies and classroom activities are proposed to engage students in critical thinking and real-world application of intercultural communication concepts. Finally, the paper underlines the importance of integrating intercultural communication education in academic and professional training to better equip students for success in a multicultural world.

Key words: Intercultural communication; English for Specific Purpose, Power Distance, Cultural Awareness, Globalization

JEL Classification: Z13

1. Introduction

In an increasingly interconnected and globalized world, the ability to communicate effectively across cultures is not just a valuable skill, it is a necessity. As individuals interact more frequently with people from different cultural backgrounds, whether through travel, work, education, or online platforms, the need for competent intercultural communication becomes critical. Teaching intercultural communication is essential for fostering understanding, reducing conflict, and promoting cooperation in diverse social, educational, and professional environments.

Intercultural communication refers to the process by which people from different cultural backgrounds exchange information and meaning. It goes beyond language differences to include values, beliefs, behaviors, communication styles, and

worldviews. Teaching intercultural communication equips individuals with the knowledge and skills to navigate these differences effectively and respectfully.

One of the most significant benefits of teaching intercultural communication is that it enhances cultural awareness and sensitivity. Students learn to recognize and appreciate the diversity of human experiences and perspectives. This understanding helps individuals move beyond stereotypes and assumptions, promoting empathy and respect for others. In educational settings, this can lead to more inclusive and supportive learning environments. In workplaces, it can foster teamwork and a more positive organizational culture.

Cultural misunderstandings are a common source of conflict in both personal and professional interactions. Teaching intercultural communication provides individuals with the tools to recognize potential sources of miscommunication, such as differing non-verbal cues, language nuances, and cultural norms. When individuals understand and anticipate these differences, they are better equipped to resolve conflicts and build harmonious relationships.

2. Theoretical Framework of Geert Hofstede's Cultural Dimensions

Geert Hofstede was a Dutch expert in cultural studies, and a professor of Organizational Anthropology and International Management at Maastricht University. He used to analyze the connections between national cultures and corporate cultures, associating culture with a "mental software". According to him culture is the "collective programming of the mind that distinguishes the members of one group or category of people from another". (Hofstede 2011: 4)

In his book *Cultures and Organisations. Software of the Mind*, Geert Hofstede carried out one of the most extensive empirical study on cultural differences: from 1968 to 1972, he questioned around 116,000 IBM employees from 53 countries. Using this study, the company's aim was to find out the ideal working conditions for its employees. However, the result showed that views on the ideal working conditions are different from one country to another. After analyzing the questionnaires Hofstede created cultural dimensions that would differentiate the values and attitudes of the employees from various countries. The statistical analysis revealed common problems, but different solutions. He established four cultural dimensions and later on he added two more. The following six dimensions are aspects of a culture that can be measured and compared in relation to others:

- **power distance:** how is power and inequality dealt with in a culture?
- **collectivism versus individualism:** is individualism or collectivism preferred in a culture?
- **masculinity versus femininity:** is the culture more masculine or more feminine?
- **uncertainty avoidance:** how is uncertainty dealt with in a culture?
- **long-term orientation versus short-term orientation:** is there a short-term or a long-term orientation in a culture?
- **indulgence versus restraint:** control over one's life or the importance of free time and leisure in a culture?

3. Hofstede's Cultural Dimension Power Distance: Concept and Global Examples

Geert Hofstede's concept of power distance refers to the degree of inequality that exists and is accepted within a society. It is "the extent to which less powerful members of organizations and institutions (such as employees or citizens) expect and accept that power is distributed unequally". (Hofstede 2011: 57-58) In a culture with a high-power distance, there is a strong hierarchy and a centralized power structure, where those in positions of authority are highly respected and obeyed. In contrast, in a culture with a low power distance, power is more evenly distributed, and there is less of a hierarchical structure.

High power distance scores are found in most Asian countries (such as Malaysia and the Philippines), Eastern European countries (such as Slovakia, Russia, and Romania), Latin countries (Latin American countries such as Panama and Mexico, and Latin European countries such as France), Arabic speaking, as well as the African countries. Low power distance values are found in the German-speaking countries Germany, Austria and Switzerland, as well as in Israel, the Nordic countries (Denmark, Finland, Norway and Sweden), the USA, Great Britain and the Netherlands.

3.1. Historical and Philosophical Roots

Throughout history, philosophers and founders of religions have always been concerned with power and inequality. Already in the year 500 BC Confucius in China claimed that the stability of a society is based on unequal relationships between people. The positions of the countries such as China, Singapore, Hong Kong, South Korea, Taiwan and Japan in the power index scale can be found in the top third and in the middle of the ranking. People in these countries accept and even appreciate inequality, but find that the use of power must be restrained by a sense of obligation. (Hofstede 2011:83)

In Ancient Greece, about 350 BC, Plato emphasized a fundamental need for equality among human beings. At the same time, however, he defended a society in which an elite class, the guardians, would exercise leadership. This reminds of George Orwell's famous quote: "All animals are equal, but some animals are more equal than others". Greece is found in a middle position on the power distance scale (60 points).

The New Testament of the Bible preaches poverty as a virtue. The pursuit of this virtue leads to equality in society, but the exercise of this virtue was not common among statesmen or among the priests. The Roman Catholic Church reflects the hierarchical order of the Roman Empire; the same applies to the Eastern Orthodox churches. Protestant denominations tend to be less hierarchical. The power distance in Protestant countries is therefore lower than in Catholic or Orthodox countries.

Niccolo Machiavelli distinguishes two models of political power theories: that of the fox and that of the lion. The cunning of the fox will detect all snares, and the strength of the lion will scare the wolves. (Hofstede 2011:84)

If one translates Machiavelli's thoughts to country-specific differences in power distance, one can transfer the fox model to countries with a low power distance and

the lion model to countries with a high-power distance. Italy scores in the middle of the power distance scale (position 51). Thus, Northern Italy can be compared more closely to the fox model, while Southern Italy can be compared more closely to the lion model.

Geert Hofstede points out a connection between power distance and the following factors:

- a) the distribution area of the language
- b) the latitude of the country
- c) the size of the population
- d) the wealth of the country

European countries where the mother tongue is a Romance language (French, Italian, Portuguese, Romanian, Spanish) occupy medium to high positions on the power distance scale. European countries where the mother tongue is a Germanic language (Danish, German, English, Dutch, Norwegian, Swedish) are in the lower positions. In terms of power distance, there seems to be a connection between the regions where the language is spoken and how people think today. The Romance languages evolved from Vulgar Latin (spoken Latin) and spread throughout the territories that were once part of the Roman Empire. Both the Roman and the Chinese were ruled by a central power and the population became accustomed to orders and obedience. (Treichel, Mayer 2011: 244). The emperor acted as an absolute ruler, above the law. He had all the power and authority, and the well-known Latin saying "Quod licet jovi, non licet bovi" ("Gods may do what cattle may not") underlines this fact. (Schugk 2004: 111).

Germanic languages are spoken in the countries that remained "barbarian" even in Roman times or were later conquered by barbarian tribes. Most of these countries were divided into small, independent tribal groups headed by a lord. People were not used to receiving orders from anyone else (shown today in a low power distance). (Treichel, Mayer 2011: 244-245).

Geographic latitude is also a measure related to power distance. In lower latitudes societies meet a more abundant nature. To survive in these climatic zones, people only have a limited intervention in nature. The greatest threat to such a society comes from other human groups, when these claim territories or natural resources. Society has the best chance of survival when it has a strong hierarchical order and a central authority that maintains order and balance.

In higher latitudes there is a less fertile nature. People must intervene more in nature to secure their existence. These conditions support the setting up of industry next to agriculture. The survival of people in countries with temperate or cold climates relies more on their ability to support themselves and to be independent. Size of population is also closely related to power distance, as people in highly populated countries accept political power that is more distant and less accessible than people from a small nation, i.e. a higher power distance.

Factors related to national wealth and less dependence on those in power. (Treichel, Mayer 2011: 90).

- less traditional agriculture;
- more modern technology;
- more urban living;
- more social mobility available;

- a better educational system;
- a larger middle class.

In the former colonies, the power distance is higher than in the countries that had colonies. Whether a country has been or has had a colony for the past two hundred years also influences the power distance index and is strongly related to their present wealth.

3.2. Family Dynamics

Geert Hofstede's concept of power distance can be applied to family relationships, and it helps to explain the degree of inequality that exists and is accepted within a family. In a family with a high-power distance, there is a strong hierarchy, and the parents or older members of the family hold most of the power and make most of the decisions. Parents expect obedience from their children and, sometimes even the older siblings hold authority. In high power distance families, communication is often top-down, with parents or older members of the family giving directives and the younger members following them. In these families, there is also a greater emphasis on obedience and respect for authority. Younger siblings are expected to imitate the behavioral patterns of the older ones, moreover they are not encouraged to become independent. Parents and grandparents are treated with particular respect, even after the children have moved out and became independent. When parents grow old, their children are expected to take care of them, even to support them financially. Grandparents often live with their children and grandchildren.

In a family with low power distance, power is more evenly distributed, and there is less of a hierarchical structure. Children are encouraged to become more independent and have their own opinions. In low power distance families, decision-making is more democratic, with a greater emphasis on participation and input from all members of the family. The parents play the role of a partner, rather than of an authority. It is also allowed for the children to contradict their parents and disagree. The connections within the families in such societies are often perceived as cold, distant, and not very intense by people from other cultures. The need for independence is considered very important in adult mental software. As children grow up, they begin to develop a friendly or at least equal relationship with their parents. They cannot count on their children's support later or expect to live with them.

Understanding power distance in family relationships can help families manage the differences they may encounter and build more effective and inclusive family dynamics. It can also help individuals to understand the cultural influences that shape their own families and how it may impact their relationships with parents and siblings.

3.3. The Educational Context

Geert Hofstede's concept of power distance can also be applied to the educational background, and it helps to explain the degree of inequality that exists and is accepted within a classroom or a school community. In high power distance cultures, teachers are treated with respect; students are expected to be obedient and to stand up when the teacher enters the classroom. In school there is a strong

hierarchy, and the teachers hold most of the power and make most of the decisions, the educational process is thus teacher-centred. Students only say something when they are asked to do so; the teacher is not contradicted or criticized in public and is also treated with respect outside the school. If students misbehave, their parents are immediately involved and expected to correct their children's behavior. In such an educational system, the quality of the learning process depends on the excellence of the teacher.

In low power distance cultures, the teacher is expected to treat and view students as equals. Students are more likely to perceive younger teachers as their peers and like them better than older teachers. The education process is student-oriented, where the student's initiative is highly valued. Students are expected to ask questions when they do not understand something. They discuss with their teachers, expressing their opinions even if they have a different view. Students may argue with teachers, express disagreement and criticisms in front of the class, and show no particular respect to teachers outside school. When a student misbehaves, parents often defend their children. The quality of the learning process is largely determined by the excellence of the students.

According to Geert Hofstede, in countries with low power distance, a relatively large part of the education budget is invested in secondary and high school education, which contributes to the development of the middle class in society. High power distance countries invest more in university-level education, thereby maintaining the gap between the elite and the less educated. (Hofstede 2011:69).

3.4. Workplace Dynamics

In cultures with a high-power distance, there is a strong emphasis on hierarchy and centralized power. This can manifest in a number of ways in the workplace, such as a rigid organizational structure, a clear chain of command, and a strong emphasis on respect for authority. Employers are seen as figures of authority, and employees are expected to be obedient and loyal. In these cultures, employees are willing to accept decisions made by their superiors without questioning them, and communication is conveyed from the top of the company with directives coming from those in higher positions and being followed by those lower in the hierarchy. Managers and employees do not consider themselves as having equal rights. In the organization power is concentrated in a few hands. There are also large differences in salaries. The educational level of workers is low and manual work is less prestigious than office work. Supervisors are entitled to certain privileges and they are supposed to initiate contact with their employees. The employees perceive their ideal boss as a benevolent autocrat or a "good father". In these organizations the relationship between superiors and employees can be often based on emotions. Externally visible status symbols consolidate the authority of the superior in such countries. For example, an employee might proudly tell his neighbor that his boss drives a bigger car or lives in a bigger house than the neighbor's boss. Older supervisors are usually more respected than younger ones.

In cultures with a low power distance, there is a greater emphasis on equality and participation. This can manifest itself in a flatter organizational structure, a greater emphasis on teamwork and collaboration, and a culture that values and encourages employees' input and feedback. Employees and supervisors perceive

each other as equals. The existing hierarchy is just an unequal distribution of roles established by convenience and these roles may be changed, so that someone who is a subordinate may become a supervisor in the future. The salary differences in the organization are relatively small. The workers are highly qualified, and high-skill manual work is more appreciated than simple office work. Privileges for superiors are generally not considered desirable. The same parking lot, the same canteen and the same toilets should be available for everyone. The supervisor should always be available to the employee and the ideal boss is a resourceful democrat. Employees expect to be asked for their opinion before making decisions that affect their work. However, they accept that the boss is the one who finally makes the decision. Status symbols are viewed with suspicion. For example, employees disapprove of the fact that their boss drives a large car at the company's expense. Younger bosses are generally more appreciated than older ones.

3.5. Communication and Advertising

Language is another example of the differences that can be perceived in power distance. In the USA, a country with a lower power distance, the personal pronoun "you" is used for both polite and informal addressing. In Spanish, French or Romanian, however, there are differences in the form of address (tu - usted, tu - vous, tu - dumneata - mata - Dumneavoastră).

In high power distance cultures, people dress elegantly, especially when they go out, since their position in the social hierarchy is largely determined by their clothes, shoes, makeup, and so on. In cultures with a low power distance, people care less about their appearance and often wear the same clothes both at home and in public. Presidents jog in shorts and movie stars wear jeans and T-shirts.

The advertising messages in high power distance cultures often feature powerful, authoritative figures, and they may use language and imagery that is designed to appeal to a sense of respect and obedience. Social status is particularly important, which is also reflected in advertising through the increased use of status symbols. Advertisements are more likely to feature older figures directing or giving advice to younger ones. The master-disciple principle is very often applied in advertising. (Schauerhofer, 2011:36).

Advertising messages in low power distance cultures feature more relatable and approachable figures and use language and symbolism that emphasizes collaboration and inclusivity. Older people try to look younger and the powerful try to look less powerful. In advertising, it is more common for younger people to give advice to older people. When children's behavior in the classroom is shown in advertisements, students may tease their teachers. Low power distance is also reflected in advertising in the use of anti-authoritarian elements such as parody or the use of humorous advertising in general. (Schauerhofer, 2011:37).

4. Teaching Intercultural Communication and Power Distance in ESP Classrooms: Strategies and Applications

Teachers can employ a variety of interactive and context-rich strategies to effectively explain intercultural communication and cultural dimensions like Power Distance. These strategies can significantly enhance students' engagement and understanding by connecting abstract theoretical frameworks with real-world professional applications. This approach not only improves linguistic competence but also encourages cultural awareness and critical thinking, all of them being necessary in today's globalized workforce.

4.1 Visual Aids and Interactive Tools

Visual aids play a crucial role in English for Specific Purposes (ESP). They facilitate comprehension, reinforce the acquisition of targeted vocabulary and concepts, and create a dynamic, engaging learning environment. In teaching cultural dimensions like Power Distance, teachers can utilize digital tools and visual resources that encourage student participation and intercultural comparison.

For example, teachers can introduce students to the Hofstede Insights website, an interactive platform that allows users to visually compare cultural dimensions across different countries. By navigating the site, students are exposed to comparative data that provide a real understanding of theoretical concepts such as hierarchical relationships and authority distance. A particularly effective classroom activity involves having students select two countries—Romania and another of their choosing—and analyze the differences in Power Distance. Through this exercise, students not only grasp the implications of PD but also begin to appreciate the broader socio-cultural variables that shape communication styles and workplace norms.

4.2 Real-Life Scenario Analysis

Incorporating real-life scenario analysis into ESP instruction encourages students to think critically about the role of cultural values in professional contexts. These activities often center on case-based discussions where students are asked to evaluate how Power Distance influences various aspects of international business communication, leadership styles, conflict resolution, and workplace hierarchy. For instance, students might be asked to consider how an American manager, accustomed to a relatively low Power Distance culture, would need to adapt when working in Romania, a country with a higher Power Distance score. Another scenario might explore the divergent communication styles between high and low PD cultures, particularly in terms of assertiveness, deference to authority, and decision-making processes. Discussions could also extend to the implications of Power Distance on teamwork, negotiation strategies, and leadership approaches. Such practical analyses help students link theory with practice, cultivating skills necessary for intercultural proficiency.

4.3. Expanded Class Activities

There are other classroom strategies that can be employed to reinforce the understanding of Power Distance and related cultural dimensions. Case study analysis is a fundamental approach in ESP classrooms. By examining real or simulated business situations through the lens of Hofstede's model, students can identify how cultural expectations influence managerial decisions and team dynamics. Teachers may also incorporate short video clips that depict various cultural power dynamics. These can include interviews with professionals from diverse backgrounds or scenes from documentaries and films illustrating intercultural interactions. Visual case analyses can be also effective. For example, students can examine international advertising campaigns that reflect different degrees of authority and control, encouraging them to interpret non-verbal cues, messaging hierarchies, and culturally embedded values.

4.4. Role-playing Simulation

Role-play is one of the most dynamic and impactful teaching strategies in ESP. Its purpose extends beyond mere language practice, engaging students in authentic, context-driven activities that simulate real-life communication scenarios they will likely encounter in professional or academic settings. These simulations are particularly effective in preparing students for the kinds of international and multicultural interactions they are likely to encounter in their professional or academic careers.

To explore the concept of Power Distance, teachers might set up a role-play scenario in which students simulate a meeting between representatives from a high PD culture and a low PD culture. Participants would need to adapt their communication strategies based on their assigned roles, thereby gaining firsthand experience with hierarchical and egalitarian interaction styles. These exercises build not only linguistic fluency but also empathy and strategic communication skills.

4.5. Debate as a Pedagogical Tool

Debate is another powerful technique for developing language proficiency and intercultural awareness in ESP classrooms. By engaging in structured argumentative discourse, students practice articulating ideas clearly, listening actively, and responding thoughtfully. These skills are essential for professional communication. More importantly, debates require students to critically engage with complex cultural concepts and consider multiple perspectives. Thus, it is important to use debate in ESP classes because it enhances language proficiency and develops intercultural skills. An example of a debate topic relevant to Power Distance might be: "Is low Power Distance always better in modern organizations?" This prompts students to explore the advantages and disadvantages of hierarchical versus egalitarian structures, drawing on examples from different cultures and industries. Such activities not only challenge students to use language persuasively but also deepen their understanding of the cultural values that underlie communication styles and workplace dynamics.

5. Reflective Writing Assignments

Reflection essays are a critical component of ESP instruction. They are links between theoretical learning and personal experience, allowing students to internalize course content and articulate its relevance to their lives and future careers. Reflective writing helps cultivate self-awareness, a key element of intercultural competence. In the context of Power Distance, teachers can ask students to write a reflection essay on how this dimension is manifested within their own culture. For example, a Romanian student might be prompted to consider how Hofstede's concept of Power Distance aligns with their personal and societal experiences. A guiding essay prompt might be: "How do Hofstede's dimension of Power Distance reflect in my culture and personal experiences?" Through this assignment, students engage in critical self-reflection and apply academic concepts to real-life scenarios, enhancing both their cognitive and communicative skills.

6. Conclusion

The importance of teaching intercultural communication cannot be overstated. In a world marked by diversity and globalization, students must be prepared to communicate across cultural boundaries. Understanding and teaching intercultural communication, particularly through frameworks like Hofstede's Power Distance, can lead to more inclusive, respectful, and productive relationships in educational, familial, and professional settings. By incorporating visual aids, real-life scenarios, multimedia resources, role-playing, debates, and reflective writing, teachers can create an immersive and effective learning environment. These strategies not only develop linguistic skills but also foster the intercultural competence necessary for success in today's diverse and interconnected professional world. The deliberate incorporation of Hofstede's cultural dimensions, especially the aspect of Power Distance, reconfigures the ESP classroom into an engaging environment that promotes experiential learning, encourages critical reflection, and cultivates communicative skills essential for global professional contexts.

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TEACHING BUSINESS CORRESPONDENCE: BRIDGING TRADITIONAL METHODS AND ARTIFICIAL INTELLIGENCE TO ENHANCE LEARNING EFFICIENCY AND PROFESSIONAL COMMUNICATION SKILLS

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Abstract: *Teaching business correspondence has historically been the core of Business English (BE) and business communication classes for English as a Second Language (ESL) or Foreign Language (EFL) students. Nevertheless, it often appears unappealing to students enrolled in these Business English classes. They frequently question its relevance, given the numerous easier forms of communication available. As a result, traditionally, teaching business correspondence is becoming increasingly challenging. It is difficult to capture and maintain students' attention when writing formal letters, paying attention to layout, and adhering to the necessary conventions and formulas. The paper aims to explore how AI can be integrated into teaching business correspondence and its potential benefits. The integration of Artificial Intelligence (AI) in the teaching-learning process, particularly in teaching business correspondence, is a powerful approach that reshapes pedagogical methodologies. This paper focuses on the role of AI in enhancing learning efficiency and developing professional communication skills among economics students. Recent advancements in AI technologies, including machine learning, have opened new possibilities for tailored learning experiences. These technologies facilitate instruction that adapts to and meets students' individual needs, thus improving engagement and comprehension in business correspondence tasks.*

Keywords: *business; correspondence; AI; English; traditional; innovative; method*

JEL Classification: Q55; L81; Y60

1. Introduction

The demand for specific skills in graduates led to including business correspondence in curricula decades ago. Business communication teaching evolved to meet changing needs, such as letters, faxes, memos, and emails. The present study explores the importance of blending traditional and innovative teaching methods when teaching English for Specific Purposes. In a world of speed and change, the shift to instant messaging has posed challenges when teaching business correspondence. Students may find traditional formats outdated compared to quick, informal exchanges they feel comfortable with, yet these skills

remain essential for professional interactions. The reluctance to engage with traditional business communication methods challenges teachers, as these skills are still crucial in many sectors.

1.1. Business correspondence writing - a critical skill in professional settings

Business correspondence is essential in a professional environment, influencing relationships, organizational efficiency, and overall professional image. Writing is a difficult skill (Maharani, 2018). Business writing, whether for emails, reports, or memos, requires clarity, precision, and an understanding of the audience (Wu et al., 2022). It facilitates collaboration, helps convey ideas succinctly, and enhances operational effectiveness (Xue-Feng, 2018). As organizations adapt to technological advancements, the demand for skilled employees capable of dealing with both traditional and digital platforms has increased. This highlights the importance of equipping students with writing skills to succeed in diverse business environments (Listiana et al., 2023). Research refers to challenges students face in mastering business writing, especially in understanding conventions and the audience (Rong & Nair, 2021). Incorporating peer feedback and technology-driven methods can improve writing competencies (Fleischmann & Getchell, 2024). Furthermore, as AI tools become more prevalent in business communication, students must develop AI literacy to integrate these technologies into their writing practices (Garner & Shank, 2018). Mastering business correspondence is essential for professional success and requires adaptive educational frameworks to meet modern workplace demands.

Importance of teaching business correspondence

Business correspondence develops essential skills, especially in fields like economics, where effective communication is vital. Mastery of business writing enhances employability, as employers seek candidates with strong communication skills (Aimoldina, 2017; Sarapaivanich & Patterson, 2014). Writing skills also contribute to critical thinking and analytical abilities, necessary in economics for tasks like writing reports and proposals (Daniel et al., 2023). Moreover, effective communication fosters trust and credibility, influencing outcomes in collaborative fields like economics (Sarapaivanich & Patterson, 2014). Business correspondence improves organizational success by promoting transparency and facilitating decision-making (Kondratieva et al., 2021). As the business landscape evolves, mastering business correspondence remains crucial for educators and professionals.

2. Literature review

Teaching business correspondence, particularly in fields like economics, has evolved significantly, with research focusing on various pedagogical approaches to improve writing skills. Studies show that combining genre-based and data-driven learning enhances business email writing, using authentic language examples (Sujinpram & Wannaruk, 2024), and that case methods improve student engagement and language abilities (Zhang, 2024). Other research emphasizes the

role of business correspondence in intercultural communication, highlighting the importance of teaching both language and cultural context (Shafazhinskaya et al., 2023).

Recent studies also emphasize student-centered and creative teaching strategies, where educators adapt lessons to students' needs, fostering critical thinking and problem-solving skills. The rise of AI tools, such as ChatGPT, has shifted from being a challenge to a resource for language learning (Hong, 2023), with recorded teaching videos becoming a beneficial innovation post-pandemic (Astutik et al., 2022).

AI integration in business communication education has gained significant attention for enhancing language learning and writing skills. AI tools offer personalized learning experiences, providing real-time feedback on grammar, tone, and structure, which improves students' writing habits (Davis, 2024; Lee et al., 2022; Barua et al., 2022). Despite the benefits, concerns about over-reliance on technology, erosion of critical thinking, and data privacy issues have emerged (Kim & Zhai, 2024; Çela et al., 2024). Educators must strike a balance between utilizing AI and preserving human-centered learning to ensure students continue developing critical communication skills. Thus, AI's role in enhancing business communication education is significant, but careful consideration is required to balance its integration with traditional methods to prepare students for the professional world.

3. Traditional teaching practices vs. Innovative, AI-integrative practices

Traditional methods of teaching business correspondence involve structured, classroom-based approaches, focusing on formal writing skills, grammar, format, and etiquette. These methods have been widely used for years to ensure that students or employees understand the essential aspects of professional communication in business settings. Innovative, AI-integrative practices for teaching business correspondence use technology to enhance the learning experience, making it more interactive, personalized, and efficient. By incorporating AI and other digital tools, instructors provide real-time feedback, tailor the learning materials, and simulate real business communication scenarios.

3.1 Description of traditional methods used in teaching business correspondence.

When we refer to the traditional teaching methods for business correspondence, we understand they are often characterized by rigidity and focus on theoretical foundations, structure, formality, and the conventions of professional communication (Xie, 2021). Common traditional instructional strategies include lectures, rote memorization of formats, and using standardized templates for correspondence like letters, emails, and memos (Li, 2023). Such approaches can decrease the engagement levels of students, who may find the stiff structure less relatable compared to more innovative methods (Parcha, 2023).

Traditional teaching also relies on teacher-centred methodologies, where the educator is viewed as the primary source of knowledge and the leading actor. In such environments, learners are often passive participants, impeding their ability to

practically apply knowledge (Parcha, 2023). However, critics of these methods consider that they fail to address students' individual learning needs and do not adequately prepare them for real-world business correspondence applications, given the fast-moving evolution of the workplace and communication norms (Xie, 2021). For instance, relying on theoretical instruction without integrating practical exercises, such as role-playing or simulations of business communications, can lead to a lack of readiness for actual business interactions (Li, 2020).

Moreover, technology integration remains underexplored, mainly in traditional business correspondence teaching, where educators tend to emphasize manual skills over digital proficiency. This presents a significant gap since contemporary business environments increasingly demand adaptability to digital communication tools and platforms (Yashan et al., 2024). The absence of blended or innovative methodologies, such as immersive simulations or technology to enhance interactive learning, dramatically diminishes the chances of engaging students in meaningful, applicable, real-world correspondence practice (Chen, 2021).

In summary, traditional teaching methods provide basic skills in business correspondence, but they fail to engage students in the process. Their rigidity, along with little or no integration of technology and real-world practices, calls for a shift towards more innovative instructional strategies that can better prepare students for their future careers.

We will briefly enumerate some of these methods' common aspects and highlight some of their most significant features.

a. Lecture-based learning in business correspondence involves teachers presenting key principles such as the format, tone, structure, and grammar of business documents like letters, emails, and memos. This method focuses on theoretical aspects of business communication, including formal tone, appropriate language, and document structure, emphasizing accuracy in grammar and syntax. It is teacher-centered, with students engaging primarily in note-taking and passive learning, which may limit the development of practical skills (Winarno et al., 2018). Although this approach equips students with an understanding of language conventions and business writing standards, it lacks interactive engagement, which could enhance deeper learning and retention (Winarno et al., 2018; Mascle, 2013). The use of teaching aids like handouts and multimedia can support learning, but this method often fails to engage students in real-world, practical communication (Listiana et al., 2023). Briefly, this approach provides a basic understanding of business correspondence, yet it must incorporate more interactive and practical strategies to better prepare students for modern professional communication (Nia & Fithriani, 2023).

b. Textbook-based learning in business correspondence provides essential resources, covering writing styles, letter formats, and case studies. They help students understand professional communication norms and develop necessary skills. Topics include letter formats (e.g., subject lines, salutations, body paragraphs, and conclusions) and professional vocabulary, such as industry-specific language and polite communication. Textbooks include real-world examples for analysis and practice, offering a structured approach to mastering business communication.

c. Templates and samples. Students often study samples and templates of various business correspondence, such as cover letters, resignation letters,

business proposals, and inquiry letters. These serve as models that students can use as an inspiring source in their work. This well-established method provides students with concrete frameworks and guidelines for understanding various business document types, aiding in the acquisition of writing skills and enhancing students' confidence. Firstly, model examples of essential documents such as cover letters, resignation letters, business proposals, and inquiry letters are introduced to students. Students then follow professional writing conventions and understand the formats they will eventually apply in practice. This approach includes several techniques that help students practice and apply their knowledge: filling in blanks and modifying sample letters. Instructors might provide students with incorrect or poorly structured examples, asking them to revise and correct them. This method teaches proper layout and structure, effective communication, attention to detail, and self-editing practices.

d. Practice-based learning emphasizes hands-on exercise and active participation in writing for business purposes. This approach relies on strategies such as role-playing exercises and written assignments. Written assignments form the spine of traditional learning in general and business correspondence in particular. As part of written assignments, teachers may encourage students to use digital communication tools and platforms (e.g., email clients and online collaboration tools), enabling students to apply the theoretical knowledge gained in lectures to practical situations.

3.2 Description of innovative methods that could be used alternatively in teaching business correspondence.

Traditional methods have effectively built the first layer of knowledge and skill. However, they might not fully engage students in interactive, real-world business correspondence applications in the modern, digital workplace. Incorporating artificial intelligence (AI) into the teaching of business letter writing offers teachers innovative methodologies to enhance student engagement and individual learning experiences.

a. AI-powered writing assistants. AI platforms like Grammarly and ProWritingAid provide students with real-time feedback on their writing, focusing on grammar, tone, structure, and style. These platforms can help students refine their business letters by improving clarity and professionalism when students receive suggestions for alternative phrasing, enabling them to convey their ideas more effectively, and encouraging independence when students perform self-correcting utilizing AI-driven feedback, thus building confidence in their writing while learning to recognize their patterns of error.

b. Template generators. Within the business correspondence environment, AI creates customizable letter templates that guide students through the writing process (Mondal et al., 2023; Tajik, 2025), helping them improve written communication and enhancing clarity and effectiveness in business correspondence. These templates may be letters with gaps that miss essential elements (like salutations, subject lines, and sign-offs) and include placeholders, ensuring students rehearse correct formats for different business letters (e.g., formal requests, inquiries, or complaints). Automation offers clarity and accuracy. Moreover, these templates can be continuously updated to reflect current trends in

business communication, ensuring that students are working with the most up-to-date standards.

c. AI chatbots are digital tools that allow users to interact with systems through text or voice-based communication, integrated into platforms like Facebook Messenger, WhatsApp, or voice assistants like Alexa. In education, they serve as virtual tutors, helping students with assignments and providing personalized learning experiences (Bourgonjon et al., 2018). Chatbots can simulate business communication scenarios, allowing students to practice responding to emails or letters. The AI then provides feedback on structure, tone, and adherence to formal conventions, offering more precise analysis than manual reviews and identifying areas for improvement (Shawar & Atwell, 2007).

d. Real-time collaborative writing Real-time collaborative writing allows multiple individuals to work together on a document, providing instant input, editing, and feedback. AI tools in platforms like Google Docs or Microsoft Teams enable students to collaborate on business correspondence tasks, offering real-time suggestions and feedback. This method promotes teamwork and continuous revision, helping students improve their documents as they work. Key benefits include immediate feedback and the opportunity for students to learn from each other while receiving AI-driven expertise (Grubert et al., 2020).

e. Speech-to-Text for drafting letters. **Speech-to-text** is an AI technology that converts spoken language into written text. This tool allows students, especially those who struggle with writing or typing, to dictate their business letters rather than physically typing them, enhancing writing processes. (Kong et al., 2024). The AI tools (e.g. Google Dictation, Google Assistant, Otter.ai) transcribe the spoken words into written text and help to format the text according to formal business letter conventions in terms of structure, grammar, punctuation, and tone. Employing AI-powered tools and strategies when teaching business correspondence, teachers create a dynamic and engaging learning environment, where students focus better on their task and work faster by dictating their writing rather than typing.

f. AI-based adaptive learning platforms. AI platforms like Duolingo for Business English, Lingvist, Rosetta Stone, EnglishClass101, Voxy, or Babbel for Business English, personalize the learning experience, adapting exercises according to the student's level of knowledge, and further on the student's progress and weaknesses. These platforms provide practice in writing business inquiries, complaints, and proposals, ensuring that each student receives the practice they need.

g. Virtual AI tutors for business writing. Virtual tutors, such as ChatGPT or Jill Watson, offer interactive and personalized writing practice. Students begin conversations with these tutors in simulated business communication situations, and receive real-time feedback on language, tone, structure, and content. This tool allows students to practice business correspondence like emails, customer inquiries, or formal reports at any time, benefiting from 24/7 support and encouraging students to practice outside class hours.

h. Plagiarism detection tools like Turnitin and ProWritingAid help students maintain the appropriate tone and structure in business correspondence and also detect plagiarism, ensuring that the writing is formal and professional. These tools

suggest revisions and refinement when necessary and train students to assume responsibility when writing, keeping their work original and free of plagiarism.

i. AI-integrated business communication simulations imitate a realistic business environment, providing students with hands-on experience in responding to customer complaints, negotiating deals, or writing professional correspondence. Platforms like SimTutor or The Business Simulation Game adjust simulations to meet the students' needs when adjustment is required, improving their communication by developing problem-solving and decision-making skills.

3.3. Blended learning approach.

The integration of traditional and innovative methods in teaching business correspondence can significantly enhance learning outcomes. By blending the strengths of both approaches, educators can cater to diverse learning styles, improve student engagement, and ensure that students acquire both basic knowledge and modern, practical skills. In a blended learning environment, students typically attend regular lectures and workshops, use textbooks and solve exercises (traditional), followed by engaging in online activities, AI-based writing assistants, or simulations (innovative). For instance, a traditional lecture could introduce the fundamentals of business correspondence, such as format, tone, and structure, followed by interactive activities where students use AI-powered tools like Grammarly to refine their writing. Additionally, before class, students may watch videos or read material about writing formal emails and business letters. During class, they can apply their knowledge through group activities using AI tools or simulated business scenarios, receiving real-time feedback. This model combines the best of theoretical instruction and hands-on practice, making learning more engaging and personalized (Teng & Zeng, 2022). This hybrid approach allows students to develop complex skills and be prepared for business environments.

4. Writing inquiry letters with AI - Lesson Plan

Here is a sample lesson plan that aims to bridge a gap by combining traditional business writing instruction with the power of AI-driven technologies for a more engaging, personalized learning experience. Students will practice writing formal inquiry letters, using AI tools to refine drafts and improve clarity, tone, and professionalism. The lesson integrates individual practice, peer feedback, and AI assistance to foster self-editing and revision skills. By the end of the lesson, students will have gained practical business writing skills and understand how AI can support professional communication, emphasizing ethics and responsibility.

Objective: To write formal inquiry letters by integrating traditional writing skills with AI-driven tools that provide instant feedback, a more attractive and engaging learning atmosphere, while paying attention to the requirements of effective business communication. *Duration:* 90 minutes. *Materials needed:* 1. computers or tablets with internet access, 2. AI-powered writing tools (e.g., Grammarly, Jasper, or an AI-powered business letter generator), 3. traditional inquiry letter examples and templates, 4. Google Docs or a collaborative writing platform for group work, 5.

projector and screen for demonstrations, 6. whiteboard/Flip chart for brainstorming and group discussion.

Lesson Plan:

1. Introduction to Writing Inquiry Letters (15 minutes)

Traditional Approach: First, the discussion about the structure, layout and components of an inquiry letter, stressing the key elements: proper salutation (e.g., "Dear [Recipient's Name or Title]"), a clear and concise introduction stating the purpose of the inquiry, detailed/ relevant context, an adequate closing (e.g., "Sincerely" or "Kind regards").

A sample inquiry letter is projected on the screen to illustrate these components.

AI Introduction: The concept is defined as a useful writing tool that can help refine the inquiry letter. Explanation regarding AI as a provider of real-time feedback on tone, clarity, and structure, which is especially useful for learners struggling with maintaining professionalism or writing concisely.

2. AI-Powered Inquiry Letter Writing Practice (30 minutes)

Step 1: Provide students with a scenario in which they need to write an inquiry letter (e.g., inquiring about job opportunities, asking for product information, or requesting details about a service). Each student will choose one of the provided scenarios to write their letter.

Step 2: Students will start using an AI-powered letter generator (such as a template tool or an AI writing assistant) to draft an inquiry letter. The AI tool will help them to select the correct format, tone, and relevant info, ensuring that they follow formal business letter conventions.

AI Assistance: The AI tool will provide suggestions for improving the letter's clarity, tone, and grammar as students write.

It will suggest how to phrase questions politely and professionally, helping students avoid informal language or overly direct phrasing.

If students miss key components (e.g., failing to include a polite request or appropriate closing), the AI tool can point it out and suggest revisions.

3. Peer Review with AI Feedback (20 minutes)

Step 1: Students will form pairs and will exchange their inquiry letter drafts; then they will provide peer feedback using traditional methods, reviewing for clarity, tone, and completeness. They will observe and focus on areas where the letter could be improved or made more polite and professional.

Step 2: After peer review, students will use AI tools like Grammarly or ProWritingAid, and will upload their letters for additional feedback on grammar, structure, and vocabulary usage.

Step 3: Students will revise their inquiry letters twice, focusing on improving the clarity of their letters and on meeting the requirements of professional inquiries.

4. Final Refinement and Group Discussion (15 minutes)

Traditional Approach: Some students will share their revised inquiry letters with the class. Then they will discuss the common, basic features of these letters and how they should conceive them in the first draft.

AI Reflection: The discussion will focus on how AI tools helped with the writing and revision process. Students analyze and reflect on the benefits of using AI for self-editing and improving their writing skills.

Homework/Extended Activity: Students will have to write a new inquiry letter (e.g., about a different topic) independently, using both the traditional approach and the AI tools to refine their writing. They should bring their drafts to the next class for further feedback.

5. In conclusion

Incorporating AI technologies into the teaching of business correspondence increases students' writing proficiency and communication skills. By combining traditional methods with AI tools like writing assistants, template generators, and real-time collaborative platforms, teachers can create an interactive classroom experience that prepares students for an ever-changing working environment. AI-driven tools enable students to practice business communication in a way that is designed according to their needs. The blended learning approach, which integrates AI with conventional teaching, can significantly improve student outcomes and enhance their understanding of professional communication. Moving forward, AI's role in business English courses will help bridge the gap between theory and real-world practice in business communication.

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LA COMMUNICATION D'AFFAIRES : DE LA LETTRE COMMERCIALE AU COURRIEL ET AUX PLATEFORMES / THE BUSINESS COMMUNICATION : FROM BUSINESS LETTERS TO EMAILS AND PLATFORMS

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Abstract: *Written communication has always been essential in a business environment, with written documents holding undeniable legal value. In the context of technological changes over the last 30 years and the rapid development of the Internet, digital communication has gradually replaced traditional means of communication. We have moved from transmitting information through official letters to fax and then to email. In the past, a small number of individuals with specialized training were responsible for drafting business letters, but nowadays, every employee of a company must handle their own correspondence. The shift in devices and the rapid pace at which written communications are drafted and transmitted via the Internet or mobile phones bring about changes in discursive practices. This paper examines email as a discourse genre, first analyzing its differences from traditional correspondence. We then explore its characteristics, particularly its formal flexibility and its grounding in the interactive dynamics specific to digital environments. We also highlight its crucial role in managing professional relationships, facilitating efficient communication, and adapting to contextual needs. Recent business language textbooks propose numerous exercises focusing on understanding professional emails and developing a wide variety of emails while also considering other types of written documents (social media posts, articles for the company's website). Conceiving professional emails remains a fundamental exercise in business language courses, familiarizing students with the need to communicate with internal colleagues and external partners, thereby improving their skills in written comprehension and expression and better preparing them for integration into the labour market, autonomy, and adaptation to the current business environment.*

Keywords: *digital communication, business communication, digital genres, email, communication platforms.*

JEL classification: Z13, Z19.

1. Introduction

L'évolution des pratiques d'écriture due à l'essor des médias électroniques a profondément transformé la communication moderne. On parle aujourd'hui de « communication numérique écrite » ou « communication écrite en ligne », un « hyper-genre » (Pop, 2017) qui englobe, selon Marcoccia (2016), « divers types

de situations de communication interpersonnelle (privée ou publique) par courrier électronique, messagerie instantanée, forums, tchats, plateformes de réseaux sociaux, etc. ». Marcoccia (2016) définit et décrit ces nouvelles formes de communication, en remarquant des caractéristiques dérivant de « l'environnement numérique », telles que leur formatage technologique, leur plurisémiotité (combinaison : texte, image, icône, « techno-signes ») leur fort degré d'intertextualité (intégration d'autres fragments textuels) et leur dimension hypertextuelle.

Il y a de nos jours des exigences de rapidité et d'accessibilité, les échanges sont presque instantanés, permettant une communication fluide et efficace. Marcoccia (2016) distingue des formes asynchrones de communication (le courrier électronique, les forums de discussion) et des formes synchrones de communication (le chat et la messagerie instantanée).

Dans le monde de l'entreprise, savoir rédiger des notes de service, des comptes rendus, des procès-verbaux, des rapports, des notes de synthèse, des lettres et des courriels professionnels représentait une des compétences clés des managers et des cadres. Aujourd'hui, tous les employés doivent avoir des compétences multiples et la capacité à réagir rapidement, car de nombreuses entreprises organisent leurs réunions sur la plateforme Teams, qui permet aussi bien des échanges oraux en temps réel que le partage de documents et la co-production de documents, en privilégiant le travail collaboratif.

La communication efficace à l'intérieur de l'entreprise (avec les cadres et les employés) et à l'extérieur (avec les fournisseurs, les clients, les partenaires) est une préoccupation permanente des managers, représentant un facteur clé de succès. Dans la présente contribution nous allons examiner le courrier électronique, un outil important de communication écrite aussi bien interne qu'externe, qui a remplacé graduellement le courrier traditionnel, ayant comme dispositif d'élaboration et de transmission l'Internet et la téléphonie mobile. Nous allons analyser les spécificités de ce genre numérique, très utilisé dans les interactions professionnelles. La rapidité des échanges entraîne une évolution du ton et du style des messages par rapport à la lettre d'affaires : l'écriture devient plus concise et informelle, même dans des contextes professionnels, modifiant ainsi les normes traditionnelles de la correspondance. Les personnes sont impliquées dans une interaction continue, mais la profondeur des échanges est moindre.

Nous allons montrer également que la communication d'affaires ne cesse d'évoluer et que les échanges professionnels modernes se déroulent à l'aide de formes hybrides, fortement influencées par le médium. Ainsi, les plateformes numériques jouent un rôle clé dans la communication, permettant aux entreprises de collaborer efficacement et de gérer les échanges internes, d'interagir avec leurs clients et partenaires, et de diriger leurs opérations à grande échelle.

2. Le courrier électronique vs le billet

Dans un article paru en 2005, Labbé et Marcoccia s'interrogeaient sur les évolutions génériques engendrées par l'arrivée d'un « nouveau support matériel (le numérique) » et posaient la question de savoir s'il fallait parler de genres nouveaux

ou de « recomposition » de genres anciens. Ils ont soutenu l'hypothèse que les genres numériques se trouveraient dans « un rapport de continuité avec des genres préexistants ». Leur étude de cas proposait une comparaison entre le billet (un message bref, apparu au XVII^e siècle, plus familier que la lettre mais conservant une expression soignée) et le courrier électronique, afin de mettre en lumière les dynamiques de transformation et de continuité propres à ces formes de communication. Dans les deux cas il s'agit de « dialogues épistolaires de forme brève » qui ont des points communs :

- la brièveté
- la clarté
- le caractère souvent informel
- la dimension ludique
- la présence de jeux sur le langage ou de jeux graphiques (soulignements, majuscules, gros caractères)
- la fonction informative et pratique (organisation de l'activité)
- la visée relationnelle (entretenir un réseau de relations : vœux, remerciements)
- la fonction d'annoncer ou de reprendre un échange
- la séquentialité (insertion de fragments du texte initial dans le message de réponse).

Étant donné ces caractéristiques, Labbé et Marcoccia considèrent que le courrier électronique est « une variation numérique » du billet et que la modification du support n'entraîne pas l'apparition d'un genre nouveau. D'ailleurs, ils soulignent le fait que les deux genres étaient en concurrence avec le genre de la correspondance classique et que la préférence pour les messages brefs apparaît lorsqu'il est nécessaire de « mener plusieurs "tours de parole" par écrit ».

3. Le courrier électronique vs la lettre traditionnelle

Gajewska (2016) propose une étude comparative du courrier traditionnel et du courrier électronique, en donnant des exemples extraits de la correspondance commerciale. Dans les deux cas, les messages sont construits sur la base d'un schéma : le « normolettre » pour la lettre d'affaires traditionnelle et la « structure pré-formatée » dans le cas du courrier d'entreprise. La linguiste souligne toutefois que le mode de transmission différent a entraîné des fonctions distinctes, avec des « potentialités jusqu'à présent inconnues » du courriel.

La lettre et le courriel fournissent des informations contextuelles, car la réception se réalise un certain temps après la rédaction du message, en l'absence de l'émetteur. Même si dans le cas du courriel la réception est « présumée imminente » (Cusin-Berche, 1999), la lecture est différée.

Dans le paratexte de la lettre on trouve des informations concernant l'émetteur, le destinataire, le temps et le lieu de la rédaction.

Dans la lettre traditionnelle, la signature manuscrite et dactylographiée avait valeur de preuve légale. Dans le courriel, la signature « se décline au pluriel et prend des formes très variées » (Gajewska, 2016), ayant plutôt une fonction informative et, selon certains linguistes (Mourlhon-Dallies & Colin, 1999, cités par Gajewska, 2016), faisant partie du texte du message, non du paratexte. La signature

automatique donne des indices sur l'auteur du message, son département, son entreprise et peut comporter une typographie spéciale (couleurs, taille et type des polices, procédés de mise en évidence). Parfois, elle comprend des logos, des slogans, des liens cliquables, devenant un outil marketing. Gajewska (2016) indique une nouveauté dans la communication écrite d'entreprise, à savoir la « dimension relationnelle » de la signature, qui est un geste de considération ou une forme de politesse envers le destinataire.

La linguiste met également en évidence les différences d'organisation textuelle, plus précisément le plan du courriel traditionnel (le schéma « passé-présent-futur » ou « introduction-développement-conclusion ») est remplacé par le plan « en pyramide inversée » (mise en avant de l'essentiel, de l'information la plus importante).

Selon Gajewska, les propriétés techniques du médium déterminent certaines spécificités du courrier électronique, qui peut être sujet à des modifications, à des reprises, étant une forme « instable ». On a la possibilité de sélectionner l'option « réponse automatique », on peut transférer le message à un autre destinataire, on peut mettre des destinataires en copie. Ainsi, le courriel devient « objet complexe », supposant deux niveaux énonciatifs (un contexte énonciatif initial et le contexte énonciatif de l'acte de la transmission). Il s'agit d'une spécificité textuelle propre, les courriels étant souvent « des plurilogues qui empruntent à une multiplicité de sources énonciatives ». (Gajewska, 2016)

La linguiste remarque la difficulté à identifier les sources énonciatives dans le cas du transfert, de l'insertion de fragments de textes initiaux dans d'autres courriels, de la modification de ces fragments. Il s'agit dans ce cas d'une autre spécificité du courriel par rapport à la lettre traditionnelle, dérivant du changement de support.

Le courriel est caractérisé par l'interdiscursivité, étant plutôt un « dialogue de textes écrits » qui entrent en interaction avec d'autres textes et forment « des unités sémantiquement complètes ». (Gajewska, 2016) Alors que la lettre traditionnelle était un texte autosuffisant, le courriel reformule des informations existantes dans des messages antérieurs, renvoie à ceux-ci par des procédés d'anaphore ou de thématisation.

En analysant la correspondance d'affaires, Gajewska précise que la lettre était écrite à la suite d'entretiens oraux, pour confirmer des décisions prises et indiquer les conclusions des échanges oraux. L'oral était caractérisé par l'imprévu, « l'écrit était censé constituer la preuve juridique des résolutions finales ».

Le courriel remplace de nos jours le courrier papier et le téléphone, étant plus discret et moins intrusif. Un échange de courriels entre plusieurs personnes présente l'avantage que chaque énonciateur peut apporter des notes. Un document attaché peut être l'objet de modifications successives réalisées par plusieurs membres du groupe de travail, favorisant la coopération.

Les appels téléphoniques et les e-mails jouent des rôles complémentaires dans la communication. Les appels téléphoniques permettent une interaction plus immédiate et personnelle. Ils sont souvent privilégiés pour clarifier rapidement des points, résoudre des problèmes urgents ou renforcer les relations avec un ton plus humain et spontané. Les e-mails offrent une trace écrite, facilitent l'organisation et permettent de transmettre des informations détaillées, souvent confidentielles, à

plusieurs destinataires sans être intrusifs. Ils sont idéaux pour les communications réfléchies, les communications officielles, les annonces importantes ou les échanges qui nécessitent de la documentation. Ils peuvent être archivés et constituer une preuve légale en cas de litiges.

En combinant les deux, on peut bénéficier de l'efficacité des e-mails pour structurer les échanges et de la rapidité des appels pour traiter les urgences ou ajouter une touche personnelle.

Alors que pour Gajewska (2016) le courrier électronique reste un mode de communication, qui n'obéit pas à des normes génériques strictes et ne suppose pas de routines strictes, à la différence du courrier traditionnel qui, en revanche, est considéré comme un genre institué de mode (1), peu sujet à variation, caractérisé par « des formules et des schèmes compositionnels préétablis » (Maingueneau, 2007), pour Cusin-Berche (2003) il s'agit d'un nouveau genre discursif, qu'elle appelle *le genre messiel*, influencé par le medium, ayant des spécificités techniques, discursives et stylistiques propres.

4. Les plateformes collaboratives

Dans la communication d'entreprise, d'autres outils sont devenus indispensables : les plateformes collaboratives (Talkspirit, Workplace, Teams, Jamespot).

En donnant l'exemple de la plateforme Teams, on entre dans un autre paradigme : entrelacement entre l'oral et l'écrit, communication instantanée / partage de documents écrits, travail individuel / travail collaboratif, opérations courantes / réalisation d'un projet d'envergure.

Cette plateforme est idéale aussi bien pour les conversations informelles que pour les réunions officielles et les présentations, avec des participants se trouvant à distance. La plateforme offre des fonctionnalités complexes : chat individuel ou de groupe, partage de documents, possibilité de modification, de co-édition et de centralisation de fichiers, enregistrement des réunions, possibilité de transférer les courriels sur la plateforme, option d'intégrer des participants externes aux rencontres.

Les entreprises qui veulent accroître la productivité et l'efficacité de leurs équipes recourent massivement à la plateforme Teams, car elle stimule la collaboration et le travail en vue d'un objectif commun.

La communication en temps réel est devenue une nécessité et la plateforme Teams, en proposant une hybridation entre les modes de communication, permet de combiner le synchrone et l'asynchrone, pour une collaboration fluide et dynamique.

En déroulant leurs activités sur la plateforme Teams, les cadres et les employés doivent mettre en œuvre simultanément les quatre compétences linguistiques fondamentales (compréhension écrite et orale, production écrite et orale) et gérer les aspects interculturels (dans le cas très fréquent d'équipes plurilingues). Grâce aux échanges interactifs, à la diversité des contenus et aux outils disponibles, elle permet de renforcer la maîtrise de la langue dans un cadre dynamique et adapté aux besoins de l'utilisateur.

5. Les manuels de FOS et la formation de la compétence rédactionnelle

Dans l'entreprise, la tâche de rédiger des lettres d'affaires était confiée aux secrétaires, qui avaient une formation spécialisée dans le domaine. De nos jours, tous les employés d'une entreprise doivent être capables de lire et écrire des documents professionnels et de gérer leur propre correspondance.

Les Chambres de Commerce et d'Industrie (CCI) organisent depuis longtemps des cours de français des affaires comprenant des modules dédiés à la correspondance commerciale (lettres et courriels), ainsi que des examens pour certifier la capacité à travailler en français. En général, les personnes qui vont travailler en France ou bien celles qui œuvrent dans une multinationale ou dans une entreprise traitant des affaires au niveau international suivent de tels cours pour leur remise à niveau et pour acquérir des compétences rédactionnelles en français.

Elles peuvent également consulter des guides pour la rédaction du courrier professionnel et des recueils de modèles de lettres (Périer, 1994, Dipše, 2001). Les guides et les manuels de correspondance traditionnelle proposent la classification : courrier externe (pour la gestion des relations avec les partenaires extérieurs à l'entreprise) / courrier interne (pour une communication efficace au sein de l'entreprise). Les lettres d'affaires sont également classées en fonction de la thématique abordée (relations avec la banque, relations avec les assureurs, relations avec les fournisseurs, commandes, réclamations). Les guides fournissent des conseils concernant la mise en page, l'objet de la lettre, les formules d'appel et les formules de politesse, le ton, le registre, le style de la lettre (clarté, simplicité, concision, courtoisie).

Gajewska (2016) remarque que par rapport à la lettre, dont les fonctions sont de « présenter, enregistrer, justifier, réclamer et ordonner », le courrier a les objectifs suivants : résoudre un problème, demander la réalisation d'une action, transmettre une information. Il y a moins de manuels concernant le courriel professionnel. Ceux-ci contiennent plutôt des conseils rédactionnels et des exemples de courriels et non pas de « modèles » de communication. En revanche, il y a de nombreux sites web contenant des exemples de courriels professionnels, des conseils de base pour la rédaction ou bien des guides de bonnes pratiques.

Presque tous les manuels de français des affaires des années 1990-2000 contiennent un chapitre consacré à la correspondance professionnelle. Ainsi, l'unité finale du manuel *Le français de l'entreprise* (Danilo, Tauzin, 1990) présente le « normolettre » et recommande des formules d'appel et des formules de politesse. On y trouve de nombreux exercices de reformulation et des suggestions relatives au style de la lettre.

En 1993, Danilo et Perforinis ont fait publier une méthode de communication professionnelle (*Le français de la communication professionnelle*) et ils ont introduit dans plusieurs modules des exercices de compréhension écrite et de production écrite de lettres d'affaires et de courriels. Un des modules est entièrement consacré à la lettre commerciale et la dernière unité du manuel décrit d'autres formes de communication écrite (le minitel, la télécopie, le télex, le courrier électronique) et orale (la réunion-téléphone, l'audioconférence, la visioconférence, la vidéotransmission).

Les méthodes plus récentes de français professionnel, centrées sur l'approche actionnelle, présentent des thèmes actuels et motivants et organisent les modules de façon à travailler les quatre compétences (compréhension orale, compréhension écrite, production orale, production écrite). Dans les méthodes *Travailler en français en entreprise* (2007, 2009) et *Objectif Diplomatie* (2011, 2017), chaque thématique axée sur la réalité de la vie professionnelle est l'occasion de suggérer des exercices de compréhension et de production de courriels. Dès le niveau A1, les activités ont pour but d'exercer la capacité de communication en situation. Il n'y a plus de chapitre séparé consacré à la correspondance commerciale et la lettre d'affaires n'apparaît plus.

La méthode *Édito Pro. Français professionnel B1* se focalise sur la « résolution de tâches authentiques, en lien étroit avec les situations de communication propres au monde du travail du XXI^e siècle » (Holle et al., 2020: 3). Toujours axé sur l'approche actionnelle, ce manuel intègre le courrier électronique dans quelques modules d'apprentissage et introduit d'autres documents authentiques extraits des réseaux sociaux (forums de discussion, pages Facebook) et des sites web d'entreprises. Les conseils de rédaction, clairs et succincts, sont réunis dans des encadrés d'aide à la communication. En plus de la rédaction de courriels, le manuel contient des tâches d'élaboration de textos, de messages à poster sur les réseaux sociaux ou bien de documents pour le site web d'une entreprise. Par conséquent, la partie consacrée à la compréhension écrite et à l'expression écrite se diversifie, incorporant beaucoup de formes de communication numérique.

Il faut signaler qu'actuellement les étudiants ont la possibilité de s'appuyer sur l'intelligence artificielle pour réaliser les exercices de rédaction énoncés par les manuels et pour rédiger des courriels de manière efficace et professionnelle. L'IA peut les aider à structurer leurs messages, à améliorer leur style d'écriture, à corriger les fautes et même à adapter le ton en fonction du destinataire (formel, amical, académique, etc.).

En outre, les manuels de français des affaires ont parfois du mal à suivre l'évolution rapide des outils numériques et des modes de communication professionnels. Les éditeurs et les spécialistes de FOS essaient toujours de créer du contenu adapté aux réalités modernes, intégrant les nouvelles pratiques linguistiques et communicatives et prenant en considération les spécificités des échanges actuels : instantanéité, hybridation et multimodalité. Peut-être que les entreprises elles-mêmes pourraient initier des ressources internes et des stages pour mieux former leurs futures équipes à la communication professionnelle digitalisée.

6. Conclusion

Dans le contexte de l'évolution des nouvelles technologies de l'information et de la communication, le professeur de langues étrangères doit remettre en cause, moderniser et diversifier les supports et les méthodes d'enseignement, car « communiquer efficacement par écrit en contexte et pour des besoins professionnels est un savoir-faire qui s'apprend ». (Gajewska, 2016)

Il faut toujours actualiser les contenus en tenant compte des tendances actuelles dans la communication d'affaires. Ainsi, dans les manuels récents de FOS les exercices de compréhension et de production écrites s'articulent davantage autour du courriel que sur la lettre d'affaires. Le courriel sert encore aussi bien aux échanges habituels qu'aux communications officielles de haut niveau ; il partage de nombreux points communs avec la lettre (valeur de preuve légale ; format très spécifique ; langue correcte et soignée ; style : clarté, concision, précision), mais il présente des différences (dimension plus réduite, langage plus informel, flexibilité formelle, dynamique interactive propre à l'environnement numérique), des fonctionnalités complémentaires (fichiers joints, fonctions copie conforme, copie conforme invisible, transfert, réponse automatique, réponse en reprenant des paragraphes du message initial et en ajoutant des commentaires), des implications particulières (confidentialité, éthique). Le courrier électronique est un mode de communication qui s'est imposé avec la transformation numérique, qui offre une grande souplesse dans l'expression écrite, où « la parole fraîche laisse plus de place aux variantes stylistiques individuelles ». (Gajewska, 2016)

Dans les cours de langues étrangères à des fins spécifiques, il conviendrait également de prendre en considération les dispositifs hybrides (par exemple la plateforme Teams), utilisés de plus en plus dans les stratégies corporate. Ces dispositifs combinent les échanges oraux et les échanges écrits, favorisent le travail collaboratif et la co-production de documents.

L'évolution de la science et de la technologie ne cesse d'ouvrir des perspectives et des pistes de réflexion pour optimiser la communication dans les milieux d'affaires et la formation des étudiants aux nouveaux dispositifs, genres et formes de communication.

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COMMUNICATION BARRIERS ENCOUNTERED BY ERASMUS STUDENTS AT THE UNIVERSITY OF ORADEA: CHALLENGES AND ADAPTATION STRATEGIES

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Abstract: *This study explores the communication challenges faced by Erasmus students during their short-term learning experience at the University of Oradea in the 2023-2024 academic year. By examining the impact of language barriers on academic performance and social adaptation, the research highlights the difficulties encountered by 25 Erasmus students from diverse cultural backgrounds, including Turkey, Portugal, Spain, and France. Communication issues emerge as a critical factor influencing students' ability to integrate both academically and socially. The paper provides an overview of the Erasmus Program, emphasizing its objectives and the opportunities it offers for academic and personal growth. It then explores specific challenges, including cultural differences, homesickness, variations in academic systems, healthcare access, transportation difficulties, financial constraints, bureaucratic hurdles, and dietary restrictions. Among these, language barriers stand out as a pervasive issue, affecting students' interactions with faculty, colleagues, and the local community. The study further investigates the role of language proficiency in facilitating or hindering students' academic success and overall well-being. Institutional support, such as language courses and integration programs, is discussed as a crucial element in mitigating communication difficulties. The methodology involves data collection through questionnaires and interviews, offering valuable insights into students' experiences and perceptions. The findings indicate that communication barriers significantly impact Erasmus students' academic engagement, social integration, and overall satisfaction with their study-abroad experience. The results emphasize the necessity for targeted interventions, such as enhanced language training and structured support mechanisms, to ensure a more inclusive and rewarding exchange experience. The study concludes with recommendations for improving language proficiency initiatives, fostering cross-cultural communication, and strengthening institutional support to enhance students' overall Erasmus journey. Ultimately, while recognizing the Erasmus Program's transformative potential in fostering international mobility and cultural exchange, the research underscores the need to address communication challenges effectively to maximize students' academic success and personal growth.*

Keywords: *communication barriers, language proficiency, academic integration, Erasmus Program.*

JEL Classification: Z13, Y8

1. Introduction

This study explores the impact of foreign language proficiency on the academic performance and social integration of Erasmus students who have chosen to study at the University of Oradea for one or two semesters. The research is based on an analysis of questionnaire responses from 25 Erasmus students from diverse cultural backgrounds, including Turkey, Portugal, Spain, and France. Our focus on communication barriers stems from the observation that many Erasmus students encounter difficulties in effectively using English, which serves as the primary medium of instruction and interaction in academic and social settings. These language challenges can significantly influence their ability to engage with coursework, participate in discussions, and form meaningful connections with peers and faculty members.

One major concern is that some lecturers may struggle to deliver their courses in English fluently, potentially limiting Erasmus students' ability to fully grasp academic content. This issue highlights the broader challenge of language preparedness, not only for students but also for host institutions striving to create an inclusive and effective learning environment. Beyond academic concerns, language barriers can also affect students' daily interactions, making it more difficult for them to navigate administrative processes, seek medical assistance, or engage in social and cultural activities.

To provide a comprehensive understanding of these challenges and opportunities, the paper begins with an overview of the Erasmus program, emphasizing its objectives and the potential benefits of international mobility for students. Following this, we present insights gathered from Erasmus students, detailing the communication barriers they encountered and the strategies they employed to overcome them. Since language proficiency is a key factor in successful adaptation, we also discuss the language competency standards that Erasmus students are expected to meet when studying abroad.

Additionally, we examine the institutional support available for students facing language difficulties, including language courses, tutoring programs, and integration initiatives. The study also considers broader cultural and systemic factors that may influence communication, such as differences in teaching styles, academic expectations, and intercultural communication norms.

Finally, the study details the methodology used to analyze the questionnaire responses, presents the key findings, and draws conclusions based on the collected data. By addressing the impact of communication barriers on Erasmus students' experiences, this research aims to contribute to a better understanding of the linguistic and cultural challenges in international education. Furthermore, it seeks to provide recommendations for improving institutional support mechanisms, ensuring

that Erasmus students can maximize both their academic success and personal growth during their mobility experience.

2. Data about the Erasmus Program.

2.1. General data about the Erasmus Program.

The Erasmus Program provides students and academic staff with the opportunity to study and develop both personally and academically within an international university setting. As a key initiative within the European Union's education policies, the program aims to foster acceptance of cultural diversity, promote democratic values, and enhance intercultural awareness. These objectives align with broader European strategies that emphasize integration, economic development, and social cohesion. Additionally, the Erasmus Program is designed to support lifelong learning and mobility, stimulate creativity, and improve the overall quality of education across Europe (Council of the European Union, 2009). By equipping individuals with valuable knowledge and skills, it also facilitates a smoother transition into the labor market, enhancing career prospects for participants (Teichler, 2019).

2.2. Key Statistics on the Erasmus Program

Since its inception in 1987, the Erasmus Program has gained significant popularity, with a growing number of students and educators choosing to participate for the academic, professional, and personal benefits it offers (Papatsiba, 2005). The Erasmus+ Program has experienced significant growth and has had a substantial impact on education, mobility, and cross-cultural collaboration in Europe and beyond.

Since its inception, over 10 million people, including students, educators, and staff, have taken part in the Erasmus+ program (European Commission, 2024a). Each year, hundreds of thousands of individuals benefit from academic exchanges, professional training, and volunteering opportunities abroad. In 2023 alone, more than 900,000 participants engaged in various mobility activities such as studying, training, and volunteering abroad (European Commission, 2024a).

Between 2014 and 2024, the program contracted more than 230,000 projects, collaborating with nearly 170,000 organizations, including universities, vocational schools, NGOs, and research institutions (European Commission, 2024b). These partnerships have been instrumental in fostering international cooperation and innovation in education.

The Erasmus+ program has been allocated a budget of €26.2 billion for the period 2021-2027, which is nearly double the amount of the previous funding cycle (European Commission, 2024c). This increased financial support reflects the European Union's commitment to expanding educational mobility and inclusion. While originally focused on European countries, Erasmus+ now supports mobility and cooperation with over 190 countries worldwide, allowing for greater international engagement and collaboration beyond Europe (European Commission, 2024d).

Approximately 70% of Erasmus+ participants are higher education students. Erasmus mobility has been shown to significantly enhance employability, with 80%

of Erasmus alumni securing jobs within three months of graduation (European Commission, 2024e).

Erasmus+ is one of the most effective programs for promoting multilingualism. Around 50% of students improve their language skills significantly during their mobility period, and 90% report greater cultural awareness and adaptability after their experience abroad (European Commission, 2024f).

The program has placed a stronger emphasis on inclusion, with targeted funding and initiatives for individuals from disadvantaged backgrounds, ensuring that Erasmus+ remains accessible to a diverse range of participants (European Commission, 2024g).

These statistics demonstrate the far-reaching impact of the Erasmus+ program on students, educators, and institutions, as well as its role in fostering international collaboration and cultural exchange.

2.3. Communication barriers and opportunities

Research has shown that Erasmus students tend to develop stronger intercultural competencies, improved language skills, and increased employability compared to their non-mobile peers (Mitchell, 2015). However, while the program presents numerous opportunities, it also comes with challenges—particularly in the realm of communication. Language barriers remain a common issue that can affect students' ability to integrate into their new academic and social environments, ultimately influencing their overall experience (Sweeney, 2013). Some studies highlight that even students with prior language preparation may struggle with academic terminology, local dialects, or different teaching methodologies (Coleman, 2006).

At the same time, overcoming these challenges provides students with a unique opportunity to develop linguistic skills, adaptability, and intercultural competencies, which are increasingly valuable in today's globalized world. Universities have implemented various support mechanisms, such as preparatory language courses, tutoring programs, and cultural orientation sessions, to help Erasmus students navigate these barriers (Smit & Dafouz, 2012). However, the effectiveness of these measures varies depending on institutional resources, student engagement, and individual linguistic backgrounds.

Along with the opportunities it provides, the experience of studying in a foreign country brings about challenges as well. These include the necessity to adjust to new social and cultural norms, surpass linguistic obstacles, manage with dietary restrictions, transportation problems, accessibility to healthcare services, money management, and, most importantly, the need to get over feelings of isolation and loneliness.

According to a study developed by the Directorate-General for Internal Policies of the European Parliament, additional factors that could potentially discourage candidates from participating in the Erasmus program include: the grant's inability to cover necessary costs for students, coupled with a lack of information about funding and co-funding opportunities (Improving the Participation to the Erasmus Programme, 2010:11, 2010:18); inadequate information about study/credit recognition; a lack of awareness about the program and inadequate information in relation to it; uncertainty regarding the compatibility of higher education systems

(Improving...2010:16); in addition, students who are more interested in academic experience than in cross-cultural exchange appear to find the Erasmus program less appealing. This idea is supported by more skeptical points of view, according to which short-term experiences do not generate long-lasting changes in individuals (Forsey, Broomhall & Davis 2012).

This section of the paper explores both the challenges and opportunities that arise in the context of the Erasmus Program, with a particular focus on the role of communication. Understanding these dynamics is essential for developing effective support systems that enhance students' ability to fully benefit from their mobility experience.

2.4. The experience of Erasmus students in Oradea

Before distributing the questionnaire to the chosen group of Erasmus students, we collected information about their experiences through in-person interviews and written responses to the following question:

How can you describe your time as an Erasmus student at the University of Oradea and in Romania?

A number of 25 students accepted to speak about their experience in Oradea. We can infer from the data collected that the main obstacles faced by Erasmus students are:

a. Cultural barriers

Cultural differences present a serious obstacle for Erasmus students, despite the fact that differences tend to become less noticeable in today's globalized world. Therefore, even though the Erasmus students who agreed to share their experiences with us acknowledge that Romania's culture, language, and customs differ greatly from those of their home countries, they also found common elements. In such a context, the solution proposed by most students interviewed is that an open attitude of Erasmus students with regards to Romania's culture, traditions and habits might be very helpful for their integration and academic success. Additionally, it was suggested that learning as much as possible about Romanian traditions and culture, prior to traveling to Oradea, participating in local festivals and events, and joining international student organizations while residing in Oradea could facilitate an easier adaptation to the host country and its academic environment. Such openness towards other cultures is actually one of the main objectives of the Erasmus Program.

b. Yearning for home

A common problem for many Erasmus students is their difficulty to manage alienation from their familiar environment. Being away from home, encountering different people, with other habits and traditions, may contribute to feelings of loneliness and isolation. This is an understandable phenomenon, especially in the case of students whose Erasmus stage is their first longer separation from home. As possibilities to overcome this issue, using new technology to communicate constantly with the family, building friendship with Romanian or other Erasmus students, living an active social life were strategies suggested by the Erasmus students, which may contribute to an easier transition to a new environment and the success of their Erasmus experience.

c. Differences between academic systems

One of the foremost purposes of the Erasmus program is precisely to make students familiar with other educational environments and academic systems, thus the differences may be regarded as possibilities to understand and become aware of diverse approaches to learning. In general, coordinators of Erasmus programs make sure that the Erasmus students may benefit from academic support services (tutorship, counseling, study groups.)

d. Differences among healthcare systems

The Erasmus students that agreed to speak about their experience at the University of Oradea suggested that Romanian healthcare services are less developed and more expensive than in their home countries and they felt anxiety as regards the possibility of needing medical attention during their stay. For this reason, they suggested the possibility of acquiring a more comprehensive healthcare insurances as a solution to overcome anxiety relating to healthcare services. Additionally, carrying a supply of necessary medication can assist students in taking care of minor medical conditions. Being able to speak English or some Romanian was also mentioned as a form of support in solving health-related issues.

e. Transport-related issues

Mobility of Erasmus students may be limited if public transportation is not available at all hours of the day or is not very frequent. However, the students we interviewed suggested they solved easily transport-related issues by using ride-sharing services, such as Uber and Bolt. As emphasized by the Erasmus students themselves, this is another barrier that can be more easily overcome if foreign students are able to speak English and/or Romanian.

f. Financial challenges

Planning a budget is one of the chief concerns of Erasmus students who spent one or two semesters in Oradea. Since the program does not cover all costs, allocating a budget for both expected and unexpected expenses is of crucial importance even before arriving in the host country. In addition, as Romania still uses its specific currency (lei), which is not widely available outside this country, using online banking services or opening a local bank account were mentioned as possibilities for anticipating or overcoming financial-related issues.

g. Bureaucratic challenges

Keeping all necessary documents in good order and learning some basic vocabulary in Romania may help facilitate communication with the administration in Oradea. In addition, international student office at the host university can provide support with administrative issues.

h. Diet-related challenges

Some cultures also impose specific dietary restrictions. Some students may have food allergies or special food-related needs. In such a context, Erasmus students may find it difficult to buy or order food in the host country, especially if communication in English and/or Romanian is a problem. As mentioned by the students we interviewed, labels are not always written in both English and Romanian, in local markets seller often speak only Romanian and/or Hungarian (in the case of Oradea), thus making it difficult to ask about ingredients used in dishes. Again, learning some food-related vocabulary and phrases was suggested as a helpful solution, along with using translation apps or asking for help. In addition,

choosing to stay in accommodation with kitchen facilities may allow students to prepare their own meals.

Based on the answers received from students, we can conclude that the Erasmus students encounter different types of barriers and challenges in the host country. In essence, all these are related to their capacity to communicate efficiently. Thus, in the next section we shall look at how the good command of English and may prove very helpful. Of course, as mentioned above, acquiring at least a basic conversational level in Romanian could help students in their interactions within the academic environments, the public transportation system, health care services, government agencies, and local authorities. It could also help with communication in local markets.

However, while English proficiency may suffice in many academic and social settings, there are additional benefits to acquiring at least a basic conversational level in Romanian, the host country's official language. Although most Erasmus students can manage day-to-day life in Oradea using English, knowing some Romanian can dramatically improve their interactions in situations where English may not be widely spoken or understood. For instance, when dealing with public transportation, healthcare services, or government agencies, students may encounter situations where communication in English is limited, which can create frustration or confusion. A basic knowledge of Romanian would help students navigate these essential services more smoothly, making their time in Oradea more enjoyable and less stressful.

In summary, while a strong command of English undoubtedly facilitates Erasmus students' academic success and integration into international environments, learning at least some Romanian can significantly enrich their overall experience. It enables them to engage more fully in the local community, access essential services, and navigate their daily lives with greater ease, ultimately contributing to a more positive and transformative Erasmus experience.

2.5. Linguistic challenges and opportunities for Erasmus students

Language proficiency plays a crucial role in the academic and social integration of Erasmus students in a foreign country. It is often considered both a barrier and an enabler, as language proficiency can significantly impact students' academic success and their ability to integrate socially. At the University of Oradea, like in many other universities participating in the Erasmus program, English is the primary language of communication for international students.

The Erasmus+ program offers several mechanisms to assist students in overcoming language barriers, one of the most important being the **Online Language Support (OLS)** system. OLS is a free, online service provided by the European Commission to help Erasmus students improve their language skills before and during their mobility experience. The OLS system offers a language assessment before departure, which evaluates a student's language proficiency in the language they will use for study or work. Based on the results, students can access various language courses designed to improve their proficiency in the selected language.

One of the key advantages of the OLS system is that it allows students to improve their language skills at their own pace and from any location, making it

accessible and flexible. Students can engage in interactive learning modules and practice their language skills through various exercises. While the OLS platform primarily focuses on helping students improve their proficiency in English, it also provides support for other languages commonly spoken within the Erasmus+ network.

However, it is important to note that the results of the OLS language assessment do not limit students' participation in the Erasmus+ program. Even if a student's language proficiency level is low, they are still allowed to participate in the exchange program, which reflects the program's inclusive nature. Despite the support provided by OLS, many Erasmus students report struggling with language barriers, particularly when their academic programs are not taught in English or when they lack sufficient proficiency in the host country's language.

At the University of Oradea, the evaluation of Erasmus students' language proficiency is typically conducted by the partner institution before the mobility period. For students attending programs that are not taught in English, the university applies a tutoring system. This system provides additional support, where students receive assistance in English for their courses and laboratories, and assessments are completed in English, helping to bridge the gap created by language barriers. However, challenges persist, especially when some professors are not able or willing to conduct lectures in English, which forces Erasmus students to rely on self-study and project-based learning. This situation often leads to a less immersive academic experience for these students.

While the OLS language system is a valuable resource for Erasmus students, the language challenges faced by students at the University of Oradea and similar institutions highlight the need for continuous support in language learning. The presence of a tutoring system and flexible learning tools like OLS can help mitigate these challenges, but addressing issues like faculty language readiness and increasing language support across disciplines remain critical to enhancing the Erasmus experience for all participants.

3. Methodology

As methodological approach we sought to explore how language proficiency, particularly in English, influences the academic and social integration of Erasmus students at the University of Oradea. To achieve this, we utilized a mixed-methods approach, relying primarily on quantitative data collected through a questionnaire while also considering qualitative insights based on personal interactions and observations over the past five years.

In order to better understand the experiences of Erasmus students at the University of Oradea and suggest possible solutions to overcoming language barriers, we conducted a study involving 25 Erasmus students from the Faculty of Electrical Engineering and Information Technology, and the Faculty of Construction, Cadastre, and Architecture. The goal was to explore how English language proficiency impacts their academic performance and social integration during their stay.

To collect data, we designed a questionnaire consisting of 12 multiple-choice questions, aimed at encouraging students to express their opinions on the role of language skills in their academic and social lives. The questionnaire was administered via Google Forms at the end of the students' first or second semester in Oradea, and participation was voluntary.

In developing the questionnaire, we relied mainly on our interactions, throughout the last five years, with the Erasmus students studying in Oradea and the observation of their English-language proficiency. We started from the assumption that more accurate knowledge of the language chosen for communication might facilitate the academic success of Erasmus students. The questionnaire items were reviewed and checked by the co-authors of this study, who also teach English for Specific Purposes to Erasmus students.

Once the responses were collected, we analyzed the data, compared the results, and aligned them with our observations of students' participation in class activities and overall academic performance. This comparative analysis helped us gain insights into the students' perspectives on language barriers and their strategies for overcoming them.

It is also important to note that, while the questionnaire was designed to focus on language proficiency and its role in academic and social integration, it is possible that other factors, such as cultural differences, personal attitudes, and institutional support mechanisms, also influenced the students' experiences. These factors were not directly assessed in the survey, which is a limitation of the study. Future research could expand this study by including a wider range of questions that address these variables more explicitly, as well as by gathering data from a more diverse sample of students across different faculties and universities.

The methodology, however, offers a useful framework for understanding the challenges that Erasmus students face and suggests that language proficiency is a key factor in determining academic and social success. By addressing the linguistic barriers faced by students, institutions can enhance the overall Erasmus experience, ensuring that students fully benefit from the opportunities the program provides.

4. Results

4.1. Discussions

The results from the questionnaire reveal several key insights into the experience of Erasmus students at the University of Oradea, particularly regarding the role of language proficiency in their academic and social integration. The first question aimed to evaluate the overall ease or difficulty students faced when integrating into the academic environment at Oradea University. A significant 65.2% of respondents reported that adaptation was difficult, suggesting that a substantial number of Erasmus students struggle with the transition into a new academic setting. This could be related to factors such as unfamiliarity with the academic system, cultural differences, or difficulties in communication. Only 30.4% of the students found it easy to adapt, while a small portion (4.3%) did not provide a clear answer. These figures underscore the importance of addressing the barriers

students face in adapting to a foreign academic environment.

The second question sought to determine whether English was the primary language of communication for both academic and social activities. The results show that 65.2% of respondents selected English as their primary communication language, while 34.8% reported relying solely on English for their interactions. This confirms the central role of English in the Erasmus students' experience, both in their academic studies and social interactions. However, it also suggests that a small group may face additional challenges in engaging with their peers and professors if their English proficiency is not sufficient.

The third question focused on the impact of language proficiency on academic performance. The findings indicate that language barriers have a significant effect on the academic success of Erasmus students. A notable 13% of respondents acknowledged that their limited language skills had a major negative impact on their studies, while over half (52.2%) reported experiencing minor integration challenges due to their language abilities. Interestingly, 34.8% did not associate language with any barriers to academic adaptation, indicating that some students may be more adept at overcoming language difficulties.

When asked about their attendance in lectures, more than half of the students actively participated in lectures and practical activities. However, 30.4% did not attend classes regularly, and 4.3% did not provide an explanation for their lack of participation. The correlation between language proficiency and attendance is apparent, as the responses suggest that students who struggled with English proficiency were less likely to attend classes. Additionally, some students did not attend because of the perceived inability or reluctance of lecturers to conduct courses in English, with 45.5% of respondents indicating that this was a factor in their decision not to participate. This highlights the importance of having both students and lecturers proficient in English for effective learning experiences. The findings from the seventh question show that language proficiency also affects students' social integration. While some Erasmus students were able to adapt socially, 34.8% reported that their English skills hindered their ability to integrate into the social fabric of the university. This aligns with the earlier findings regarding academic integration, further emphasizing that communication difficulties extend beyond the classroom and impact students' overall Erasmus experience. As expected, the vast majority of students (100%) reported taking steps to improve their language skills. This reflects the students' awareness of the importance of language proficiency in overcoming barriers. Many Erasmus students took advantage of resources such as language support programs offered by the University of Oradea, confirming that the institution's role in providing linguistic assistance is crucial. The data from question nine show that 64% of students benefited from such programs, while 32% did not, highlighting the need for more widespread participation in these support initiatives.

Regarding the improvement in their foreign language skills, 76% of the respondents felt that their language proficiency had improved during their time at the university, while 24% felt that the impact was minimal. This suggests that while the Erasmus experience is beneficial for language development, not all students

perceive the same level of progress. However, when asked about the overall impact of the Erasmus program on their future careers, 100% of the respondents reported a positive outlook, indicating that the program's benefits extend beyond language acquisition, contributing to personal and professional growth. Finally, when students were asked to evaluate the Erasmus experience as a whole, 96% expressed that it was a worthwhile and transformative experience. This overwhelming positive response underscores the value of the Erasmus program despite the challenges faced, particularly related to language barriers.

While language barriers pose significant challenges to Erasmus students at the University of Oradea, these challenges are not insurmountable. The study highlights the importance of English proficiency for academic success and social integration, and it also underscores the role of the host institution in supporting language development. Students' proactive efforts to overcome language barriers, combined with the university's language support programs, contribute to an overall positive Erasmus experience, which students perceive as both academically enriching and personally transformative.

4.2. Interpretation of results

The findings from the questionnaire suggest that participating in the Erasmus program is an enriching and transformative experience for most students, offering opportunities to broaden their perspectives, gain insight into different cultures and academic systems, and develop personal skills. For many students, it serves as an avenue for improving their communication abilities in a foreign language, which is one of the primary goals of the Erasmus program. However, the data also highlights some challenges that need to be addressed, particularly regarding language proficiency. These challenges were identified as potential barriers to the students' academic success and social integration.

A significant portion of students reported difficulties in academic integration, which were linked to their limited proficiency in the English language. This was compounded by the fact that some lecturers were not fully able or willing to teach in English, further hindering the academic experience. This suggests that while language is the main means of communication in the Erasmus program, both students and faculty may need additional support to ensure effective interaction in an academic environment. Language barriers thus emerged as a central challenge in achieving the academic and social objectives of the Erasmus experience.

4.3. Suggestions for Improvement

One of the key areas for improvement is the selection process for Erasmus students. Ensuring that candidates have a certain level of proficiency in the language they will be using (most commonly English) could significantly improve their chances of academic success and social integration. A pre-departure language assessment or certification (e.g., CAMBRIDGE, TOEFL, IELTS, or a similar assessment) could be implemented to ensure that students have the necessary language skills to succeed in their studies and in social interactions. This would minimize the challenges faced by students with limited language abilities and increase the likelihood of a successful experience.

Improved language support programs

While the University of Oradea provides some language support programs, more robust and comprehensive language support could be beneficial. These could include:

- Pre-departure language preparation: Students should be encouraged or required to take language courses or engage in language immersion programs before their departure, ensuring they have a strong foundation in the language of their host country.
- Enhanced Ongoing Language Support: The university could expand its Online Language Support (OLS) program or offer additional language workshops, conversation clubs, and peer mentoring to help students continuously improve their language skills while they are in Oradea. This support should not be limited to English but could also include basic Romanian language training to facilitate better communication with locals in non-academic settings.
- Language tutoring: Personalized tutoring sessions for Erasmus students could also be offered to improve their English proficiency, focusing on both academic and conversational aspects of the language.

Development of bilingual course materials

To make Erasmus mobility more inclusive, institutions should encourage lecturers to create course-related materials that are accessible both in English and in the local language (e.g., Romanian for students in Oradea). This dual-language approach can help Erasmus students better understand the content, reduce language barriers, and improve their overall academic performance. It also ensures that students who are not yet proficient in the local language but are comfortable with English will have equal access to educational resources. Lecturers should also be encouraged to integrate flexible teaching methods that account for varying levels of language proficiency.

Faculty training and support for multilingual classrooms

Some Erasmus students reported difficulties in fully engaging with lectures due to the communication barriers caused by professors' limited proficiency in English. Faculty members who teach Erasmus students should be provided with professional development opportunities focused on improving their ability to deliver courses in English. Training programs could include language enhancement workshops and cultural sensitivity training to help professors better integrate Erasmus students into their classes. Additionally, professors could be encouraged to use more accessible language in their lectures and provide supplemental materials (such as written summaries, glossaries, or lecture slides) to support students' comprehension.

Encouraging active participation and integration

To further improve the integration process, the university could develop activities designed to facilitate social interactions and cultural exchange. Social events, study groups, and language exchange programs would provide students with opportunities to practice their language skills in informal settings and build friendships with local and international peers. Erasmus students should also be encouraged to engage in campus life outside of the academic context, such as joining student organizations or participating in volunteer opportunities, which can further enhance their integration into the local community.

Cultural sensitivity and awareness training for lecturers

Training programs for lecturers could also be implemented to help them understand the specific needs of Erasmus students, especially regarding language proficiency and cultural differences. This could include workshops on how to effectively communicate with non-native speakers, adapt teaching methods for an international audience, and create an inclusive learning environment that supports all students regardless of their linguistic background.

Promoting buddy mentorship programs

Establishing peer mentorship programs where local students or more experienced Erasmus students can assist newcomers with language barriers, cultural adaptation, and academic integration could foster a stronger support system. These buddy mentors can guide new students in navigating the academic environment, social activities, and everyday life in Oradea, helping them feel more comfortable and supported.

Improving orientation programs

Orientation programs for incoming Erasmus students should place a stronger emphasis on language skills and their role in both academic and social integration. Alongside practical information about the city and the university, students could receive guidance on how to improve their language skills and how to use the available resources effectively. These programs could also emphasize the importance of engaging with the local culture and language, encouraging students to learn basic Romanian phrases for daily interactions outside the academic setting.

Enhancing collaboration between universities

It would be beneficial for the University of Oradea to collaborate with other institutions participating in the Erasmus program to share best practices for language support and integration. This could involve joint workshops, webinars, or collaborative research on how to overcome language barriers in the Erasmus context. Such partnerships could help create a more cohesive and efficient language support network across participating universities.

The Erasmus program offers tremendous opportunities for academic, personal, and professional development. However, as the results of this study suggest, language barriers continue to pose challenges for students, potentially limiting their ability to fully benefit from the experience. By implementing a combination of more rigorous language proficiency requirements, expanded language support services, faculty training, and enhanced integration programs, the University of Oradea and similar institutions can help Erasmus students overcome these barriers and make the most of their time abroad. Ultimately, these improvements will help Erasmus students better integrate into their academic and social environments, leading to a more successful and enriching experience.

5. Conclusion

This paper aimed to explore the role of foreign language skills upon the social integration and academic success of Erasmus students studying at the University of Oradea. The data was obtained based on the answers given by 25 Erasmus students to a questionnaire that included 12 items.

After analyzing the results, the following conclusions can be drawn.

The Erasmus mobility is definitely a source of positive transformation, helping students develop personally and academically while encountering a new educational context and living in a different social and cultural environment. Though short-term, it can accelerate development on many aspects of one's life and personality. The findings indicated that all Erasmus students interviewed perceived their experience at the University of Oradea as a valuable one, contributing to their personal development, improvement of capacity to work in a multicultural context, acceptance of other cultures, traditions and values. Though short-term, this experience can also contribute to developing one's communication abilities, especially when using a foreign language. In terms of their improvement of English language skills, most students interviewed for this study agreed to have benefited from their staying and studying in Oradea.

On the other hand, this study has revealed that, academically speaking, limited knowledge of the chosen foreign language can have a detrimental effect on students' understanding of the material presented in class, which can definitely have a strong impact both on their grades and their sense of accomplishment. In this respect, our findings align both with our observation at class and with the results of other studies on foreign language proficiency of Erasmus students (see Kolosheva et al, 2015, Zhang and Brunton, 2007).

However, it must be acknowledged that this present study has limitations. First future research on the topic might consider collecting data from more participants. In addition, formulating the questionnaire so as to encourage students to give explanations for their answers would definitely be more relevant for understanding the barriers they encountered while trying to adapt to the educational system of Oradea University.

Another interesting perspective for gaining a deeper insight into what the Erasmus mobility actually means in a person's life would be to continue collaboration with former Erasmus students and understand the transformative effects of their Erasmus experience for their lives, based on retrospective analysis and accounts.

Considering the value of this study for the context of understanding and improving the Erasmus students' experience, we believe that reference to the context in Romania, a country rarely discussed in the research literature, is the one that represents a factor of originality.

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PROJECT-BASED LEARNING AND ITS EFFECTS ON DEVELOPING WRITING SKILLS IN BUSINESS ENGLISH STUDENTS

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Abstract: Nowadays probably more than ever, communication has reached an unprecedented level. Regardless the shape of it, face to face or written, communication seems to be the key to success in every domain of activity. Businesses want to go global and employers look for employees who master communication skills in English, especially writing skills since every company wants to convey its idea, message, concept to employees, partners, contractors all over the world. Business English writing is a compulsory skill to be mastered by Business English students, yet there is little progress in acquiring writing skills perhaps because it is perceived as being unattractive. Students perceive writing tasks as difficult ones as writing itself is a difficult skill to master. It is argued that project-based learning seems to be the solution to the problem. The present study wants to discuss the effect of Project-Based learning on developing writing skills for students at the University of Oradea, Faculty of Economics and their perception of Project-Based learning in Business English. It is based on mixed-methods research including a systematic literature review and semi-structured interviews, in the qualitative phase, as an instrument for data collection, aiming to find out the students' perspective towards the use of Project-Based methods in developing writing skills in Business English. The sample of the study consists of 50 students at the Faculty of Economic Sciences, University of Oradea, first and second year of Bachelor's Degree. The students have been asked 5 questions on their opinions towards Project-Based learning in Business English. The results show that students perceive Project-Based learning as a great tool for improving their writing skills, favoring the improvement in vocabulary, organization of material, grammar and content writing. Project-Based learning enhances the students' critical thinking and creative thinking along with vocabulary and grammatical knowledge. Project-Based learning also proved to be a motivator for learners to engage in writing as they had become accustomed to individual learning environments where active participation is needed, in all stages of the process, to avoid falling behind. In order to gain a deeper and broader comprehension of the effects of project-based learning, on students' writing skills, further studies will be done.

Key words: writing skills; educational technology; Business English; blended learning.

Jel codes: Z13; Q55; L81.

1. Introduction

We live in a fast-paced world, where information is power. Whether we like it or not, the rapid development of technology has shown us that, no matter how we improve in different domains of our lives, things change rapidly and the only solution at hand is to keep the pace. The importance of English is absolutely obvious in today's world. English is used around the world by people in different countries, as a means of cross-cultural communication, being a global language. There are over one billion of English language speakers around the world and the number increases every day, being the language of social, political, business, education, industry and media context. In this general landscape, the current foreign language education must be focused on language production, meaning that teachers must develop the students' ability for communication regardless the form of it, oral or written. Writing is a compulsory skill, being considered one of the basic yet complicated language skills to be mastered by Business English students. Swandi & Netto-Shek (2016, p.1) claim that *'Writing ability is defined as an essential ability for students to master for academic purposes and as a work and life skill.'* Unfortunately, although writing is an ability that the students must master, writing has been neglected for a long time in comparison with other skills, being considered uninteresting and difficult to students. The writing ability is a complex cognitive activity which encompasses a lot of variables simultaneously. In writing, grammar must be used correctly: the use of appropriate tenses, the subject-verb agreement, the appropriate modal auxiliary and the active-passive sentences. Vocabulary is another essential aspect that should be considered when talking about writing ability. Lack of vocabulary and failure in selecting the appropriate word create difficulty in conveying a message, therefore, difficulty to be understood by the reader. Generating an idea with little vocabulary can be difficult; the time needed to create a few sentences can be too long, thus the construction of a paragraph is practically impossible. According to Palmer in Matthews et al., (185, 9.135), *'organizational skills concern how information is organized into paragraphs and texts by sequencing ideas rejecting irrelevant information and summarizing relevant points.'* Thus, writing is considered to be a rather complicated language skill to be mastered, especially for Business English students, implying correct and accurate language usage, correct text layout, accurate writing strategy and good critical thinking. Being a cognitive domain-based skill, writing involves learning, comprehension, application and synthesis of newly acquired knowledge. Therefore, the process of writing involves two approaches: the product approach (when the students are expected to analyze the text only, in terms of language used and the process approach which is an activity of looking at what people do when they compose written texts. Thus, when talking about writing, we need to think of a complex process in which students should become proficient.

2. Literature review

Writing is a complex process, an active involvement of cognitive competence, expressing the author's desire, being an active process, as the students have to

accumulate their desire and meaning of a topic within their brain and transfer the ideas and meanings into another language. The main concern is about organization, coherence and cohesiveness of the message they want to write. Adequate knowledge, proper writing convention, qualified content and punctuation are the key elements for performing a good writing. Being an authentic and unique assessment, writing is a language competence where students apply their understanding and language style. The construction of words carries the writer's ideas, thoughts and opinions. Hedge (2005, p.5) says that *'Since it involves two-ways communication, writing demands a logical, comprehensive, and clear delivery so it does not mislead understanding.'* When we talk about Business English, writing is a high-demand skill, having essential elements such as report writing, emails, resumes, and business communication (internal and external). In this context, Mali (2021, p.7) argues that *'Project-Based learning is an effective strategy in an educational context to enhance the students' writing skill considering the various challenges faced by the students in developing the skill. Project-Based learning could improve the students' communicative, cooperative, and creative skills.'* Moreover, being a process and product-oriented approach, Project-Based learning gives the students the opportunity to develop several skills, by motivating, challenging, and empowering them with self-confidence, strong self-esteem and autonomy. Recent studies show that projects in developing writing skills in Business English represent opportunities for experiential learning where the students can create knowledge on existing knowledge, by creating new experiences. Being a very useful tool, mobilizing students to acquire new knowledge, Project-Based learning also develops the personal features of the students; there is a strong connection between students' engagement in the project and the learning outcome. Capek (2019, p.3) claim that *'Project-Based learning is considered a highly effective way of education; the fundament of Project-Based learning is the correct idea that students should not learn abstract definitions but rather they should learn by solving complex projects.'* Project-Based learning is regarded as a learning model, based on the 21st century constructivist learning theory, according to which students' learning occurs when the new knowledge is presented in relation to the previous knowledge, in an effective teaching environment. According to recent studies, the newly acquired knowledge is connected to experiences, the students practicing through their personal experience, having active participation during the process of learning. The simplest definition of Project-Based learning presents it as a learning model that focuses on activities which attempt to produce learning through project works. It is potentially promoting the four concepts that support the 21st century education, the Four Cs: communication, critical thinking and problem solving, creativity and innovation and collaboration. Project-Based learning allows students to work together which leads to a development of language skills, communicative competence and increased confidence, cooperation and self-discipline. Moss & Van Duzer (2017, p.1) define Project-Based learning as *'an instructional approach that contextualizes learning by presenting learners with problems to solve or products to develop.'* It is a different approach in comparison with the traditional teaching methods as it emphasizes learning through students-centred, interdisciplinary, and integrated activities in real-world situations. Recent studies also show that Project-Based learning activities can be characterized as follows:

- student-centred, the teacher being a facilitator;
- allows the students to prove knowledge, by presenting an end product;
- focuses on content learning not on language patterns;
- integrates authentic language skills;
- creates a bridge between English in courses and real-life contexts.

Thus, being engaged in meaningful and interesting projects, students feel more motivated and willing to share ideas and interact with other students, being encouraged to work together and engage in more interactive and collaborative learning experiences. Recent studies show that platforms like Google Docs and Microsoft Word Online, facilitating real-time collaboration, enable students to work together on writing projects and providing direct feedback. According to Cong-Lem (2018, p.3) *'the use of blogs or websites for projects presentations, improves writing skills as well as introduces students to the genre of online writing and understanding a wider audience.'* On one hand, providing feedback to teammates leads to enriched writing skills through social interaction; on the other hand, it also improves information-finding, data-analysis and writing presentation skills.

Several research reported that the students involved in Project-Based learning, having technology integration, showed significant improvement regarding their writing abilities, fostering increased project engagement and improved writing skills.

3. Research Methodology

3.1. Research Design

In this paper, the selected approach is the qualitative type of study. Qualitative studies explore and provide a deeper insight into real-world problems, without collecting numerical data, helping to generate hypothesis which can be more rigorously tested with quantitative research for further research. The Concise Oxford Dictionary offers the following explanation (1998, p.1035) *'in qualitative studies the key concern understands the phenomenon of interest from the participants' perspective, finding out their opinions and feelings rather than information that can easily be shown in numbers'*. Qualitative research asks open-ended questions, uses techniques including structured and semi-structured interviews, focusing on groups. According to Sweeny, S. M. (2020, p.123) *'qualitative interview approaches to research can be stimulating and rewarding experiences for both researcher and participants'*.

3.2. Sample of the Study

This study has been conducted at the Faculty of Economic Sciences, University of Oradea, the sample being 50 students from the first year of our faculty (35 females and 15 males), all specializations of the faculty. The students' level in English is upper-intermediate. The first-year students in Economics, the study programs of Finances-Banks, Accounting, International Business, Marketing, Management and Economy of Commerce, Tourism and Services were the respondents to the five questions in the questionnaire.

3.3. Research Informants

In order to examine and get a clear image of developing writing skills in Project-Based learning, having clear reference to Business English, the study uses informants to offer an insider's perspective and in-depth information.

The following the inclusion criteria is used:

1. students in Economics who have English selection exam scores above 80 points;
2. students in Economics who have taken Introduction to Business English Course during the first semester.

3.4. Research Instruments

The instrument of this research is a semi-structured interview, containing five questions, regarding the students' experience and perspective on Project-Based learning in Business English. Thus, this study provided the students an opportunity to express their opinion in their own words.

3.5. Data Collection and Analysis

All interviews were conducted in English, being anonymous and written. The length was between 7 and 10 minutes. Each interviewee was asked questions regarding their personal experience on attending Project-Based learning courses.

Table 1 (showing the characteristics of all the participants in the study)

Characteristics	
Age	18-21 years old
Female/Male	35 Female, 15 Male
Educational Status	College students
Faculty	University of Oradea, Faculty of Economic Studies
Specialization	International Business – 15 students; Accounting – 10 students; Marketing – 5 students; Tourism – 5 students; Finance-Banks – 10 students; Management – 5 students.

Source: Author

The first-year students in Economics, the study programs of Finances-Banks, Accounting, International Business, Marketing, Management and Economy of Commerce, Tourism and Services were the respondents to the five questions in the questionnaire. The total number of respondents was 50 students and the representation of each study program is seen in Figure 1.

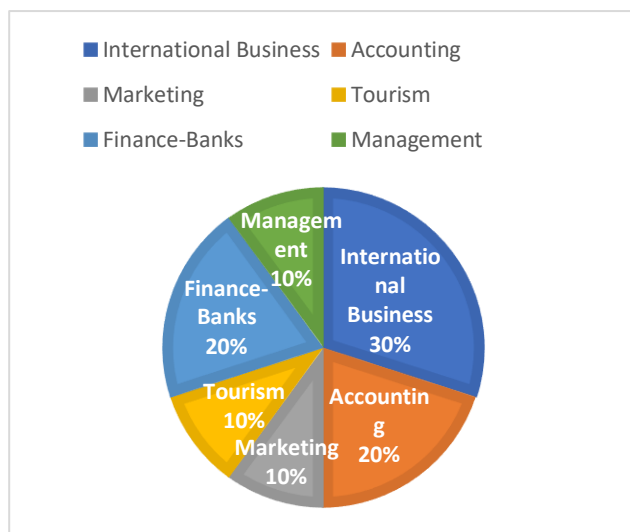


Figure 1. Number of respondents in each study programme

Source: own design on the basis of the data received from the respondent students

4. Results and Findings

This section describes the questions and the answers of the undergone study. The study is based on answers to the following questions, given by the students:

Question 1: Did your writing skill develop during the Project-Based learning process?

Question 2: Do you consider Project-Based learning a useful tool in learning Business English?

Question 3: Do you think that Project-Based learning improves communication between students?

Question 4: Do you think that Project-Based learning is accessible to all the students?

Question 5: Do you consider that your Business English knowledge has improved during the process of doing the project?

Table 1 (showing Q1 in the study)

Q1: Did your writing skill develop during the Project-Based learning process?		
	YES	NO
International Business	15	0
Finance Banks	10	0
Tourism	3	2
Marketing	3	2
Accounting	8	2
Management	4	1

Source: own design on the basis of the data received from the respondent students

The results of the answers to question 1 are seen in the following figure:



Figure 2. Writing skills development during Project-Based learning

Source: own design on the basis of the data received from the respondent students

Table 2 (showing Q2 in the study)

Q2: Do you consider Project-Based learning a useful tool in learning Business English?		
	YES	NO
International Business	11	4
Finance Banks	7	3
Tourism	3	2
Marketing	3	2
Accounting	7	3
Management	4	1

Source: own design on the basis of the data received from the respondent students

The results of the answers to question 2 are seen in the following figure:

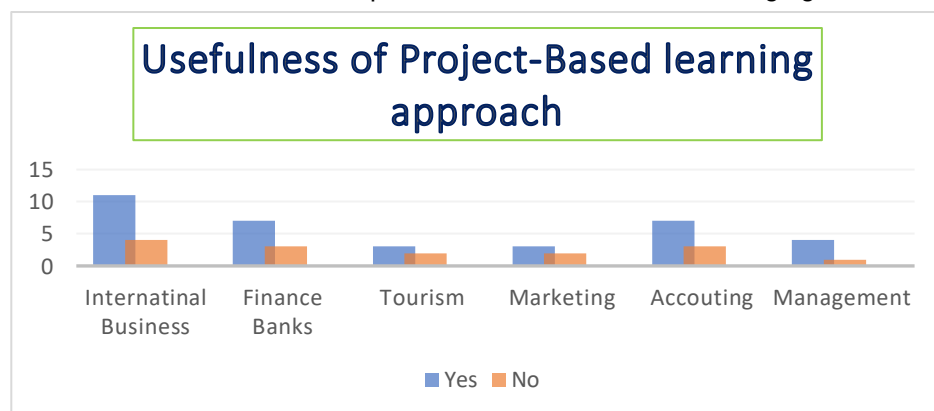


Figure 3. Usefulness of Project-Based learning approach

Source: own design on the basis of the data received from the respondent students

Table 3 (showing Q3 in the study)

Q3: Do you think that Project-Based learning improves communication between students?		
	YES	NO
International Business	15	0
Finance Banks	10	0
Tourism	3	2
Marketing	3	2
Accounting	8	2
Management	4	1

Source: own design on the basis of the data received from the respondent students

The results of the answers to question 3 are seen in the following figure:

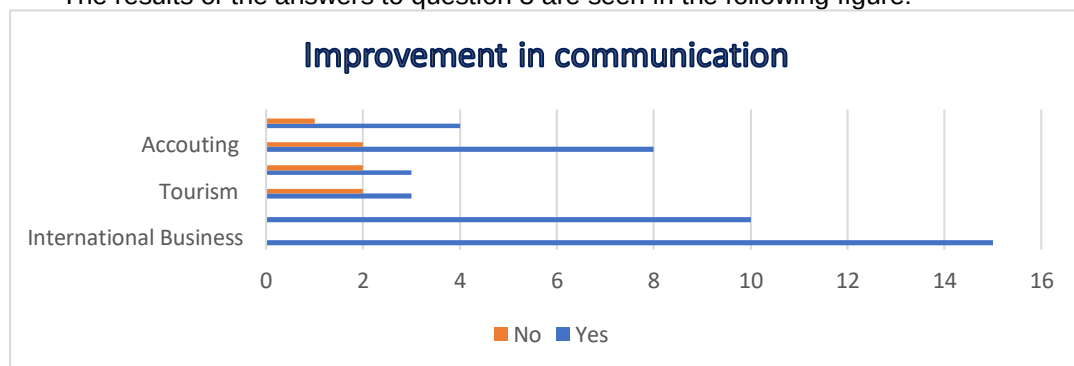


Figure 4. Improvement in communication during Project-Based learning

Source: own design on the basis of the data received from the respondent students

Table 4 (showing Q4 in the study)

Q4: Do you think that Project-Based learning is accessible to all the students?		
	YES	NO
International Business	15	0
Finance Banks	10	0
Tourism	3	2
Marketing	3	2
Accounting	8	2
Management	4	1

Source: own design on the basis of the data received from the respondent students

The results of the answers to question 4 are seen in the following figure:

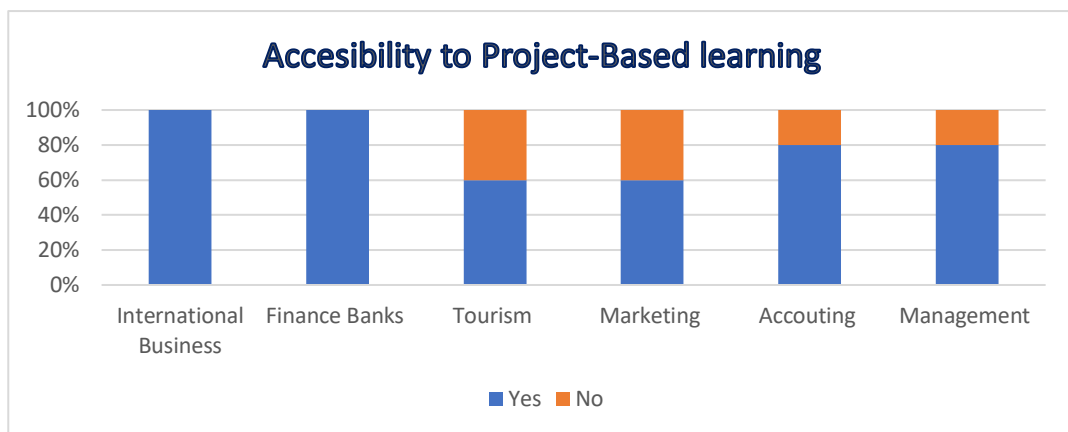


Figure 5. Accessibility to Project-Based learning

Source: own design on the basis of the data received from the respondent students

Table 5 (showing Q5 in the study)

Q5: Do you consider that your Business English knowledge has improved during the process of doing the project?		
	YES	NO
International Business	15	0
Finance Banks	10	0
Tourism	4	1
Marketing	3	2
Accounting	8	2
Management	4	1

The results of the answers to question 5 are seen in the following figure:

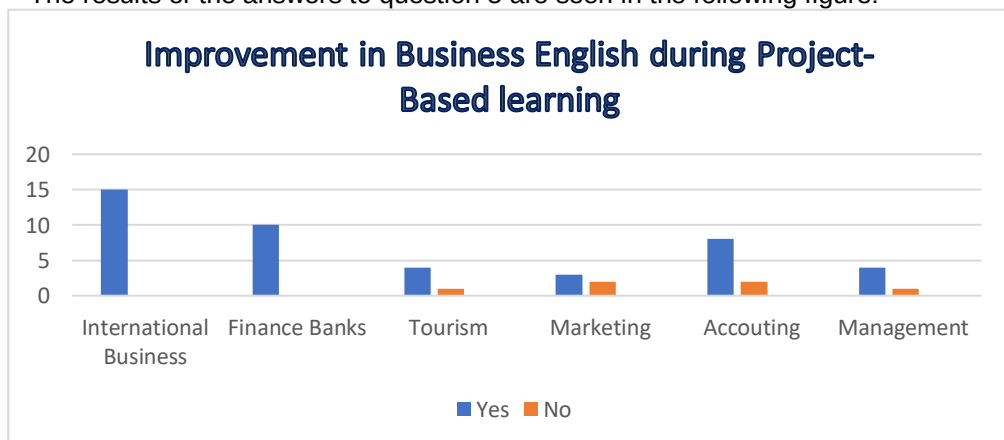


Figure 6. Improvement in Business English during Project-Based learning

Source: own design on the basis of the data received from the respondent students

6. Conclusions

Being a dynamic and student-centred approach, offering a series of significant advantages in the context of Business English learning, Project-Based learning relies heavily on real-world tasks, enhancing language proficiency and also cultivating essential workplace skills. Unlike the traditional methods where memorization prevails and practice is somehow isolated, this strategy proves to be effective and efficient for the students preparing for international careers. One of the most prominent benefits of Project-Based learning is that it encourages real-world communication, having real-world tasks, meaningful contexts such as writing emails, presenting business plans, negotiating with clients or participating in meetings. This is a contextualized practice which leads to more natural fluency, helping the students to internalize the structures and vocabulary of Business English through repeated use in practical situations. Moreover, Project-Based learning fosters a range of professional and soft skills: the students work in teams, take on specific roles, and manage deadlines, leading to the development of collaboration abilities, critical thinking and problem-solving. Nevertheless, Project-Based learning aligns closely with task-based language teaching, a method which is especially relevant for Business English. When being asked to complete authentic tasks, the students practice functional language such as making suggestions, agreeing or disagreeing, clarifying points and summarizing discussions. These tasks mirror the communication demands of today's workplace and help learners develop pragmatic competence. The motivational boost, coming from working with other students on challenging and relevant projects is another important benefit of this learning method. Seeing a clear purpose in their work, being the owners of the outcome, and the active participants in the project, the students pursue their own interest while applying language skills in a goal-driven context. Moreover, Project-Based learning proves to be an excellent tool to prepare the students for cross-cultural communication, by project which simulate intercultural scenarios. This way the students become aware of tone, formality, etiquette and other aspects that vary from culture to culture. By practicing this way, students avoid misunderstandings and build strong professional relationships at their future workplaces. Another key strength of Project-Based learning is the integration of digital tools when the students are encouraged to use modern platforms for presentation, communication and research. This is an important language development support but also an important factor for developing digital literacy and critical thinking in today's global workplace.

The results of this study of exploring students' perception towards the use of Project-Based learning are the following: The students at the Faculty of Economic Sciences, University of Oradea, first and second year of Bachelor's Degree, being asked 5 questions on their opinions towards Project-Based learning in Business English have given positive answers, considering this method as an effective and impactful approach in the context of Business English. As a result of the authentic, task-based nature of Project-Based learning method, as well as the engagement in real-life business scenarios, through the implementation of Project -Based learning, students have shown marked improvements in their writing skills, particularly in producing contextually-appropriate, coherent and purpose-driven texts relevant to

business environments. The practical application of writing conventions and language structures can definitely improve the students' writing skills. Moreover, the Project-Based learning has demonstrated its value in enhancing communication among students. Collaborative projects need constant exchange of ideas, interaction and negotiation, these elements leading to the development of the students' interpersonal and oral communication skills. The collaborative aspect of Project-Based learning leads to the development of some soft skills, such as problem-solving, leadership and teamwork, these being considered to be key competences in both professional and academic settings.

The results of the study also highlight the accessibility of Project-based learning. By allowing the students to contribute according to their strengths and encouraging diverse forms of attendance, Project-Based learning ensures inclusivity, by promoting a sense of belonging and motivation among students. Moreover, the flexible nature of Project-Based learning also supports differentiated learning and accommodates various levels of language proficiency. This method transforms the Business English course into a vibrant and practical learning environment, by integrating language, skills and real-world scenarios. Finally, the use of Project-Based learning has shown a significant development in the students' understanding of Business English concepts and terminology, as a result of their active engagement with meaningful context. This approach leads to a better retention of knowledge, making the entire process a more effective and enduring one, bridging the gap between theory and practice and making Business English more relevant and applicable to students' future professional endeavours.

This study confirms that Project-Based learning is not only a sound method for developing language skills but also a comprehensive educational strategy that supports the students' holistic development in Business English, equipping the students with the linguistic, cognitive and social tools necessary for success in global communication.

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THE WAY OF TEACHING *WIRTSCHAFTSDEUTSCH* TO THE ECONOMICS STUDENTS

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Abstract: *The paper is organized on three central themes. In the first part, it has as its central point the term Fachsprache in our case Wirtschaftdeutsch, starting from terminology. The second part deals with the premises of learning and teaching the German language for economics students, the necessary conditions being an advanced knowledge of the German language, conditioned by basic knowledge of economics. An important factor of learning foreign languages is the emotional factor; the student's motivation is decisive. The last part of the paper presents the methodology of teaching the German language for economics students Wirtschaftdeutsch, the teacher being oriented towards business situations, as close as possible to reality, interspersed with dialogues, with terminology exercises; the logical and free thinking of the economics students is called upon.*

Keywords: *Wirtschaftsdeutsch, economics students, methods*

JEL classification: Z19

1. General considerations

Specialized language refers to a particular field of activity, this language is found in a particular field of activity. It can be said that we are dealing with a language different from literary language, littered with specialized expressions and terms. Specialized language is based on literary language marked by specialized terms and words, which make up the specialized vocabulary. There are situations in which the specialized words take on a different meaning from the words in the literary language. Some aspects of grammar and intonation may also differ from literary language.

Specialized language belongs to the *standardisierten Sprachvarianten*. This language is distinguished according to the groups of speakers who use it, and specialized terms are called terminus technicus. The totality of terms is called terminology. Many specialized terms were invented as a result of scientific developments. A common feature of specialized language is the emergence of new terms, especially from the English language. Specialized terms are found in technical dictionaries or glossaries.

2. The challenges of learning a specialized language

The fundamental prerequisite for learning a foreign language is a mastery of the terminology in the mother tongue, accompanied by a solid knowledge of the grammar of the mother tongue. These two elements will support eager learners in mastering their new specialized language.

The second basic condition is the mastery of basic foreign language skills, if possible, the applicant should master German at A2 level. In this case, the specialized language lessons would also correspond to this language level. However, a good command of the technical language, regardless of the subject area, requires a solid knowledge of German, confirmed by the B2-C1 certificate. The higher the general level of German, the easier it will be to acquire a specialized language.

Learners' motivation plays a major role in acquiring specialized language. The need to act is much stronger in motivated people than in demotivated people. We should bear in mind that the person's attitude towards the task determines the learning process. The person who takes action has a greater chance of success if he/she believes that he/she can solve a problem than if he/she perceives the problem as difficult or even too difficult from the start.

2.1 The premises of business language teaching

Excellent knowledge of general linguistics is a prerequisite for teaching general linguistics. The necessary linguistic competences of teachers should correspond to the language level C1-C2.

The second step in teacher training is to learn the technical language. This language is difficult to learn and takes a long time. The teacher must study specialized literature both in his/her mother tongue and in a foreign language in order to become familiar with the specialist terminology and the specialist issues. This stage requires a lot of time, ambition and effort from the teacher. All this is worth the effort if we want to excel in business language. For any teacher the challenge is great. Thorough knowledge of the relevant subject area is extremely important when preparing teaching materials and in our teaching work. They are our best supports.

2.2 Consulting specialists

However, as teachers specializing in foreign languages, they cannot be called connoisseurs. Teachers who are interested in this issue, it would be advisable to consult experts, as teachers are not able to understand the specialized literature.

Teachers specializing in foreign languages are not experts but philologists, trying their best to master the underlying terminology before entering the classroom.

3. Methodology of teaching technical language (Business German)

Before talking or writing about a range of methods and strategies in special language teaching, we need to be clear about the objectives and end results of our professional activities. Of course, it is important to know which students we are

working with and what year of study they are in. It is important to take into account their language level so that we are clear on what kind of foundation we need to build on.

Second and third year bachelor students as well as master students already have general language skills, and when they encounter difficulties while teaching specialized languages, they often feel that they cannot overcome these obstacles. As is well known, technical language is a broad domain and mastering it requires great effort, perseverance and hard work. This is why teachers need to think about and choose their teaching strategies and methods carefully.

Action-orientated exercises should be included in business German courses. These are methods that motivate learners and enable them to be independent. The emphasis is on dialogue exercises ranging from simple repetition to variations and role-play. Listening, understanding and reacting appropriately should become routine. Compensatory strategies could be supplemented with pantomimes and games. In addition, there should be exercises based on group work and learning posters, group discussion exercises, suggestions for projects and presentations with topics taken from the Internet and interdisciplinary work.

3.1 Practice related aspects

Each chapter should have as its centre point the leaning into practice, which facilitates action-oriented learning and introduces students to the material to be taught. Only if students are convinced of the usefulness and relevance of putting into practice the knowledge they have learnt, success in the learning process is assured.

3.2 Phasing in of teaching materials

In the teaching activity the materials to be taught are introduced gradually, dealing with different aspects of economics, business management, marketing, accounting, finance. Students will not be unnecessarily burdened with a large volume of new information, lest they lose interest in business terminology.

Topics that would be indicated in the teaching of business language are aspects of the European Community's economic market inflows, economic development, current trends caused by social and environmental policy, intercultural aspects. It would present European consumer market conditions, specifically German contexts of practical economic activity.

An important principle should be the gradual introduction and practice of specialized terminology using practical and case examples that relate to the student's knowledge and experience, in my opinion this approach has proven to be particularly recommended.

3.3 Teaching and practicing specialized vocabulary

Vocabulary building exercises are action-orientated and subject specific. Learning and working strategies are extended and reflected in special exercises. Technical terms that are essential for the covered topics must also be defined in detail and, if necessary, clarified, and appropriate translations of technical terms in their ambiguity in the mother tongue must be provided by the teacher. Logical thinking helps in interpreting foreign words and internationalisms, which abound in

technical language. Specialized words are often understood by students, advancing their roots in literary German. It is advisable for the teacher to guide them to explain the content of the unfamiliar word in their own words.

The most important thing is that the students are not just passive recipients of the lesson, but rather become active participants in the lesson. New terms and new items in the course should be worded in such a way that they stand out, thus facilitating learning.

3.4 Stimulating logical thinking

Students often encounter new, unfamiliar terms or technical terms in non-fiction texts. The teacher's task is to explain these terms to them by describing them. It is advisable to use internationalisms for German terms. Another helpful aspect would be to mention the synonyms and antonyms of the presented words; the terms will be better fixed in memory.

It is advisable that students are not offered immediate translation of terms into their mother tongue, in order to stimulate logical and associative thinking. They are stimulated to discover the meaning of technical words. It is advisable that the students are guided along the path of interpreting the technical vocabulary and, in the end, they come to understand the meaning themselves. As a result, their motivation increases significantly, students will be conquered by the technical language and the feeling of helplessness and confusion will disappear completely. This method of teaching is the most recommended and has proven its effectiveness over the years.

3.5 Visualizing the material to be learnt

The material to be presented should be highlighted using tables, learning grids, large presentations, etc., in order to get a better visualization and a better overview for the students. Students are stimulated to comment on them, make predictions, draw conclusions. The teacher should present graphs, diagrams, which could be discussed and interpreted. They prove their effectiveness in checking the knowledge acquired. These written or oral exercises significantly increase the students' language skills.

3.6 Stimulating students' creativity

In the process of teaching, the success of learning new terms depends essentially on the steps taken by the student independently, students comparing the results of their evolution and becoming aware of the evolution of the learning process. The students' discussions in the plenary about the solutions they have found by themselves are much more important than the verification of the correct answers at the end of the textbook.

Not only the learning outcomes are important, but also the learning process. At the end of the course, it would be advisable to have assignments on the presentation of the newly presented economic conditions, drawing a parallel with the economic system in our country. These exercises give students the opportunity to speak and write freely, which stimulates creativity. This type of exercise is not aimed at a grammar-free presentation of the relevant economic relationships and differences, but rather to put into practice the newly acquired knowledge, to stimulate reflection

on economic differences and to promote intercultural understanding and communication related to business.

3.7 Freedom of choice

One of the most important teaching methods is to always give students the freedom of choice, i.e. to be presented with at least 2 questions or topics to solve or discuss. They will choose the topic closest to them. Students will remove what they already know, what is boring, annoying and uninteresting. What is interesting and exciting will remain. If the act of teaching is approached by the teacher with passion and interest, the results will not delay. Mental attitude in any human activity is crucial to its success. There is a saying in German culture that "*Lust und Liebe zum Ding macht alle Arbeit gering*". The process of learning the German language should not be perceived by the students as an imposed task, this aspect will arouse their reluctance. The learner should learn German through play and fun; only then will they achieve their learning goals in an easy and direct way. This is the way the human psyche is programmed, and we must take this into account. From a psychological point of view, this is the guarantee of successful effective training in the active use of language in a completely informal teaching atmosphere. Once the pressure has been removed, then the learning process will become much easier and more fruitful.

During the language course, students have learnt grammatical structures and vocabulary corresponding to their language level with the help of numerous exercises. Everything they have learnt so far is becoming automatic, and the next step will be to translate their acquired knowledge into active language. Now is the time to give a real stimulus to the development of creativity. Students find it a real challenge to formulate and express their thoughts in the foreign language, to demonstrate the knowledge and skills they have acquired. They reach the stage where they are proud of their achievements because they already speak the foreign language they have learnt. This transition happens imperceptibly, which is extremely valuable.

In the educational process some errors (both grammatical and lexical) are allowed during their oral or written presentation. The main thing is that the students dare to express themselves freely in front of their peers by presenting papers or answers to questions on a topic of their choice. The initial fear of making mistakes, their own inhibitions and obstacles have finally been overcome. This is real progress, a real victory for the students. It means that they are already at a higher level of language skills.

3.8 Ensuring success in the learning process

After each lesson, it would be advisable to follow the lesson with exercises that provide an opportunity to reinforce the learning content or to apply the knowledge learnt. In most cases, the exercises review the knowledge learnt. In most cases they complement the knowledge learnt. Beyond the given situations, exercise tasks could be the subject of a problem-orientated lesson opening and thus serve to develop learning areas. Students are able to offer suggestions for teaching activities that go beyond classroom activities. Students need to be given about alternative sources such as technical dictionaries, glossaries and specialized

literature such as newspapers, economic journals. These alternative sources allow students to deepen their knowledge of economic language and will also be helpful in the preparation of any reports or presentations on economic topics.

4. Conclusions

In conclusion, we would like to emphasize that business German lessons should convey the important technical terms in a practice-oriented manner. Courses should be adapted to the economic reality. In the case of the courses, students should learn a total of 500 technical terms, with this minimum knowledge base they can expand their general language skills so that they are able to express themselves appropriately in a professional or technical language environment. Technical terms should be selected from the field of economics and be relevant to the current economic reality, being indispensable in practical work.

A basic knowledge of economic language will facilitate the student's access to relevant texts from specialized literature that may be of interest to him/her. This would enable him/her to significantly enrich and broaden his/her professional knowledge and skills. His/her communication (both oral and written) with foreign colleagues would also improve significantly. In this way the students would familiarize themselves with the internal business life of companies as well as with events concerning processes between certain companies. The aim of language teaching in the professional area is to increase motivation in language learning. In the future, employers will place greater emphasis on the language skills of students. In particular, job-specific language knowledge and skills will be taken into account. A good command of business language will help future managers and employees in foreign companies to establish and maintain contacts with companies in German-speaking countries. It is strongly useful for students pursuing internships in German companies to know technical language. For those interested in taking business German language exams, the German language courses provide a solid foundation and excellent preparation for taking these exams successfully.

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STUDENTS' PERSPECTIVES ON THE IMPACT OF ARTIFICIAL INTELLIGENCE IN LEARNING BUSINESS ENGLISH

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Abstract: *The intrinsic link between the development of technology and the future of higher education is no longer a doubt. New possibilities along with new challenges both for teaching and for learning change the landscape of education and the possibilities of it. It is well-known that technology advancements, especially the appearance of the Artificial Intelligence has brought about huge changes in the trends of teaching English. This article explores the traditional trends and the future trends of Business English teaching, focusing on the pedagogical shifts imposed by the technological advancements in education, from the students' perspectives. More exactly, this research article explores the landscape of teaching Business English focusing both on current trends and on future approaches, the usefulness and the effectiveness of engaging new technology in classes. It is based on mixed-methods research including a systematic literature review and semi-structured interviews, in the qualitative phase, as an instrument for data collection, aiming to find out the students' perspective towards the use of modern technology-based methods in comparison with traditional methods of learning/teaching Business English. The sample of the study consists of 50 students at the Faculty of Economic Sciences, University of Oradea, first and second year of Bachelor's Degree. The students have been asked 5 sets made up of 3 questions on their opinions towards using technology in learning Business English. The study explores the following three main topics: background and experience with AI, perceptions and attitudes, usage and application, effectiveness and learning impact, challenges and concerns. The results show that a significant integration of technology in what is known as blended learning has resulted in a boost in learning Business English, being more interactive, engaging and effective. The students feel that their skills (productive skills: speaking and writing and the receptive skills: reading and listening) have improved after a period of using technology-based tools in the teaching and learning process. Thus, the results show that technology represents one of the most appreciated and appropriate learning tools for today's Generation Z, improving learning effectiveness and evaluation validity.*

Key words: *Artificial Intelligence; educational technology; teaching methods; Business English; blended learning.*

Jel codes: Z13; Q55; L81

1. Introduction

In today's globalized world, proficiency in English, the lingua franca of the business world and of technology, is more important than ever before. As we can find uses of English everywhere, starting with engineering, medicine, law, agriculture and continuing with business and finance, the mastering of it is extremely important; in other words, business development, industrialization and globalization have led to conclusion that English has become the international means of communication. The present situation has led to an increased emphasis when it comes to teaching English in the recent years. Hence, acquiring an advanced level of English is absolutely necessary for all the students, along with the need for digital literacy. On the other hand, emerging technologies and the appearance of Artificial Intelligence are entering more and more different fields of education, including foreign language education. It refers to the use of different tools, enhancing the teaching and learning process. The challenge for the nowadays teachers of Business English is to have the appropriate technique to gain the students' attention along the entire teaching process. On the other hand, for the students, the necessity and the desire to improve their Business English skills in the era of globalization is quite challenging. It is worth mentioning that teaching Business English in today's face passed technological world is not an easy thing as teachers must be creative and up to date with the students' interests and goals when delivering their material. Technology is everywhere so education is somehow pushed to deal with technology and the teachers feel the necessity of embracing it and applying it in the class. Moreover, the present generation of students was born surrounded by technological environment, perceiving technology as part of their life, so technology integration in education would not be a problem that would overwhelm students.

Romania is situated on an increasing trend regarding technology and its use in the teaching and learning process. The extensive use of technology leads to the conclusion that there is a strong grasp of digital literacy. In fact, Romania has one of the most widespread ownerships of smartphone accounts in the world. The International Telecommunication Union (ITU) World Telecommunication/ICT Indicators Database tells us that between 2000 and 2025, there has been an increase in the number of smartphone accounts ownerships. Thus, mobile subscription accounts for 23.20 million individuals or 121% of the total population. The widespread ownership of smartphones indicates us a significant proportion of engaged social media users, ore exactly, 68,42% of the population or 13 million individuals are active users of social media platforms. The interest in technology is obvious, therefore, integrating technology into education can enhance student engagement, facilitating personalized learning and equipping them with essential knowledge for the modern world. The present trends in society and education represent a result of the technological development, pandemic and the globalized economy. Technology has rapidly changed the face of the language education landscape, providing it with a wide variety of tools and resources necessary to increase the outcome of this complex activity.

2. Literature review

In order to have a clear image of where we are today, regarding teaching Business English, it is important to have a look at its historical development. English Language Teaching has evolved over time, the historical development of it providing us a varied context for understanding how teaching Business English has developed. There have been rich historical contexts having rich teaching contexts. Thus, in the late 19th century and early 20th century, the dominant teaching method was that of rote memorization of vocabulary, translation methods were in practice, emphasizing grammar rule. This method of translation was used for classical languages, developing writing skills and reading skills, being criticized for lacking the development of communication skills. It was a strategy which eliminated the need of speaking; thus, the students were extremely teacher-dependent as the teacher was the only one who was talking during the activities.

The development of the Direct Method at the beginning of the 20th century drew to attention the need to develop oral communication and avoidance of translation. Natural language use, conversational fluency and listening comprehension were the main three goals of introducing this teaching method. Keo and Lan (2024, p.3) stated that *'Through Direct Method approach may not sufficiently handle structured written assignments and reading exercises, it may impede the development of comprehensive language skills by ignoring reading and writing abilities.'*

The mid-20th century brought about a focus on repetition, audio-visual materials and pattern drills, being dominated by the Audio-Lingual method. Mart A. (2013, p. 1) states that *'Language items are presented to students in spoken form without reference to the mother tongue so that they can learn language skills effectively. The goal of the Audio-Lingual method is, via teaching vocabulary and grammatical patterns through dialogues, to enable students to respond quickly and accurately in spoken language.'* The approach was meant to increase automaticity, accuracy in language use and mastery of language structures, however, it was criticized for focusing only on rote learning, lack of meaningful communication and a high probability of monotony in class.

After this period, dominated by the above-mentioned methods, English Language Teaching started to become 'more active', meaning that it started approaching language teaching by using real-life tasks. Interactive activities and meaningful communication. The era of Communicative Approach has started. As Savignon (2002, p.5) states *'Central to Communicative Language Teaching is the understanding of language learning as both an educational and a political issue. Language teaching is inextricably linked with language policy. Viewed from a multicultural intranational as well as international perspective, diverse set of language-learning goals but a diverse set of teaching strategies.'* The Communicative Approach has as a main purpose the development of the pragmatic skills, cultural awareness and communicative competence. However, this approach has its limitations, among which we mention: adapting to learner backgrounds, balancing accuracy and fluency and effective technology integration.

The late 20th century English Language Teaching was marked by Task-Based Learning strategy, which is a method used even nowadays, the main characteristics of it being real-life language use, learning through tasks and activities based on

problem solving. Ha Loc and Tuyen (2002, p.3) observe that *'unlike the traditional methods of assessment which focus on paper-based tests, the task-based approach is used to evaluate learners' competence and ability to solve different kinds of tasks. In addition, the assessment of learning tasks is not only the reenactment of actual activities through lectures, but also the assessment of learners' reflective capacity in each problem.'* The intention of this method was to promote independent learning, individual language acquisition and critical thinking skills. Hence, the teachers using this method had to face challenges such as the difficulty in designing tasks, the assessment of the task performance and the authenticity of the tasks.

The beginning of the 21st century faced the introduction of technology in English Language Teaching, by incorporating in the language courses digital tools, online platforms, multimedia resources and adaptive learning systems. As Rintaningrum (2023, p.2) states, *'The advancement of technological tools causes a shift in some language learning activities. When dependency on textbook is not enough to address the advancement of modern education.'* The teaching/learning strategy of the 21st century is student based, students being conditioned in an environment where communication, collaboration, creativity, critical thinking as well as problem-solving are key components. Marysia (2023, p.7) claims that: *'The capacity for change adaptation, initiative and self-direction, social and intercultural competence, productivity and accountability, and leadership and responsibility are other traits that can be cultivated through scientific learning'*. Thus, mastering English the following areas is absolutely essential:

- Effectiveness of communication: using oral, written and nonverbal communication skills; active listening having as an outcome the comprehended meaning; media and technology use.
- Communication and collaboration: in order to reach creative pursuits, the development of creative thinking entails the following steps: applying development approaches of broad concepts, new idea production and analyzing own ideas.
- Information, technology and communication literacy: the use of technology as a tool for analyzing, organizing and evaluating information; understanding the ethical and legal issues regarding the information technology.

The above-mentioned historical developments show us the evolution of the English language teaching methodologies, from the traditional approaches being based on grammar and translation, to a more communicative approach, being based on communication, collaboration, task-based strategy and technology-integrated practices. Current trends in teaching/learning Business English focus on a more dynamic shift towards innovation, technology integration and cultural competence, being learner-centred. As Kiwan and Rod (2012, p.3) notice *'In the era of fast technology and social networking, one can transact ideas and information not only through face-to-face interaction but also through technology, which allows for the instant formation and dismantling of (hyper) real communities based on temporary desire and politics.'* The language learning experiences are enhanced by technology integration, by using digital tools, online platforms, and multimedia resources. Many researchers in the field have concluded that the implementation of new technology, with VR headsets and the other accessories, has led to a close-to-life experience in the whole process of language learning. Interactive language

learning experiences, exercises through games and personalized feedback are just a few results of new technology use in Business English teaching. Compared to printed books, technology-based materials have the advantage of dynamic functions and various modalities to support students' meaning-making. Being tailored to the individual learning needs, preferences and progress levels, these materials go beyond the traditional model, which is no longer accepted by the students. The main focus is to develop communicative competence, real-world language skills and interaction which makes sense. The practice of the language in authentic contexts is reached by using simulations, dialogues and role-play activities. As Kholstinina et al (2021) state, *'It has shown that all these methods and techniques promote students' learning and academic achievement, increase students' retention, enhance students' satisfaction with their learning experience, help students develop skills in oral communication, develop students' social skills, promote student self-esteem, help to promote positive intercultural relations, and the problem of using effective methods of teaching English is extremely important.'* Today's world is a digital world with its emerging technologies among which the latest achievement, that of the Artificial Intelligence and big data processing have a strong impact on the education processes, more exactly on the strategies adopted for learning/teaching foreign languages, in our case Business English. The appearance of the Artificial Intelligence and the development of it, with virtual reality, augmented reality and natural language processes are revolutionizing language learning experiences. Bringing new ideas and new opportunities to all aspects of the teaching and learning process, it has revolutionized not only the students above mentioned traditional methods but also the teacher's role in the teaching process. We are facing a complex and promising tool in the field of language acquisition. On the other hand, teachers face an unprecedented challenge in integrating technology in their class in order to satisfy the learning needs of the young generation. Virtual reality and chatbots are the tools that need to be used by teachers in order to keep up with the digitally literate students and keep a high level of involvement in their classes. Technology comes along with a wide range of benefits and these benefits must be taken into consideration when thinking of strategies in teaching Business English.

3. Research Methodology

For this study, the selected approach, is the qualitative type of study. According to Wikipedia *'The qualitative research is a type of research that aims to gather and analyze non-numerical (descriptive) data in order to gain an understanding of the individuals, social reality, including understanding their attitudes, beliefs, and motivation. This type of research typically involves in-depth interviews, focus groups and field of observation.'* Qualitative research uses methods including structured and semi-structured interviews, focus groups, and participant observation, not only to help generate hypotheses which can be more rigorously tested with quantitative research but also to help researchers delve deeper into the quantitative research. A qualitative interview approaches to research can be stimulating and rewarding experiences for both researcher and participants.

Sample of the Study

This study has been conducted at the Faculty of Economic Sciences, University of Oradea, the sample being 50 students from the first year of our faculty (32 females and 18 males), all specializations of the faculty, meaning International Business in English, Finance and Banks, Marketing, Management, Accounting. The students' level in English ranges from upper-intermediate to advanced. The technique used in choosing the participant was the purposive sampling technique with non-probability sampling approach. Purposive sampling is a non-randomized sampling technique that selects sampling units (persons, cases or events) based on the criteria that would suit the objectives of the study. It is also called judgmental sampling as it relies on the researcher's judgement when selecting the samples that can provide the best information in order to achieve the study's objectives. Non-probability sampling is a technique by which not all the elements to be selected for the study are provided equal opportunities.

4. Research Informants

In order to examine and get a clear image of the impact of Artificial Intelligence in learning foreign languages, having clear reference to Business English, we have chosen key informants that could provide relevant information, being chosen following the inclusion criteria: 1. Economics students who have English selection exam scores above 80 points; 2. Economics students who have taken Introduction to Business English Course during the first semester.

Research Instruments

The instrument of this research is a semi-structured interview, containing five main topics, each being formed of three questions, regarding the students' experience and perspective about using Artificial Intelligence based platforms and applications in learning foreign languages. Thus, this study provided the students an opportunity to express their opinion in their own words.

Data Collection and Analysis

All interviews were conducted in English, being anonymous and written. The length was between 10 and 15 minutes, each interviewee being asked to describe their personal experience regarding the use of Artificial Intelligence apps and platforms in developing their Business English knowledge. The first-year students at the University of Oradea, Faculty of Economic Sciences, the study programs of International Business, Finance-Banks, Accounting, Management, Marketing, and Economy of Commerce, Tourism and Services were the respondents to the five questions in the questionnaire. The total number of respondents was 54 students and the representation of each study program is seen in Figure 1.

Table 1 (showing the characteristics of all the participants in the study)

Characteristics	
Age	18-21 years old
Female/Male	37 Female, 17 Male
Educational Status	College students
School	University of Oradea, Faculty of Economic Sciences
Specialization	International Business in English – 11 students; Accounting – 10 students; Marketing – 10 students; Tourism – 6 students; Finance-Banks – 10 students; Management – 7 students.

Source: Author

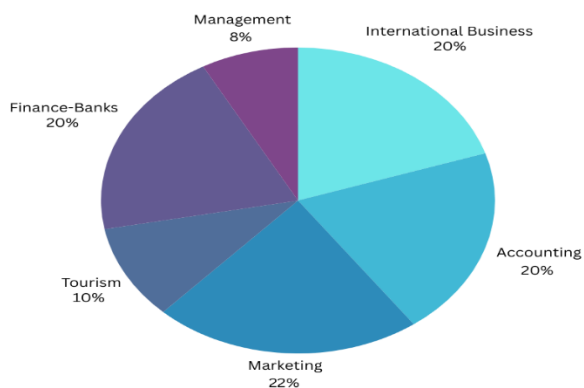


Figure 1: Students' specialization

Source: own design

The study explores the following three main topics:

1. Background and experience with AI;
2. Perceptions and attitudes;
3. Usage and application;
4. Effectiveness and learning impact;
5. Challenges and concerns.

RESEARCH TOPIC 1

In order to find out the attitude of students towards using AI based technology in learning Business English, we asked questions regarding background and experience with using AI based tools in learning Business English. The rate of frequency shows us the students' baseline and their level of familiarity with using AI based tools in learning Business English.

QUESTION 1 regarding attitude towards AI

Do you feel motivated to try AI tools for learning Business English?		
Specialization	YES	NO
International Business 11	7	4
Accounting 10	9	1
Marketing 10	7	3
Tourism 6	4	2
Finance-Banks 10	5	5
Management 7	4	3

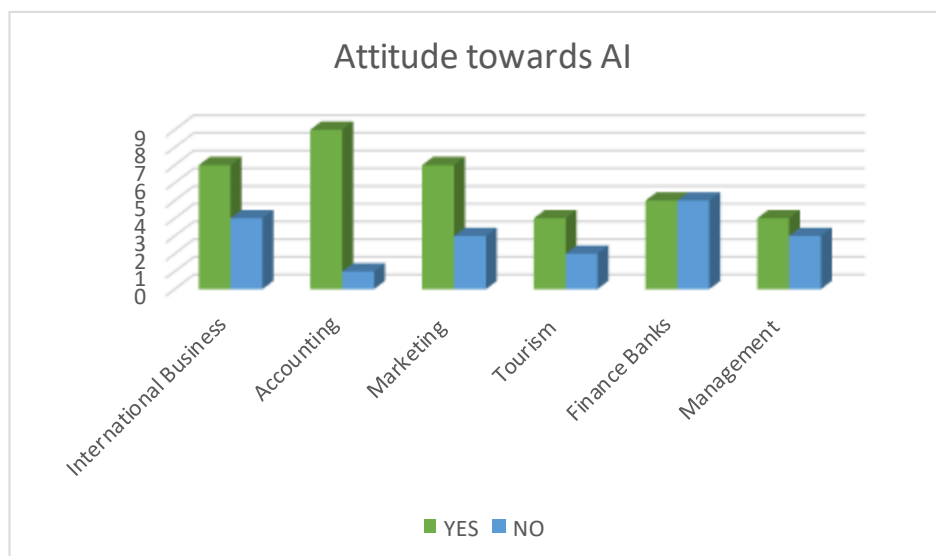


Figure 2: Students' attitude towards AI tool usage in learning Business English

Source: own design

RESEARCH TOPIC 2

In order to find out the attitude of students towards using AI based technology in learning Business English, we asked a question regarding background and experience, their attitude and belief regarding the use of AI based tools in learning Business English.

QUESTION 2 regarding perception of AI

Do you perceive main benefits in using AI based tools in learning Business English?		
Specialization	YES	NO
International Business 11	7	4
Accounting 10	9	1
Marketing 10	7	3
Tourism 6	4	2
Finance-Banks 10	5	5
Management 7	4	3

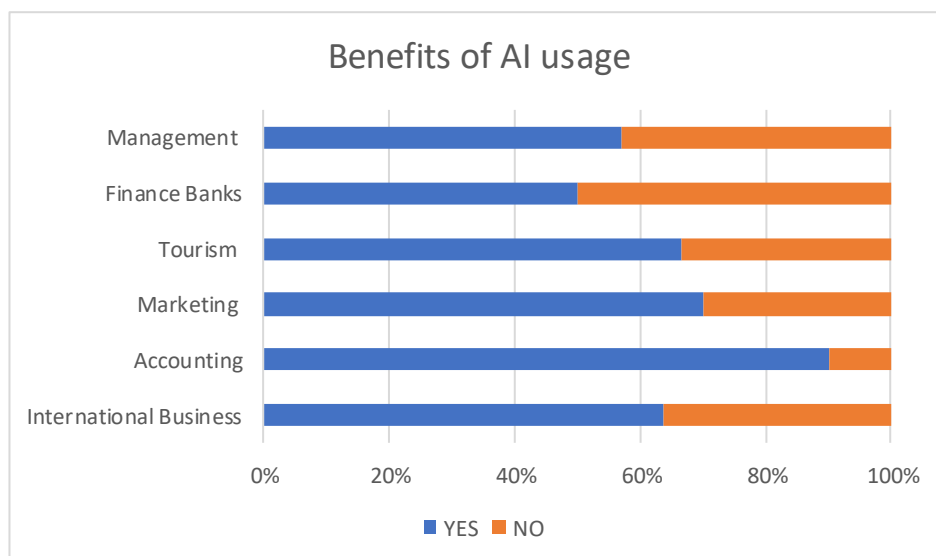


Figure 3: Students' perception on the benefits of AI usage in learning Business English

Source: own design

RESEARCH TOPIC 3

In order to find out the method students use in learning Business English with AI based technology, we asked a question regarding skills development, communication and improvement.

QUESTION 3 regarding skill development and improvement in communication

Do you think your skills have developed after using AI based tools in learning Business English?		
Specialization	YES	NO
International Business 11	5	6
Accounting 10	8	2
Marketing 10	7	3
Tourism 6	4	2
Finance-Banks 10	5	5
Management 7	4	3



Figure 4: Students' perception on skill development after AI usage in learning Business English

Source: own design

RESEARCH TOPIC 4

In order to find out the effectiveness and learning impact in learning Business English with AI based technology, we asked a question focused on results and outcomes.

QUESTION 4 regarding effectiveness of AI based learning in comparison with teacher guided learning

Do you think that using Ai tools in learning Business English is more efficient than learning with a teacher?		
Specialization	YES	NO
International Business 11	0	11
Accounting 10	0	10
Marketing 10	0	10
Tourism 6	0	6
Finance-Banks 10	1	9
Management 7	1	6

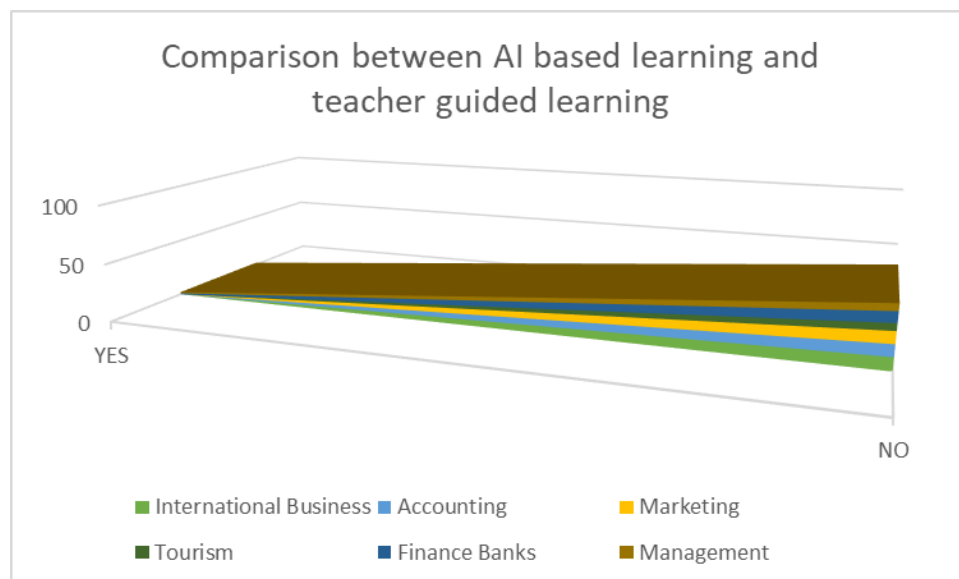


Figure 5: Students' perception on effectiveness of AI tools in comparison with teacher guided learning

Source: own design

RESEARCH TOPIC 5

In order to find out the difficulties in learning Business English with AI based technology, we asked a question focused on challenges, perception and outcomes.

QUESTION 5 regarding resistance and difficulties

Have you faced any challenges while using AI tools to learn Business English?		
Specialization	YES	NO
International Business 11	2	9
Accounting 10	4	6
Marketing 10	5	5
Tourism 6	2	4
Finance-Banks 10	3	7
Management 7	3	4

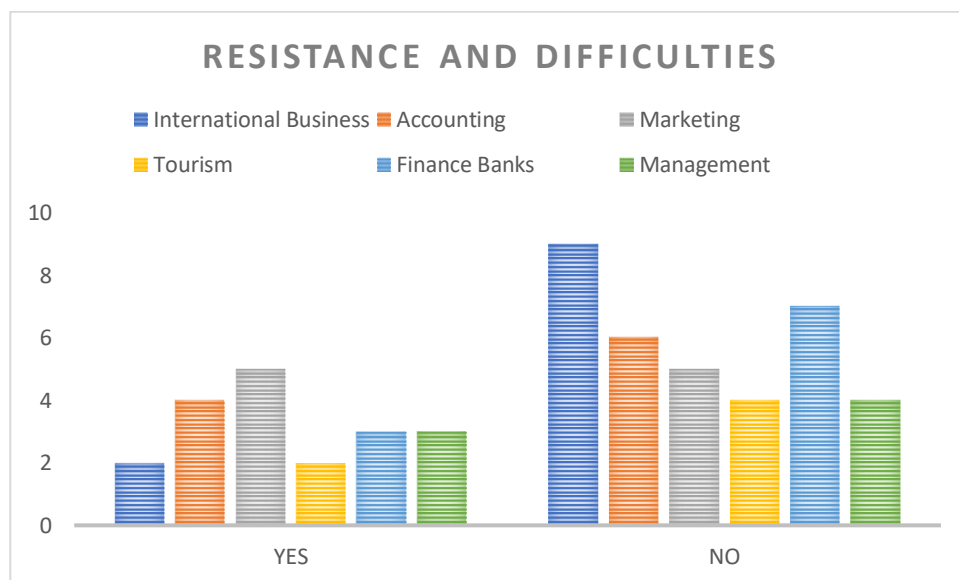


Figure 6: Students' perception on challenges when using AI tools in learning Business English

Source: own design

5. Findings and Discussions

In this paper we tried to analyze our students' perception regarding the impact of Artificial Intelligence in learning Business English. Starting from the concepts and analyses that we found in the literature review; we grouped our questions into five main categories. At the first question, regarding the students' attitude towards using AI tools in learning Business English, 67% answered with 'yes', only 33% answered 'no' to this question. The second question regarding benefits using AI based tools in learning Business English, the same percentage has been received: 67% 'yes', 33% 'no'. The third question was related to the skills developed by the students after using AI based tools for learning Business English, receiving 61% 'yes' and 39% 'no'. The fourth question related to the efficiency of learning with AI based tools in comparison with teacher guided learning process, the results show that 98% of the students prefer to have a teacher-based learning strategy. The fifth question referring to the challenges that the students faced when learning with AI based tools, the results show that 65% had no difficulties in approaching AI based tools for learning Business English.

6. Conclusions

We live in the digital age with a lot of technological innovations and achievements that unprecedentedly affect the education processes on the whole, including the strategies and approaches regarding foreign language teaching and learning. Our students belong to Generation Z; it is a well-known fact that this generation has grown up with digital tools, being digitally literate and technologically savvy. Therefore, today's teaching/learning environment cannot any longer solely be constricted to the traditional learning environment. The appearance of AI has reshaped today's rapidly evolving educational landscape, shifting towards student-centred learning, innovative approaches, enhancing thus the students with engagement, fostering at the same time critical thinking and practical applications. Our study shows that there is a clear bond between the steady development of technology and education, bringing in new challenges and new changes. AI has brought about new trends and the pedagogical shifts imposed by the technological advancement should be embraced and continued by the teachers with all the effort that they deserve.

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THE ROLE OF CHATBOTS IN BUSINESS COMMUNICATION. CUSTOMER INQUIRIES. CASE STUDY: H&M

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Abstract: *Business communication has changed due to the quick development of artificial intelligence (AI), and chatbots are essential for automating consumer interactions. This paper examines the impact of chatbots on handling business inquiries and correspondence, focusing on H&M as a case study. AI-powered chatbots are used by the international fashion retailer H&M to increase customer service effectiveness, speed up response times, and boost engagement. The study examines the primary roles that chatbots play in business communication, such as answering often requested inquiries, assisting with orders, and making tailored recommendations. The study evaluates the efficacy of H&M's chatbot system by examining its accuracy, speed, and user happiness. It also highlights the drawbacks of chatbot technology, including its inability to comprehend complicated queries, the requirement for human intervention in subtle interactions, and the possibility for customer annoyance from impersonal responses. Through a qualitative and quantitative assessment, the research highlights the advantages of chatbot-driven communication, including scalability, 24/7 availability, and a decrease in operating costs. To guarantee a flawless client experience, it also tackles the difficulties of striking a balance between automation and human engagement. According to the findings, chatbots greatly simplify commercial correspondence, but their effectiveness hinges on ongoing developments in artificial intelligence, advances in natural language processing, and seamless integration with human customer service representatives. By providing insights into the best practices for implementing chatbots, this paper adds to the expanding conversation on AI in business communication. The H&M case study shows how chatbots may improve customer satisfaction, maximize operational efficiency, and revolutionize digital corporate communication when properly developed and maintained. To match changing customer expectations, businesses must, however, overcome current constraints and consistently enhance chatbot skills.*

Keywords: *chatbots, AI, business communication, customer service, H&M, automation, natural language processing.*

JEL Classification: Z13; Q55; L81.

1. Introduction

The term "business communication" describes the sharing of information in a business setting, including employee-to-employee and business-to-customer exchanges. It encompasses a range of formats, including emails, reports, meetings, and interaction with customers. Thus, chatbots have become a potent tool for improving communication strategies as companies move more and more toward digital solutions. The integration of chatbots in business communication has revolutionized customer service by providing instant, efficient, and scalable solutions.

Until recently, businesses used conventional techniques to respond to consumer inquiries prior to the emergence of digital communication tools and AI-powered solutions like chatbots. These techniques prioritized human-to-human communication, manual processing, and interpersonal engagement. Prevalent in sectors including retail, hotel, and banking, the techniques mentioned offered a customized experience, but it took a lot of time for both clients and companies. One such technique was *in person presentation*. Even though it was efficient at giving individualized care, it frequently took more time and money. To communicate with company representatives directly, customers went to actual offices, shops, or service facilities. Also, there were restrictions in terms of location and business hours; more personnel and material resources were needed.

Another technique was *help over the phone*. Companies set up separate customer service phone lines so that customers could speak with support representatives in real time. It was used for thorough explanations, complaint resolution, and troubleshooting. Yet, there were challenges: prolonged wait times at busy periods, the need for a sizable staff to provide effective service, and conversations were not fully documented unless they were recorded.

Written communication (faxes and letters) was used for official communications like complaints, court cases, or contracts. Faxes were widely used for the speedy delivery of crucial documents. The problems encountered were related to time (lengthy because of the physical delivery), they required manual document filing and organization, and they were unsuitable for urgent correspondence.

The late 1990s and early 2000s saw the widespread adoption of *email* as a tool which enabled companies to effectively manage internal correspondence, reply to customer inquiries, and deliver updates. This means of communication does not lack disadvantages, though: responses that are delayed outside of regular business hours, handling a lot of emails can be really stressful, and if not worded clearly, there is a chance of miscommunication.

In the same time, larger companies set up *specialized call centers* or *service desks* to handle large numbers of requests, with teams that specialize in answering particular kinds of questions (billing, technical support, etc.). The challenges encountered refer to the need for a lot of personnel and training and if not handled well, it could result in uneven customer service experiences.

Therefore, considering all the aspects mentioned above, the use of chatbots has grown in popularity in today's fast-paced corporate world as organizations look to increase customer happiness, streamline operations, and improve communication effectiveness. Artificial intelligence (AI) and natural language processing (NLP)-

powered chatbots are essential for managing many facets of contemporary business correspondence.

2. Literature Review

Chatbots are now essential instruments for commercial correspondence, helping businesses and their clients communicate. Their function in corporate communications, customer service, and digital company transformation is highlighted in recent literature. The persuasiveness of AI-based chatbots in customer service and their capacity to affect user behavior—specifically, adherence to requests and recommendations—are examined in different studies (Wessel & Benlian, 2021; Brendel & Kolbe, 2022). They look at how anthropomorphism affects user trust and willingness to follow chatbot recommendations through components including visual representation and conversational style, pinpointing important psychological processes that influence user compliance, such as social presence, emotional connection, and perceived legitimacy. Additionally, there is a comparison between chatbots and human customer support agents, finding that in some situations, chatbots can get compliance rates that are comparable to or even higher than those of human representatives. These results have important economic ramifications, emphasizing the necessity of developing chatbots with compelling communication techniques to improve customer pleasure, engagement, and policy compliance. Relevant literature in the field also explores the differences between human-human online conversations and human-chatbot interactions, analyzing communication patterns, engagement levels, and user perceptions. The findings indicate that chatbot conversations are more structured and predictable, with users adapting their language by simplifying sentences and avoiding complex phrasing to accommodate chatbot limitations. Despite advancements in AI, chatbots are perceived as less intelligent and socially present compared to human counterparts, which affects user trust and engagement (Hill et al., 2015; Brandtzaeg & Følstad, 2018; Følstad & Skjuve, 2019).

Also, recent studies highlight the integration of deep learning technologies in business chatbots, which enhances their ability to provide 24/7 services and reduces workforce costs. These chatbots are increasingly used for customer relationship management, financial advising, and online shopping (Zhang et al., 2024). Also, chatbots powered by AI greatly improve user connection by offering prompt, individualized responses. Enhancing the user experience and promoting smooth communication depend on this connection. For example, using chatbots like ChatGPT can improve users' critical thinking skills, according to a study on AI chatbots and critical thinking skills (Fabio et al., 2024). It has been demonstrated that chatbots improve cognitive processes, especially those related to executive functioning, memory, and attention. AI chatbots may help with executive functioning training, lowering cognitive load and enhancing general cognitive performance, according to a comprehensive review (Pergantis et al., 2025). Additionally, users interacting with chatbots reported lower frustration levels and better task performance. The employment of chatbots has important behavioral ramifications as well. By giving dependable and consistent answers, chatbots can affect user

behavior and foster more engagement and trust. According to studies, chatbots can provide prompt support and treatments to help manage stress, anxiety, and other behavioral issues (Fabio et al., 2024).

A comprehensive review of chatbot research in business and information systems reveals key themes such as user interaction, cognition, and behavior. This review also identifies major trends in publication and research agendas, emphasizing the importance of understanding human-chatbot interaction (Li et al., 2025).

In terms of customer service effectiveness, research on AI chatbots for customer service indicates that they significantly improve customer satisfaction by providing instant responses and personalized interactions. These chatbots are effective in handling routine inquiries, thus freeing up human agents for more complex tasks (Vergaray et al., 2023)

For the future, the literature suggests that future research should focus on improving chatbot adaptability and emotional intelligence to better mimic human interactions. Additionally, exploring the ethical implications of chatbot use in business is crucial for developing responsible AI technologies (Zhang et al., 2024; Li et al., 2025).

3. Types of Chatbots Used in Business

A chatbot is a computer program that mimics human communication through text or voice interactions and is driven by artificial intelligence (AI) or pre-programmed rules. Websites, smartphone apps, messaging apps (like Facebook Messenger and WhatsApp), and voice assistants (like Google Assistant or Alexa from Amazon) are just a few of the platforms on which chatbots can function. The following section discusses two types of chatbots: Rule-Based Chatbots and AI-Powered Chatbots.

3.1. Rule-based chatbots (pre-programmed responses)

The simplest type of chatbots are rule-based ones, which are made to provide preprogrammed responses to predetermined inputs. Rule-based chatbots follow a straightforward "if-this-then-that" logic, depending on preset scripts and rules to direct interactions, in contrast to AI-powered chatbots that employ machine learning and natural language processing (NLP) to comprehend context.

■ Predefined Responses:

Rule-based chatbots are designed to respond in a certain way to a predetermined set of queries or triggers. These reactions are set and do not change in response to unprogrammed or novel inputs.

Only particular words or phrases that the chatbot has been trained to recognize can elicit a response. When a user inquiry about "business hours," for instance, the bot will reply with a pre-written response on store hours.

■ User Input Recognition:

Rule-based chatbots recognize commands or keywords in user input. The chatbot employs a related rule to initiate the relevant response after detecting a keyword. For example, when a user asks, "What is your return policy?" the chatbot

understands "return policy" and responds with a pre-programmed response from the company.

■ **Decision Trees and Flowcharts:**

These chatbots frequently use flowcharts or decision trees, in which each user input generates a new branch with additional possibilities or targeted responses. Based on the chatbot's pre-programmed pathways, the dialogue proceeds in an organized manner. These chatbots work especially well at leading users along pre-planned routes, assisting them in locating the data they require or finishing particular activities.

Industry: Banking and Finance

■ **Use Case:** Lloyds Bank's chatbot (<https://www.lloydsbank.com/help-guidance/everyday-banking/message-us-online.html>) assists customers with basic banking queries, such as checking balances, setting up payments, or understanding account features.

■ **How It Works:** The chatbot uses a decision tree to guide users based on their responses. For instance:

Example Flow:

User: "How do I transfer money?"

Bot: "Do you want to transfer to a new account or an existing one?"

User: "Existing account"

Based on the user's answer, the chatbot presents the next step or set of instructions.

Bot: "Please provide the account number and the amount to transfer."

This decision tree ensures that the conversation stays focused on the user's specific needs, avoiding unnecessary or confusing responses.

Industry: Travel and Hospitality

■ **Use Case:** TripAdvisor's chatbot (<https://www.tripadvisor.com/ShowTopic-g1-i12105-k14552205>

[Chatgpt or other AI type responses on Trip Advisor policy-](#)

[Tripadvisor Support.html](#)) assists users in finding and booking travel accommodations and activities.

■ **How It Works:** The chatbot uses decision trees to gather the necessary information about the user's travel preferences. If the user is looking to book a hotel, the bot might ask about location preferences, budget, dates of stay, and room type. Based on the user's answers, the chatbot narrows down options and suggests suitable accommodations.

Example Flow:

User: "I need help booking a hotel."

Bot: "Where would you like to stay?"

User: "In Paris"

Bot: "What is your check-in date?"

User: "April 10th"

Bot: "What is your check-out date?"

User: "April 15th"

Bot: "I found several hotels for your dates. Would you like to filter by price range?"

3.2. AI-Powered Chatbots (Machine Learning and Natural Language Processing)

AI-powered chatbots are sophisticated chatbots that comprehend, analyze, and react to human language more dynamically and intelligently by utilizing technologies like machine learning (ML) and natural language processing (NLP). AI-powered chatbots have the ability to learn from interactions, comprehend context, and respond with tailored, context-aware responses, in contrast to rule-based chatbots that adhere to preset scripts or decision trees. These chatbots are able to have more organic interactions and manage more complicated requests.

Key Technologies Behind AI-Powered Chatbots:

- **Natural Language Processing (NLP)** enables chatbots to comprehend human language, including slang, context, and different query formats. Chatbots can comprehend meaning, sentiment, and intent by dissecting a statement into its grammatical constituents using natural language processing (NLP). With the use of this technology, the chatbot can understand questions that are unclear, lacking, or written in a more conversational style.

- **Machine Learning (ML)** allows chatbots to learn from past encounters and get better over time. AI-powered chatbots get better at deciphering human intent, preferences, and behavior with each exchange. In order to give better answers, they constantly update their models based on fresh data. For example, if a consumer requests a particular product or service again and over again, the bot will learn from these exchanges and give that information priority for subsequent inquiries.

■

3.3. How AI-Powered Chatbots Work:

- **User Input Understanding:** Using natural language processing (NLP), the chatbot analyzes the user's message to determine the entities (particular information, such as names, dates, and locations) and purpose (what the user wishes to accomplish). After classifying the input, it chooses how to react or what to do.

- **Contextual Responses:** AI-driven chatbots are able to comprehend and retain the conversation's context. When a user inquiry about a product and subsequently requests its price, for instance, the bot recognizes that the price request is connected to the first product question.

- **Continuous Learning:** Over time, the chatbot adjusts and gets better thanks to machine learning. For example, it can detect sentiment (positive, negative, or neutral) in communications and adapt to new lingo and linguistic trends.

- **Personalized Interactions:** Using client information and past exchanges, AI-powered chatbots can offer personalized suggestions, messages, and answers. By providing timely and pertinent ideas, this personalization enhances the consumer experience.

3.4. Drawbacks

Chatbots have several drawbacks despite their efficiency in handling business communication. Some key limitations include: Write in a straightforward style.

- **Inability to Comprehend Complex Queries** – Chatbots often struggle with nuanced or context-heavy questions. They rely on pre-programmed responses and

machine learning models, which may not always interpret user intent accurately. This can lead to incorrect or irrelevant answers, frustrating customers.

■ **Need for Human Intervention** – While chatbots can handle routine inquiries, they require escalation to human agents for more complex, emotionally sensitive, or ambiguous interactions. This dependency on human support limits full automation.

■ **Impersonal Responses and Customer Frustration** – Chatbots lack emotional intelligence and the ability to engage in deep, meaningful conversations. Customers may feel dissatisfied with generic or robotic responses, leading to decreased trust and engagement.

To address these drawbacks, businesses must continuously refine chatbot capabilities, integrate them with human agents, and leverage advanced AI techniques such as natural language processing (NLP) to improve contextual understanding and response accuracy.

4. Case Study: H&M's Use of Chatbots for Customer Inquiries

The international clothes store H&M is a well-known international fashion retailer for its stylish yet reasonably priced apparel. They have successfully improved their customer support by implementing chatbots driven by AI. These chatbots offer prompt and effective answers to a range of consumer questions, including order monitoring, product details, and style guidance.

Hennes & Mauritz, also known as H&M, has a lengthy history that began in the middle of the 20th century. H&M was founded by Erling Persson in 1947 in Västerås, Sweden. The first store was named "Hennes," which means "Hers" in Swedish, and it exclusively sold women's clothing. In 1968, Persson acquired the hunting apparel retailer Mauritz Widforss, which led to the inclusion of menswear in the product range. The company was then renamed Hennes & Mauritz, or H&M.

H&M began its international expansion in the 1970s, opening stores in Norway, Denmark, the UK, and Switzerland. By the 1980s and 1990s, H&M had established a significant presence in Europe. The 2000s marked H&M's expansion outside Europe, with the opening of its first U.S. store on Fifth Avenue in New York City in 2000. The company continued to grow globally, entering markets in Asia and the Middle East. H&M launched its online shopping platform in 1998, starting in Sweden. The company has also been a pioneer in sustainability, publishing its first Corporate Social Responsibility Report in the early 2000s. Over the years, H&M has expanded its brand portfolio to include COS, Weekday, Monki, & Other Stories, ARKET, and H&M Home, among others. Today, H&M is one of the largest fashion retailers in the world, known for its fast fashion business model and extensive global reach (<https://hmgroupp.com/about-us/history/>).

This case study looks at the advantages and difficulties of implementing chatbots, as well as how H&M employs them and how they affect consumer interactions.

Chatbots with AI capabilities act as virtual assistants, assisting H&M in meeting client needs at multiple touchpoints. These chatbots make customer service more

efficient and accessible by integrating with H&M's digital platforms, such as its website, smartphone app, and even social media outlets.

One of the main ways in which H&M employs chatbots is answering commonly asked queries like product availability, purchase tracking, return policy, and store locations, significantly reducing the workload for human agents and lowering operational costs. Consumers no longer have to wait for a human agent to answer their questions because they can type them in and get prompt answers. Also, based on browsing history and user preferences, the chatbots offer personalized product recommendations. These virtual assistants employ data analysis to recommend clothes based on the user's preferences, size, and previous purchases. In order to make shopping more interesting, they might also provide styling tips. For example, when a consumer searches for "summer dresses," they are given tailored recommendations along with links to items in the size and color they have selected. In order to complete the ensemble, the chatbot can also recommend jewelry or shoes. H&M's chatbot on Kik acts as a digital stylist, suggesting outfits based on user preferences and occasions. This personalized service enhanced customer engagement and satisfaction (Master of Code Global, 2023). The chatbot led to a 30% increase in conversion rates for users who interacted with it (Master of Code Global, 2023), demonstrating its ability to convert browsing into buying. Another way in which the chatbot increased customer's happiness is the facilitation of returns and exchanges. H&M's chatbots generate return labels, give detailed instructions, and assist clients with returning or exchanging items. This reduces the effort for customer support representatives and streamlines the returns procedure. When a consumer contacts the chatbot to initiate a return, it verifies the purchase, provides information about return possibilities, and emails the required shipping label. Additionally, the chatbot can provide options like exchanging for a different color or size. H&M has operations in several nations, and their chatbots can speak a number of languages. This makes the shopping experience more accessible and frictionless by guaranteeing that clients everywhere may get help in the language of their choice. For instance, a client in Spain asks a Spanish chatbot about a product's availability in-store, but a customer in Japan gets the same degree of assistance in Japanese. This worldwide accessibility increases client loyalty and fosters confidence. Moreover, the chatbots at H&M offer proactive involvement rather than just reactive help. Customers are encouraged to finish purchases or take advantage of specials by the bots' notifications of replenished items, impending sales, or suggestions based on abandoned carts. A chatbot message asking customers to complete their purchase and offering a discount code to encourage the transaction is sent to customers who leave things in their cart. In certain areas, H&M uses chatbots in conjunction with smartphone apps to help customers in-store. For information about available sizes, colors, or styling advice from the chatbot, customers can scan product tags. The gap between online and in-store shopping is closed by this connection. Also, the chatbot encourages users to finish purchases or take advantage of sales by reminding them of sales, replenished goods, or abandoned carts. Sales are increased and client retention is fostered by this proactive interaction.

Customer care operations have significantly improved as a result of H&M's adoption of AI-powered chatbots.

Increased Efficiency: The chatbot responds to a large number of consumer questions in real time, cutting down on wait times and increasing response rates.
Customized buying Experience: AI-powered suggestions produce a customized buying experience that increases client happiness and revenue.
Cost Savings: By eliminating the need for human customer service, automating answers to frequently asked questions lowers operating expenses.
24/7 Availability: In contrast to human workers, the chatbot offers round-the-clock assistance, guaranteeing flawless client care.

By offering immediate, individualized service, H&M's chatbot has greatly increased customer engagement and organizational efficiency. Even if AI chatbots improve customer service, companies still need to strike a balance between automation and human interaction to properly handle complicated issues. To maximize customer happiness, future developments might concentrate on improving natural language processing skills and incorporating more human-like interactions.

Here are some examples of dialogues between H&M's chatbots and clients:

Example 1: Order Tracking

Client: "Hi, can you help me track my order?"

H&M Chatbot: "Sure! Please provide your order number."

Client: "It's 123456."

H&M Chatbot: "Thank you! Your order is currently being processed and is expected to be delivered by February 25th."

Example 2: Product Inquiry

Client: "Do you have this dress in size S?"

H&M Chatbot: "Let me check for you. Yes, the dress is available in size S. Would you like to add it to your cart?"

Client: "Yes, please."

Example 3: Fashion Advice

Client: "I need help picking an outfit for a wedding."

H&M Chatbot: "I'd love to help! What style are you looking for? Casual, formal, or something in between?"

Client: "Something formal."

H&M Chatbot: "Great! How about this elegant navy-blue dress paired with silver accessories? You can find it in our formal wear section."

Example 4: Return Process

Client: "How do I return an item?"

H&M Chatbot: "To return an item, please visit our returns page and follow the instructions. Would you like me to send you the link?"

Client: "Yes, please."

H&M Chatbot: "Here is the link to our returns page: [link]. If you need further assistance, feel free to ask!"

These examples illustrate how H&M's chatbots provide efficient and helpful responses to various customer inquiries, enhancing the overall shopping experience.

5. In conclusion

Traditional approaches to answering business questions offered direct communication and individualized attention, but they were frequently more expensive, took longer to respond, and needed a large number of human resources. These restrictions opened the door for digital transformation, as companies started using chatbots and email automation to increase customer satisfaction, speed up response times, and streamline communication.

Chatbots and business communication are related because of their capacity to automate, personalize, and simplify conversations while upholding consistency and professionalism. By offering real-time assistance, tailored suggestions, and round-the-clock accessibility, chatbots have greatly increased consumer satisfaction in customer service. Businesses like H&M have effectively used chatbots to manage customer inquiries, speeding up response times and enhancing the overall buying experience. Chatbots increase operational efficiency by automating repetitive operations so that human agents can concentrate on more complicated customer concerns. Furthermore, by examining consumer preferences, AI-powered chatbots provide tailored interactions that increase customer engagement and revenue. Chatbots are a useful tool to increase customer convenience, expedite support services, and foster brand loyalty, but they cannot completely replace human interaction. Companies that successfully use chatbot technology will keep improving customer happiness and maintaining their competitiveness in the rapidly changing digital market.

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THE ROLE OF BIG TECH IN INTERNATIONAL TRADE: PLATFORMS AS FACILITATORS OF CROSS-BORDER E-COMMERCE

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Abstract: *This paper explores the pivotal role that major online marketplaces—such as Amazon, Alibaba, and eBay to name a few of them—play in shaping modern trade and e-commerce. It explains how these titans leverage strategic and economic mechanisms to pivot their global dominance while enhancing their global trade efficiency and market integration. Using a mix of methods, this study investigates recent trade data, econometric insights of these companies and industry reports in order to examine their economies of scales, network effects and transaction cost efficiencies. The findings indicate that these companies facilitate significant trade volume growth, with cross-border e-commerce projected to grow at a staggering 25.1% CAGR from 2022 to 2028, driven by platforms balancing buyer-seller ecosystems. The second part of the paper focuses on Amazon as a case study and it outlines how the company's logistical infrastructure and use of AI-driven models have underpinned its sustained global dominance in e-commerce. For instance, the U.S. accounts for roughly 47.5% of Amazon's global site traffic. However, not all impacts have been positive—according to a 2016 inquiry by the European Commission, 38% of surveyed retailers reported being affected by Amazon's restrictive practices and strategies. This raises broader question marks and insecurities about fair competition in digital markets and e-commerce; and such insights are especially valuable for economists and policymakers interested in how digital trade is reshaping global commerce because as this new paradigm evolves, it increasingly challenges long-standing models of international trade and forces a rethinking of competitive dynamics in the digital age.*

Keywords: *international trade; e-commerce; Amazon; AI-driven models.*

JEL Classification: *F13; F14; L81; L86; O33*

1. Introduction

The transformation of the international trade, and its shift from the traditional paradigms and framework that we already know, to the online, seamless and borderless buying transaction is nowadays a norm; as platforms like Amazon, Alibaba and eBay have made their way into our personal lives and transactional operations. These firms have grown into e-commerce behemoths, serving both the end customer, and the selling entity at the same time, providing them hosting and

networking; helping them into growing and being the e-commerce behemoths that orchestrate a large share of cross-border retail exchanges. Recent industry projections underscore their influence: global cross-border B2C e-commerce merchandise value its forecast to reach roughly \$3 trillion by 2028, growing about 25,1% annually from 2022 to 2028 (Vantage Market Research, 2022). Of course, this explosive growth in e-commerce is not random or accidental, but largely attributed to the scale and reach of major marketplaces, which make it easier for the end customer to discover international products and, or businesses to access global customers.

However, the dominance of these platforms also raises critical concerns over the market power and equitable competition in world trade. Amazon for instance, has established itself as an unparalleled leader in global market, with US alone accounting for almost half its website visits-more accurate 47,5% of worldwide's site visits (SellerSprite, 2024). It's worth mentioning as well that Amazon, through it's Amazon Marketplace hosts millions of third-party sellers and buyers, and exerts significant control over terms of trade. Going to the other side of the world, Alibaba Group through its platforms like Alibaba.com (B2B), Tmall and Taobao (China domestic B2C) and AliExpress (Global B2C) facilitates a massive volume of international transactions, connecting manufacturers and consumers across over 220 countries with 150+ million active global buyers on AliExpress (Joshua, 2023). eBay as well, one of the pioneers of online marketplaces, similarly connects buyers and sellers in over 190 markets (Statista Research Department, 2024).

These firms utilize sophisticated strategies grounded in economic principles to reinforce their market positions – from leveraging economies of scale in logistics and IT infrastructure to harnessing network effects that make their platforms more valuable as more participants join (Durling, 2022). Furthermore, by dramatically reducing transaction costs (e.g. search costs, payment processing, and fulfillment) these marketplaces have such a powerful advantage over traditional channels that some may call it even unfair.

2. Theoretical Framework

2.1 Network Effects and Two-Sided Market

The machinery of cross-border e-commerce hums with network effects, where each new participant-be it a buyer in Amsterdam or a seller in Bangkok-amps up the platform's allure. It works just like a bazaar: The more shoppers swarm up to snap up Korean tech or Italian leather or Turkish kebab, the more vendors pile in, enriching this way the catalog of products and driving down prices through sheer volume. It's a virtuous cycle and the large trade corporations do not just surf this wave; they actually steer it to they liking. By wielding vast databases and real-time analytics, these firms fine-tune their algorithms and strategies to the smallest details, from inventory to shipping routes, ensuring buyers and sellers stay hooked as much as possible to their website, spending as much money as possible. The academic literature (e.g. Rochet & Tirole, 2003; Parker et al., 2016) stresses that once a platform like Amazon or Alibaba achieves a sufficient amount of network size, it gains a competitive moat: its service becomes more useful and convenient than

smaller rivals, thus attracting even more users in a virtuous cycle. As an analysis noted, “*Amazon makes use of economies of scale and network effects to dominate*” the e-commerce sector (Durling, 2022). The network effect “bandwagon” means that as Amazon’s marketplace grew, it became the go-to place for an even larger number of buyers, which in turn compelled more merchants to list their products there, further amplifying Amazon’s reach and popularity (Durling, 2022). In short, we can resemble this effect with the snowball effect aka the compound effect.

2.2 Economies of Scale and Scope

The sheer number of operations of the major marketplaces aforementioned yields significant economies of scale; another classic economic concept relevant to their global dominance. Economies of scale refer to the cost advantages that a business or financial entity obtains due to its expansions; as output increases the average cost of a unit typically decreases. In the context of the studied companies (Amazon, Alibaba, and eBay), scale economies appear in multiple fields, a few of them being procurement, technology infrastructure, logistics, and of course marketing. For example, Amazon’s ability to invest in massive fulfillment centers and cutting-edge automation is supported by the colossal volumes of orders that it processes; the cost per order for warehousing and shipping drops as numbers of order rises. An academic review by Zhu and Liu from 2018 (Zhu and Liu, 2018) observed that Amazon’s continuous reinvestment into its distribution network and IT systems creates a scale-based cost leadership that smaller competition cannot match. Similarly, Alibaba’s e-commerce empire in China benefits from economies of scale in cloud computing (via Alibaba Cloud) and in payments (via Ant Group’s Alipay) that grew symbiotically with its marketplaces – achieving efficiencies in handling billions of transactions with lower marginal transaction costs.

Economies of scope – cost advantages due to a variety of products or businesses – also play a role; let’s take Amazon for example. It operates retail marketplace, cloud services, digital content, and devices (a domain not so profitable as the other ones, but let it be for the sake of the argument), which share data and technological resources between one another, reinforcing their connectivity and the ecosystem. Cusumano et al in 2019 (Cusumano et al., 2019) suggested that this diversification of portfolio allows cross-subsidization and resilience, strengthening Amazon’s overall competitive position against its competitors, who might have just one pillar of Amazon’s diverse portfolio.

From a global trade perspective, the economies of scale of this key player can translate into lower prices and of course improved service levels for international consumers and sellers. Shippers like Alibaba and Amazon, who are able to ship products high volume and cross border negotiate favorable rates with logistics providers, and in some cases, they have even developed their own logistics arms (e.g. Alibaba’s Cainiao network, Amazon’s international shipping and last-mile delivery fleet.) (Logistics Asia, 2021). These scale driven services reduce the logistic costs and delivery times while furthermore they spread fixed costs of regulatory compliance (e.g. customs clearance systems, international returns handling) across many transactions, making it viable to offer services like duties-prepaid shipping or easy international returns; perks that a smaller firm would find way too costly to handle by itself. The net effect, as discussed in trade economics research (Lendle

et al., 2016) is that e-commerce shrinks the distance between countries by utilizing their scale in order to absorb or streamline the economic frictions that exist with traditional trade.

2.3 Platform Strategies and Competition Policy

Finally, the literature review would not be complete if we wouldn't mention about the growing body of work on competition policy and platform regulation as it pertains to major e-commerce marketplaces. As their influence has exponentially grown, so has the diligence of economists, legal scholars and regulators on how these platforms may abuse their dominant positions. Key areas of interest identified in literature and policy reports include: self-preferencing (e.g. A platform favoring its own products or services over third-party sellers on the platform), exclusive dealing or lock in (contractual terms that usually prevent sellers from offering lower prices elsewhere; even on their own platform, or that force use of certain platform services like fulfillment), and data exploitation (e.g. using third-party seller data to compete against those sellers, as alleged in Amazon's case by the EU).

For instance, the European Commission's preliminary findings in its E-commerce Sector Inquiry (2016) raised concerns about the dual role of marketplaces, that act both as a platform but also as a rival seller, noting a potential conflict of interests when a platform operator competes with its own business users (Leprince-Ringuet, 2020). Scholars like Ezrachi & Stucke (2016) have theorized the concept of "algorithmic collusion" and "super platforms" to describe how a few digital marketplaces might entrench their powers in ways that have not been seen nor studied in the traditional markets, possibly necessitating updated competition policy tools.

In summary, the literature presented above provides a multifaceted understanding: online marketplaces reduce existing trade frictions and enhance global e-commerce by leveraging network effects and scale, but those same factors can also lead to outsized market power and monopolistic regimes that poses challenges for competition and policy. This dual perspective sets the stage for examining empirical findings on how Amazon, Alibaba, eBay and others, operate internationally; as we shall see further below.

3. Amazon Case Study

3.1 International Operations and Strategy

Amazon started in the United States in 1995 and by the early 2000s began its international expansions – launching marketplaces in Europe (UK and Germany 1998, France in 2000), Asia (Japan 2000, China 2004, India 2013) and beyond (DePillis & Sherman, 2021). To this day, Amazon has consumer retail websites in Europe, Asia, America, and the Middle East, and serves customers in even more countries via cross-border delivery. It's worth noting also that Amazon's global strategy is to emphasize the market integration and consistency; it strives to offer a similar user experience (in terms of perks for the Prime membership benefits, website user interface, seller platform) across all market, be it Europe, America, Asia, or the Middle East, while simultaneously tailoring to local preferences (for

example integrating local payment methods and curating region-specific product selections; as the products that are popular in USA are not popular in India for example).

3.2 Economies of scale & scope in procurement and logistics

One key strategic mechanism that Amazon uses is the tremendous economies of scale in procurement and logistics that allow the company to enter new markets aggressively. Usually, when Amazon enters a country, it invests heavily in infrastructure – usually operating at a loss for initial years – leveraging its global capital and technology. For instance, in India Amazon reportedly invested over \$6.5 billion in the first 5-6 years of operations in order to build warehouses, last-mile delivery service and to underwrite discounts and free shipping to acquire new customers (Times of India Team, 2020). These economies of scale mean Amazon can endure the costs that local retailers cannot even dream of supporting. Over time, as volume grows, Amazon achieves lower unit costs in that market.

Economies of scope also play a tremendous role in Amazon's International Expansion. Services like Fulfillment by Amazon (FBA), where Amazon handles warehouses and logistics for third-party sellers, were originally developed in the US but are rolled out globally and of course these spread the development cost of such services and provides a uniform high standard of logistics to sellers worldwide. As a result, a seller in Italy, or Russia benefits from the same service to store and ship products just like an American seller, even though they are on different continents; gaining the benefits of using Amazon's world-class logistics system in their own market. This integration of services and platforms across borders attracts both sellers – as they get consistent and reliable delivery performance - and buyers who gain easy logistics solutions and top-notch platform and services under the Amazon's logo.

3.3 AI-Driven Logistics

Amazon's supply chain is a showcase of how artificial intelligence and automation can be used to handle global operations efficiently – or better put, in a more efficient way than humans can. The firm employs AI and machine learning in order to demand forecast, inventory placement, and route optimization on a massive scale; and a concrete example is Amazon's use of AI for predictive demand forecasting during peak seasons: during a recent holiday season (cyber Monday 2023), Amazon's AI systems forecasted demand of 400 million products and prepositioned their inventory in the warehouses closer to anticipated buyers based on their reserves of historical data (Sifted Team, 2024). This kind of predictive logistic is on one hand scary for sure, but one on the other hand particularly beneficial for cross-border fulfillment – by anticipating that a certain product from a Chinese seller will see high demand in Brazil, for instance, Amazon can proactively ship inventory to its Brazil fulfillment center, cutting in this way delivery times for the customers.

Additionally, Amazon has deployed two models of AI robots, the first being Kiva in 2012 which is a transportation robot equipped with an AI model, and an autonomous robotic arm named Sequoia in 2022, that have significantly sped up the order processing. The Sequoia system alone can store and retrieve inventory by a 75% faster than the previous system, contributing to way faster dispatch times.

Through a customized inventory management system that organizes deliveries, Amazon was able to reduce human effort and employee injury by 15% and slash the processing time by 25%. Now, what do the above numbers mean for Amazon? The system ensured that the products ordered on Cyber Monday were delivered much faster. In 2020 alone, Amazon was able to use machine learning and AI to save \$1.6 billion in transportation and logistics costs and reduce their 1 million tons of CO2 emissions (Sifted Team, 2024). These figures highlight how the constant reinvestment strategy of Amazon has led them being a leader in the e-commerce market, thing achieved via scale and advanced technology, and it underscores how smaller rivals would unlikely have the financial ability to match Amazon's capability due to heavy fixed costs and data requirements involved in the processes.

3.4 Market Integration

Amazon also integrates different markets by encouraging cross-border transactions within its ecosystem. For example, European Amazon marketplaces (UK, Germany, France, Italy, Spain, Netherlands, Sweden, Poland) are largely integrated in the ecosystem, meaning that a seller can easily sell in all the other EU countries by using Amazon's platform and the firm is offering unified logistics and even automatic translating listings. This integration basically creates a regional single market for e-commerce under Amazon's auspices, ahead of what regulatory harmonization alone achieved.

In a similar way, Amazon's global seller program allows (primary) Chinese manufacturers to sell directly on all Amazon's sites, and by 2021 reports suggested that almost 50% of the top Amazon Marketplace sellers in the US were actually based in China. This reflects Amazon's integration of Chinese export supply into its platform. (In the graph shown below, we can also see a decline in the Chinese sellers, but that's due to Amazon's closure of certain accounts, due to not following COVID-19 regulations (Kaziukenas, 2024).



Figure 2: Percent of Top Amazon sellers based in China
Source: <https://www.marketplacepulse.com/articles/amazons-significant-reliance-on-chinese-sellers>

For consumers, Amazon offers option like Amazon global Store, where consumers in countries without an Amazon local store (or even with one) can import products from all over the world, with Amazon handling all the logistic and legal duties and providing a landed cost calculation to the customer.

This is a twofold win for Amazon. On one hand, it expands Amazon's sales beyond the confines of a local inventory and secondly, it further reinforces network effects by linking country marketplaces and integrating them into one platform. Imagine a customer from Australia, that before Amazon opened in Australia he could easily buy from Amazon US; once Amazon Australia launched, the already established trust and habits transferred to Amazon Australia, making Amazon's entry easier in the Australian Market.

3.5 Competitive Behavior and Anti-Competitive Concerns

Amazon's rise has not been without the very well-known controversies, especially regarding the strategies it uses and how they affect the other competitors and the sellers. One of them, is the dual role that Amazon plays, as both the marketplace operator and retailer. In a more detailed manner, Amazon sells products itself in a first-party manner, as a traditional retailer would, while simultaneously also hosting third party sellers. This arrangement has not been left without accusations on Amazon, as it may favor its own products or also might leverage its control on the platform to the detriment of the other independent sellers; an issue that touches on both fairness and competition law.

In 2016, the European Commission launched an inquiry into e-commerce which among many other aspects gathered also information on marketplace dynamics in the EU. Finding from that inquiry and subsequent investigations have turned on the light on Amazon's impact on the market. For instance, the Commission preliminary found that Amazon systematically used private data from third-party retailers, such as volumes and pricing, to inform Amazon's own sales strategy, giving this way itself an unfair advantage (Petrov, 2020). This kind of behavior would be a clear abuse of dominance under EU competition law if confirmed, as it exploits access to not-private data not available to competitors. Amazon has faced formal antitrust charges in the EU on this matter since that, resulting in commitments in late 2022 to change some of its practices. Some of these commitments included among others the ceasing of use of non-public marketplace seller data for its own retail operations (European Commission, 2022).

Another contentious strategy of Amazon was the use of price parity clauses; also known as „most-favored-nation” clause, in contracts with sellers, which prohibited sellers from offering their products at lower prices on any other platform; including their own websites. Many critics have argued that this strategy stifled competition by preventing rival marketplaces or independents sellers from competing on price and the worst of all, it locked sellers into Amazon's fee structure. European regulators pressured Amazon into removing such clauses around 2013, and Amazon obliged to this pressure by 2019, and it did so worldwide under regulatory scrutiny. This absence of price competition due to the before-mentioned clauses was cited as one of the factors that “negatively affected” retailers' ability to compete outside the Amazon's ecosystem (Leprince-Ringuet, 2020).

The survey data from Europe provides quantification of Amazon's perceived impact on sellers. In one European Commission inquiry in 2016 a significant amount of retailers reported that they were adversely impacted by the large marketplace's tactics. In fact, 38% of online retailers surveyed indicated that Amazon's strategies have negatively affected their businesses (Leprince-Ringuet, 2020). This may happen as being undercut by Amazon's own products, feeling coerced to join Amazon to reach more customers (even if it means that they had to surrender margin through fees) or having to abide by Amazon's strict terms and strategies that can also change abruptly, in other words, Amazon holds all the cards.

An EU sector report also noted that many retailers voiced concerns that their dependency on dominant platforms could be exploited, for example, sudden changes in search ranked algorithms or fee increases on Amazon can "make or break" small merchants, reflecting a huge power imbalance (European Commission, 2017). The House Judiciary Committee Investigation in the US (2020) similarly documented numerous third-party sellers who described Amazon's marketplace as a "gatekeeper" that can impose exorbitant fees and require use of services like FBA, effectively taxing and controlling their businesses (U.S. House Subcommittee on Antitrust, 2020). These competitive concerns about Amazon, illustrate how the platform's economic strategies; while immensely successful in scaling the business, pose huge challenges for fair competition and should be regulated.

4. Conclusions

In conclusion, the Amazon case study encapsulated how a dominant marketplace operates internationally: by combining a massive investment in scale (logistics, AI, global reach) with network-driven platform growth (third-party seller ecosystem), Amazon has increased efficiency in global trade but has also gathered significant market and decisional power.

This article's examination, grounded in economic theory and backed up by recent data, leads to several key conclusions:

1. Enhanced Trade Efficiency and Access: Online marketplaces have undeniably lowered the barriers and difficulties to cross border commerce, and they did this by leveraging economies of scale, sophisticated logistics and network effects, in order to connect sellers and buyers worldwide with an unprecedented ease.
2. Dominance through strategic mechanisms: The leading marketplaces have achieved their dominance through deliberate strategic use of scale and network advantages, and the detailed Amazon case study explained how investing in AI-driven models for inventory and logistics and integrating services across multiple markets gave Amazon a global competitive edge. Amazon's consolidation of nearly half of US online commerce and Alibaba's command of the Chinese e-commerce market show that dominance once achieved can be durable.
3. Challenges to Fair Competition: With great market power comes great responsibility – and concern. This article highlighted the substantial need of regulations in order to ensure that these e-commerce behemoths do not abuse their intermediary position to foreclose competition or unfairly extract value from dependent sellers. The fact that a significant amount of retailers reported negative

impacts from Amazon's tactics underlines that the success of these platforms can come with a cost to the traditional market structures, business livelihoods and on top of all, fair competition; if they are not regulated.

4. Global impact and Cooperation: Finally, it's more than clear that major marketplaces have become global actors on the trade game and their impact goes beyond country borders. Thus, ensuring fair global trade in the age of digital platforms and artificial intelligence will require international cooperation. Huge issues, like data privacy, digital taxation, counterfeit product and competition law in digital markets are discussed in multi-national forums (G20, OECD) with the recognition that unilateral approaches have limits and the policies that need to be adopted can have ripple effects if not adopted on a worldwide scheme. On the other hand, this also creates an opportunity for harmonizing best practices that protect consumers and sellers without fragmenting the digital market unnecessarily.

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GIG ECONOMY: THE FUTURE OF WORK OR THE ILLUSION OF FREEDOM? A DATA-DRIVEN ANALYSIS

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Abstract: *This article examines the gig economy as a significant economic phenomenon reshaping labor market structures and dynamics in the digital age. Driven by technological innovation, shifting demand patterns, and the economic disruptions of the COVID-19 pandemic, platform-mediated work has introduced flexible, project-based employment models that challenge traditional employment frameworks. From an economic perspective, the gig economy reduces transaction costs, enables labor market adaptability, and fosters entrepreneurship. However, it also contributes to the erosion of job security, weakens collective bargaining power, and increases income volatility—raising critical questions about its macroeconomic and distributive implications. Methodologically, the paper combines theoretical analysis—grounded in Dual Labor Market Theory, Agency Theory, and the concept of the precariat—with a bibliometric mapping of global research trends using VOSviewer and empirical data from international economic institutions. Findings indicate a dual effect: while gig work can enhance labor force participation and economic efficiency, it simultaneously intensifies precarity and creates regulatory asymmetries. Emerging policy responses, including the EU Platform Work Directive and national reforms, highlight efforts to balance labor flexibility with legal and economic protections. The study concludes that the gig economy is not merely a labor trend but an evolving economic model with far-reaching consequences for labor markets, income distribution, and the future of work. Policymakers must address structural imbalances to ensure that economic innovation does not come at the expense of equity and sustainability.*

Keywords: *Gig economy; digital labor platforms; labor market transformation; precarity; labor economics; platform work; workforce flexibility.*

JEL Classification: J08; J24; J62

1. Introduction

The gig economy has emerged in recent decades as a disruptive paradigm within the global labor market, reflecting a significant shift from traditional employment arrangements toward more flexible, digital, and often temporary forms of work.

Accelerated by digitization, globalization, and crises such as the COVID-19 pandemic, the gig economy promises autonomy and freedom for workers. However, it simultaneously raises concerns regarding job stability, equitable labor conditions, and social protection. At the core of this transformation lies a fundamental tension: while gig work offers adaptable employment opportunities and supplementary income, it also contributes to the erosion of social security, increased labor fragmentation, and the amplification of precariousness.

Gig workers often operate in legal and institutional grey zones, as digital platforms accumulate market power and influence. This article proposes an interdisciplinary and mixed-method approach to explore the gig economy. First, it examines theoretical underpinnings—including Dual Labor Market Theory, Agency Theory, and the concept of the precariat—to understand the organizational mechanisms and power relations that define gig work. Second, a bibliometric analysis using VOSviewer maps dominant themes in the international literature, highlighting key research clusters. Third, quantitative data from different sources are used to assess the global expansion of gig platforms, worker perceptions, and labor market implications. Through the triangulation of theory, empirical data, and bibliometrics, this article seeks to answer a central question: is the gig economy a sustainable model for the future of work, or a digitally refined form of labor prevarication?

2. Theoretical Framework

The evolution from traditional employment to the gig economy represents a significant shift in the modern labor landscape. This transition has been driven by multiple forces, including digitalization, shifting consumer preferences, changing social norms, and crises such as the COVID-19 pandemic, which accelerated the adoption of flexible work models. Research indicates that digital labor platforms have become essential mechanisms for enabling independent, project-based work (Joo & Shawl, 2021; Albanezi, 2024).

The gig economy offers both opportunities and challenges for workers and employers. On one hand, it provides flexibility, autonomy, and income diversification for some workers (Adamson & Roper, 2019; Choudhary & Shireshi, 2022). On the other hand, it is associated with increasing financial insecurity, limited access to social benefits, and fragmented job structures that contribute to labor precarity (MacDonald & Giazitzoglu, 2019; Ghorpade et al., 2024). Workers often face low and unstable pay, uncertain working conditions, and a lack of collective representation (Bucos, 2023; Wood et al., 2018).

While some scholars argue that the gig economy can foster innovation and economic growth, others emphasize its potential to erode labor standards and exacerbate inequality (Choudhary & Shireshi, 2022; Raffini, 2018). These debates underscore the urgent need for adequate regulatory responses that safeguard decent working conditions. Insufficient regulation may lead to the entrenchment of social and economic disparities with long-term macroeconomic consequences.

One defining feature of the gig economy is its dual nature—combining labor flexibility with increasing precarity and individualization. Workers benefit from project

autonomy and self-determined schedules, but often lack continuity in employment and access to essential protections (Dorado & Peláez-León, 2021; Raffini, 2018). This mode of work organization is increasingly governed by digital and algorithmic management, which automates task allocation and performance monitoring, yet can intensify global competition and shift risks onto individual workers (Raffini, 2018). The gig economy also reflects a deeper restructuring of labor relations through the rise of “platform capitalism.” In this context, companies act as intermediaries that efficiently match supply and demand, while circumventing traditional labor protections (Martínez, 2020). These models optimize intermediation but introduce regulatory and ethical challenges as economic risks are externalized to workers (Martínez, 2020; Dorado & Peláez-León, 2021).

In summary, the gig economy is an emergent feature of contemporary capitalism, enabled by digital platforms and characterized by temporary contracts, algorithmic oversight, labor fragmentation, and job insecurity. This paradigm both redefines traditional employment and reconfigures economic organization—posing challenges for social protection, fairness, and equity in the digital labor market (Bucos, 2023; Dorado & Peláez-León, 2021; Martínez, 2020; Raffini, 2018).

Dual Labor Market Theory, developed by Doeringer and Piore, provides a relevant framework for interpreting the segmentation inherent in gig work. This theory differentiates between a primary labor market with stability and benefits, and a secondary market marked by volatility and low protections. The gig economy replicates and extends the secondary segment by attracting workers in search of supplemental or emergency income (Sui & Ding, 2024; Barrios et al., 2020; Lin et al., 2022). It flourishes in diverse sectors—from transport to digital services—thanks to its promise of flexibility and income potential (Malik et al., 2021; Kassi & Lehdonvirta, 2018; Healy et al., 2020; Anwar & Graham, 2020).

However, persistent precariousness remains a core concern. Legal ambiguity and inadequate access to benefits continue to affect gig workers (Batmunkh et al., 2022; Peterson & Crittenden, 2024). Research advocates for comprehensive regulations that integrate gig workers more effectively into labor markets while safeguarding their rights (Kaushik, 2024; Fadhlulloh et al., 2023; Nawawi et al., 2023; Lehdonvirta, 2018).

The gig economy also aligns with Agency Theory (Jensen & Meckling), which explores the relationship between principals (platforms) and agents (workers). In this model, platforms retain control over work allocation and compensation, often limiting worker agency and introducing informational asymmetries (Berger et al., 2019; Marquis et al., 2018). Scholars note that algorithmic management tools reduce workers’ ability to negotiate or influence their work environments (Anwar & Graham, 2020; Green et al., 2018).

Despite these constraints, some workers appreciate the autonomy associated with gig work. For a segment of the workforce, flexibility remains a decisive advantage—even in the absence of formal protections (Berger et al., 2019; Barratt et al., 2020). The literature also highlights the development of informal networks and adaptive strategies, which allow some degree of worker agency under non-traditional conditions (Frenzel-Piasentin et al., 2022).

From a policy perspective, the legal status of gig workers and the rules governing platform accountability are critical to reshaping these labor relationships. As Anan

(2024), Khanal & Khanal (2024), and Sui & Ding (2024) note, the evolving nature of work necessitates legal innovation to ensure equitable outcomes and minimize systemic risks.

In conclusion, Agency Theory and Dual Labor Market Theory offer complementary insights into the structural vulnerabilities and opportunities within the gig economy. As employment becomes more decentralized and digitized, academic and policy attention must focus on ensuring that flexibility does not come at the cost of fairness, dignity, and worker protection.

3. Methodology

The study integrates three methodological components: (1) a theoretical synthesis of labor market segmentation, digital agency, and precarity; (2) a bibliometric analysis using VOSviewer to map keyword co-occurrences and research clusters in gig economy scholarship; and (3) the analysis of international statistical data to capture the evolution, structure, and socio-economic impact of the gig economy. This triangulation allows for both conceptual depth and empirical grounding.

4. Results and Discussion

4.1. Study of Gig Economy

In the Web of Science, 1,999 sources were identified that used the term “gig economy”. The term “gig economy” appears as the central and most frequently used keyword, serving as the main hub connecting various research topics. Blue cluster explores the structural and political dimensions of platform-based work, highlighting issues like informal labor, digital workforces, and migration. The keywords used are: labor, platform work, digital labor, regulation, politics, migration. Red cluster emphasizes the psychological and organizational aspects, such as well-being, job engagement, stress, and performance of gig workers. The keywords used are: gig workers, motivation, job satisfaction, stress, well-being, burnout, commitment. Green cluster examines inequalities generated by gig work and the role of public policy and social protection measures. The keywords used are: inequality, social protection, decent work, discrimination, policy. Yellow cluster addresses the business and technological innovations that underpin the gig economy, particularly platform-based and data-driven models. The keywords used are: sharing economy, collaborative consumption, innovation, business models, big data, framework. Purple cluster covers worker mobilization, unionization, and collective actions to improve rights in platform work. Keywords: collective bargaining, unions, collective action, power.

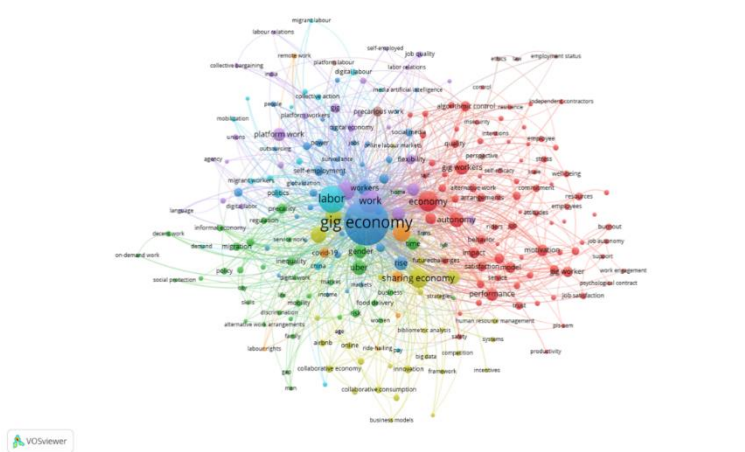


Figure 1: Bibliometric Network of Key Concepts in Gig Economy Research
Source: Our own analyses using VOSviewer

4.2 Global Expansion of the Gig Economy

The gig economy has seen exponential growth, driven by the proliferation of digital platforms and the normalization of freelance and project-based work. Between 2024 and 2030, the global gig economy is projected to grow from \$556.7 billion to over \$2.1 trillion (Business Research Insights, 2024). While countries like the United States account for a large share of this market—36% of the workforce engaged in gig work—regions like Canada and the EU also exhibit growing participation (TeamStage, 2023; Visa Analytics, 2024). Sectoral variations show concentration in delivery, transportation, and digital services.

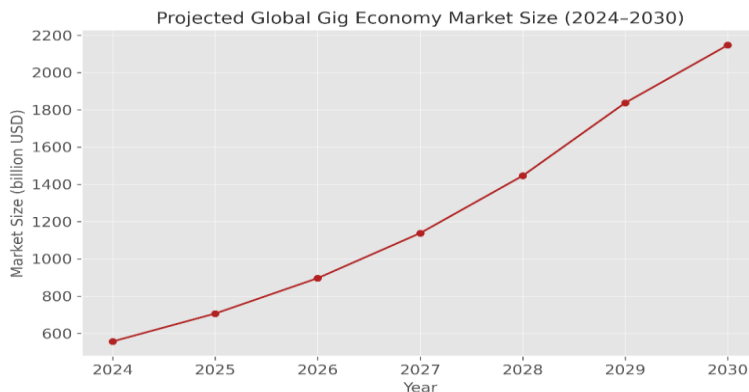


Figure 2: Projected Global Gig Economy Market Size (2024–2030)
Source: Business Research Insights – Gig Economy Market Report
[//www.businessresearchinsights.com/market-reports/gig-economy-market-102503](https://www.businessresearchinsights.com/market-reports/gig-economy-market-102503)

This chart illustrates the rapid growth of the global gig economy market from \$556.7 billion in 2024 to a projected \$2.1 trillion by 2030. The expansion is driven by digital platforms and flexible work models gaining traction worldwide.

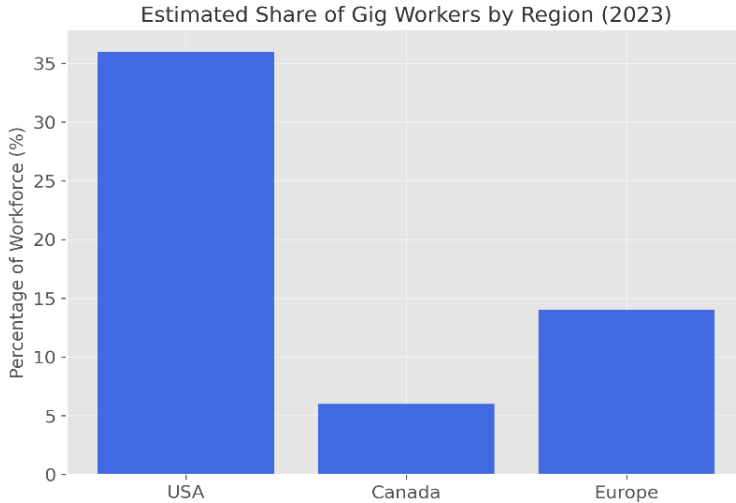


Figure 3: Estimated Share of Gig Workers by Region (2023)

Source: TeamStage – Gig Economy Statistics

<https://teamstage.io/gig-economy-statistics>

Visa Consulting & Analytics – Gig Workforce in Canada

<https://usa.visa.com/partner-with-us/visa-consulting-analytics/economic-insights/understanding-canadas-rapidly-expanding-gig-workforce.html>

The bar chart compares the proportion of gig workers in different regions. The United States leads with an estimated 36% of the workforce engaged in gig work, while Canada and Europe show emerging but growing participation.

4.3. Impact on Workers

The appeal of gig work lies in its promise of flexibility and autonomy. However, empirical data reveals significant economic vulnerability: 60% of freelancers rely on gig income to meet basic needs (AFCPE, 2024). Over 75% lack access to health insurance or retirement benefits (Upwork, 2024; AP News, 2024). Algorithmic management further complicates this landscape, introducing opaque systems of control that undermine worker agency and intensify competitive pressures.

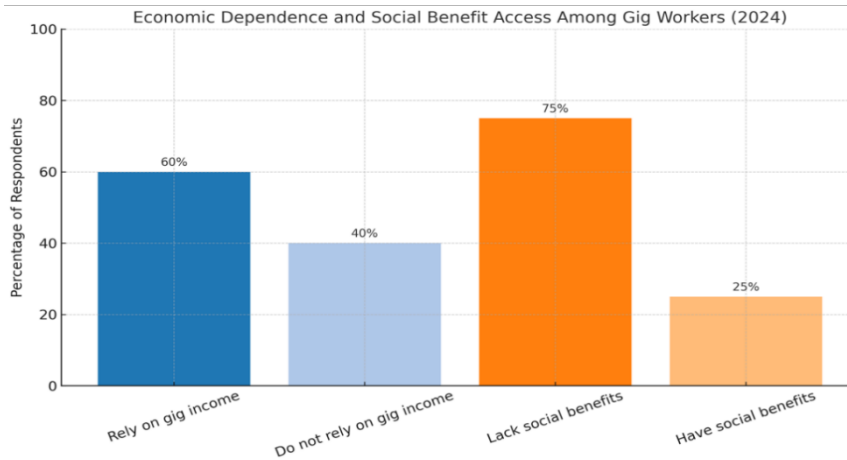


Figure 4: Economic dependence and social benefit access among gig workers

Source: Upwork – *Freelance Forward Report 2024 Gig Economy Statistics*
<https://www.upwork.com/resources/gig-economy-statistics> AP News – *European Union Platform Work Regulation (2024) EU debates gig worker protections*
<https://apnews.com/article/58ebf22a4853b9a21f558919fb9782df>

This bar chart illustrates the dual burden faced by gig workers: 60% rely on gig income to meet basic needs, while 75% lack access to health insurance or retirement benefits. These figures underscore the structural precarity and social protection gaps characterizing the platform-based labor model.

How Freelancers View Their Gig Income (2024)

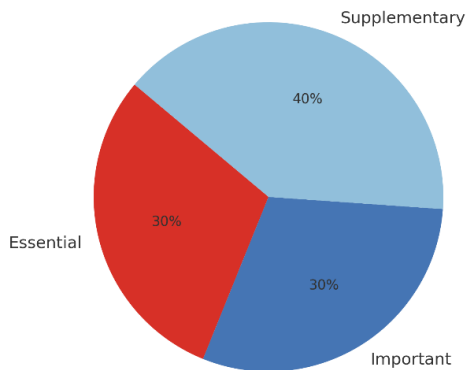


Figure 5: How Freelancers View Their Gig Income (2024)

Source: AFCPE – *Financial Wellness in the Gig Economy*
<https://www.afcpe.org/news-and-publications/blog/financial-wellness-in-the-gig-economy-empowering-flexibility-with-stability>

This chart shows how freelancers rely on gig income: 60% consider it essential or important for meeting basic needs. This highlights both the opportunity and financial vulnerability in the sector.

4.4. Employer Perspectives

From the employer's standpoint, the gig economy presents notable advantages, particularly in terms of reducing operational costs and enhancing workforce scalability. According to the OECD (2022), platform-based labor allows firms to bypass traditional employment expenses such as health insurance, paid leave, and long-term contractual obligations. Statista (2023) reports that 54% of surveyed U.S. businesses acknowledged significant cost savings when utilizing gig workers.

However, the operational efficiency of gig work is offset by considerable managerial challenges. Eurofound (2020) emphasizes that high turnover rates and performance variability among platform workers complicate workforce management. Platforms typically rely on rating and algorithmic tracking systems, which while efficient, introduce concerns around fairness, consistency, and compliance with emerging labor standards. The International Labour Organization (ILO, 2021) notes that algorithmic management can also undermine worker privacy and increase disputes related to performance evaluation and job security.

Moreover, legal ambiguity regarding the employment classification of gig workers remains a central tension in the platform economy. The European Commission's Platform Work Directive (2024/2831) aims to address this issue by introducing a presumption of employment where platform control is evident. Nonetheless, the blurred boundaries between independence and subordination continue to pose regulatory challenges. Employers benefit from flexibility, but often at the cost of accountability—raising questions about the sustainability of the current model under evolving legal and institutional frameworks (European Commission, 2024).

4.5. Future Risks and Opportunities

Recent Legislative Reforms in the Gig Economy: Addressing Precarity Through Policy

In recent years, the rapid expansion of platform-based labor has revealed significant structural vulnerabilities affecting gig workers. These include legal ambiguity regarding employment status, the absence of social protection, and the pervasive use of algorithmic management systems. In response, several European countries and supranational institutions have introduced legal reforms aimed at rebalancing the rights and obligations within this emerging labor model (European Commission, 2024; ILO, 2021).

One of the most pressing challenges in the gig economy remains the precarious nature of work. Most platform workers are formally classified as self-employed, a status that often excludes them from basic labor protections, such as paid leave, health insurance, pension contributions, and protections against arbitrary dismissal. Moreover, algorithmic management systems—used to allocate tasks, monitor performance, and determine pay—operate with minimal transparency or human oversight (ILO, 2021; European Parliament, 2023). The inability to engage in

collective bargaining also compounds the vulnerabilities faced by this workforce (OECD, 2023).

In response to these concerns, legislative reforms have increasingly sought to ensure more equitable treatment of gig workers. A landmark example is the European Union's Platform Work Directive (Directive 2024/2831), adopted in October 2024 by the Council of the European Union. This directive introduces a rebuttable presumption of employment where platform control is demonstrated, enhances transparency of algorithmic management, limits data processing related to worker behavior, and mandates disclosure of work arrangements to authorities (Council of the EU, 2024).

Spain was one of the first countries to act at national level through the "Riders Law" (Ley Riders) enacted in 2021, which reclassified food delivery couriers as employees rather than self-employed. As a result, Glovo announced in 2024 that it would regularize approximately 15,000 workers following fines issued for non-compliance (AP News, 2024).

Portugal followed suit with its "Decent Work Agenda", which came into effect in 2023 and amended the Labour Code to presume the existence of an employment relationship in the context of platform work (Kluwer Law International, 2023). The reform seeks to address the precarious nature of gig work and grant workers access to core labor rights, including social protection and collective representation.

In Italy, labor authorities have initiated legal action against platforms for misclassifying workers. In April 2025, Delivery Hero, the parent company of Glovo, increased its provisions to €253 million in anticipation of liabilities related to unpaid social contributions and regulatory fines (Reuters, 2025).

Taken together, these legislative developments illustrate a broader shift in policy: from a market-oriented model prioritizing flexibility to a more balanced framework that emphasizes decent work, legal protection, and algorithmic accountability. However, the implementation of these reforms remains complex, particularly in ensuring effective enforcement across jurisdictions and platform models.

5. Conclusions and Implications

The gig economy has significantly reshaped the nature of employment in the digital era. While it creates new opportunities for income generation and labor flexibility, it also amplifies vulnerabilities related to legal status, social protection, and power asymmetries. A growing body of evidence suggests that this model, if left unregulated, risks institutionalizing precariousness. A key conclusion is that the gig economy is a transformative force in the labor market, but it brings substantial challenges regarding security, equity, and worker rights. The gig economy has undeniably reshaped the structure and dynamics of the global labor market. It introduces new forms of work that offer flexibility, autonomy, and the potential for income diversification. However, this transformation comes with significant challenges. The analysis conducted in this article confirms that gig work often entails high levels of economic insecurity, lack of access to social protection, and an asymmetrical power relationship between platforms and workers. The prevalence of algorithmic management and the misclassification of employment status

contribute to a state of structural precarity. While the gig economy may represent an adaptive response to the demands of a digitalized and globalized labor market, it simultaneously amplifies vulnerabilities for large segments of the workforce.

Given the dual nature of the gig economy—offering both opportunity and precarity—there is a growing consensus that policy interventions are necessary to ensure fair and equitable labor conditions. Legislative developments in the European Union (e.g., Directive 2024/2831 on Platform Work), as well as national reforms in Spain, Portugal, and Italy, underscore the need to formalize employment relationships when platform control is evident. Public policy should focus on expanding social protections to all workers, regardless of contractual status, ensuring transparency in algorithmic decision-making, and recognizing the right to collective bargaining. A hybrid legal framework, capable of adapting to the specificity of platform-mediated work, appears crucial to bridging the regulatory gap and mitigating the risks associated with digital labor markets.

There is a pressing need for adaptive legal frameworks that ensure fair treatment, access to social protections, and transparency in algorithmic management. Reclassifying workers based on actual working conditions, not contractual labels, is a necessary step toward labor justice.

Further research should explore (1) the long-term implications of AI and automation in gig labor; and (2) innovative models of social protection—such as portable benefits and universal labor standards—that align with the evolving nature of work.

The gig economy thus poses both a challenge and an opportunity. Navigating this duality requires rigorous scholarship and proactive policymaking that center the rights and well-being of workers in the digital era.

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INTERNATIONAL REGIMES AND TRANSPORTATIONS; TIR REGIME AND ITS MAIN TRAITS

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Abstract: *The paper aims to indicate that the processes of regionalization and globalization were in a great manner determined and influenced by collaboration and coordination among states. But collaboration and cooperation couldn't have been promoted in a sustainable manner in the absence of international regimes; their creation is indispensable and it is responsible for the world we know it. Collaboration in order to attain common interests has been facilitated by international regimes' creation and international organization, as framework for multilateral negotiations. Transport area is an area where states' interests related to security and welfare overlap; collaboration for infrastructure construction has a very technical character, but it is covered by a legal structure which provide common principles, norms, rules, and procedures applicable in a specific transport area. This is in fact exactly the international regime, which facilitates common interests' promotion through a steady horizontal, vertical and oblique negotiation process. It brings together international regimes, international organizations, and multilateral negotiations. One of the most successful multilateral negotiations is related to road transport: it is TIR Regime and Convention, which have promoted public and private interests with a great success. Since its creation in 1959, its principles and norms were expanded geographically and technically, including today the container transport which has global coverage. The paper carries reader through what international regime is, how it works through multilateral negotiations carried under the aegis of permanent international institutions, the main traits of regimes in transportation, following with a more detailed presentation of principles and norms specific to TIR regime.*

Keywords: *collaboration; international institutions; international regime; TIR Convention; transportations*

JEL Classification: *N40; 70; O43; R40*

1. Background

First, what an international regime is? At first sight "international regimes are principles, norms, rules, and procedures" related to decision-making process, around which actors' behaviour converges in a specific area of international relations (Krasner, 1981: p. 1). But a better definition would be that focused upon the base which supports the regime in operation and the process which sustains it.

In this regard Zartman looks in a more comprehensive way at international regimes, his definition being more accurate and actual; he affirms that international regimes are “continuous bi-dimensional negotiations carried on among sovereign states”, aiming at solving coordination problem, in condition of incertitude (Zartman, 2003: p.14).

As a result, international regimes represent much more than an international convention; if this could be looked at as being a static framework related to a specific area of activities in international relations, a regime is a *living* international institution in evolution. This evolution is influenced by multiple factors such as international political context and its changing character, technical-scientific evolution and inventions which are applied in activities related to a specific regime, or learning process related to specific actions and activities which have connection with this international regime.

International regimes can cover a larger area, from geographical point of view, or from the point of view of actions and activities it helps to coordinate; but being a living thing, in evolution, their effects can evolve from a smaller geographical area to a larger one, and from a narrow and specific activity towards a larger one. As a consequence, regimes become instruments for international cooperation or instruments for coordination and collective management of interdependencies (Zartman, 2003: p. 19). Coordination and management are necessary in order to facilitate the flux of information, the fulfilling of specific functions, conflict reduction and solutions to different divergences (Eden and Hampson, 1990: p. 6).

As we noted above, *principles* represent beliefs related to facts, rectitude and causality, *norms* are behaviour standards framed in terms of rights and obligations; they help guiding regimes members' behaviour providing collective results in harmony with shared aims and convictions, in accordance with regime's principles (Hasenclever, Mayer and Rittberger, 2001: p. 9); *rules* are prescriptions and proscriptions regarding actions which will be undertaken, and *procedures* regard prevalent practices when decisions are taken and implemented (Krasner, 1983: p. 2); but a regime is much more than these principles, norms, regulations and types of behaviour: it is an institutionalized effort which shapes these elements, monitors them and ensures their support, specifying that this institutionalization stays *international*, and not *supranational* (Zartman, 2003: p. 19).

Anyway, international regimes in international transports area have more common elements; their principles and norms are quite alike, the elements of differentiation being in the sphere of rules and procedures; but the most stable elements of an international regime are related to principles and norms, which emanate from a peculiar international political context where important players in international system have agreed upon areas where their *common interests overlap*, regardless inevitable disputes specific to some geographical areas and/or issues. Financial and economic interests determine these important players to open themselves to international trade and exchanges, with transports' development and facilitation being an indispensable factor in achieving this larger goal; it can be said that regimes' purposes are to *facilitate* the negotiations and conclusion of agreements, going beyond some unilateral short-term interests.

2. International Regimes and International Organizations

We can go further and say that international regimes are very well connected to permanent international institutions/organizations; this permanent framework provide institutional and legal arena that facilitate permanent contact among states and private interests and the progress of multilateral negotiations. The continuous bi-dimensional negotiations carried among states can be looked at in the following way: there is a process multilateral negotiation under the aegis of international organizations which is carried among states (through their representatives); this is a *horizontal* negotiations process. Of course, there can be a parallel negotiation process aiming at harmonizing private interests from different states, which is in the same time a horizontal process; it can involve those private interests through non-governmental organizations which gather similar private interests, in order to crystallize them and promote them further at international level.

There is another process of negotiations between private interests and interests represented by society and state's executive and legislative; this is a *vertical* process of negotiation, which takes place simultaneously in states with interests in the subject.

And there is another process of negotiation, an *oblique* process; namely between private interests manifesting in one or more states and public interests from another state/states.

In this way the international context which facilitated international organizations' creation has provided key-stones for future multilateral negotiations which would give birth to international regimes, which are comprehensive frameworks facilitating the conclusion of specific agreements and conventions in specific areas of international relations.

There are some areas where states avoid being constrained or limited in their action (especially areas of national security), while in other areas specific to economic field, there are strong stimulus to avoid unilateral and independent actions (Axerlod and Keohane, 1993: p. 86). These are situations where individualistic calculus related to individual interests push international actors to opt for common decision making, independent egoist behavior bringing undesirable effects. These situations are specific to common interest's dilemma and common fears dilemma (Stein, 1993: p. 35).

Regimes which are related to common interests need collaboration, while those related tom common fears need coordination (Stein, 1983: p. 128).

Anyway, the main point is that international regimes aim to harmonize public and private interests through facilitating international multilateral negotiations and conclusion of conventions and agreements in specific areas of international relations. Sovereignty and security stays face-to-face with economic interests; as a consequence, international regimes promote harmonization of interests between state and market, between public sphere and private activity.

3. International Regimes and Transportation

State development and security cannot be attained in the absence of transport infrastructure and efficient logistic chains. Transports reunite state and market around them. Public interests are guarded with jealousy by state, while market press for a more free and flexible capacity to move goods.

When a state decide to build new infrastructure projects, or to modernize old ones, this decision is of outmost importance from the security point of view, but it is of great economic impact, too; that for, there are carried on negotiations in a multilateral framework to identify common border crossing points to meet infrastructure in neighboring countries, while *technical standards* are harmonized, in order to provide similar actions and procedures, especially in border crossing points.

Air and maritime modes of transport are with global coverage. Rail and road are regional; anyway, if something is discovered in one region in these two areas of transport, it could be used in other regions in the world. Furthermore, if the creation/modernization of projects determines multilateral negotiations related to technical harmonization for these infrastructure projects and for the means of transport, the regime (and conventions) which regards the way transport activities are carried on, determines harmonization in administrative field, especially in border crossing points or in places where custom activities are realized.

The main principles of regimes specific to international transport sphere are (Zacher and Sutton, 1996):

- Free movement of trade (states aim to reduce the obstacles for moving goods);
- Free movement for information (states aim to allow information flow among people from different states);
- Efficiency (states want to provide their citizens goods and services at lowest possible costs);
- Transnational control of damages (states work to avoid that their nationals generate damages to foreign nationals or their properties, and to cover those damages through compensations, in case misdeeds happen);
- Domestic political control (states maintain the capacity to exercise jurisdiction and control on their territory in relation with foreign companies);
- Equity (states provide to other states a reasonable quota of resources and incomes resulting from foreign trade operations).

As noted above, the other element of an international regime which gives him strength is related to *norms*.

Now we can go further and can connect these principles specific to international transport area to norms. They can be presented in a synthetic manner as follows:

Principles	General corresponding norms
Domestic political control	State's control over its territory related to types of means of transport and the way transport activity is undertaken
Free movement of trade	Free access for foreign transport companies to undertake transport activities on and over another state's territory
Domestic political control; free movement of trade	Free innocent passage for foreign companies when they cross over other state territory, in order to connect producer with consumer, as long as there is no infringement on domestic laws and this activity does not affect security of this state
Transnational damages control; free movement; efficiency	The obligation to prevent accidents which could harm private or public interests in crossed-over states
Free movement; efficiency	Control over illegal activities in economic area connected to state's obligation to prevent fraudulent actions against means of transport or goods transported using these means of transport Technical interconnectedness and the promotion of standardization of equipment and practices, doubled by state's action related to reduction of barriers for free movement of goods and people Competition: states aim at promoting competition among transport companies
Transnational damage control	Gaseous and noise pollution's prevention and reduction

Table 1

Source: Author

4. International Institutions Related to TIR Regime

TIR regime appearance was facilitated by multilateral negotiations carried on by numerous experts under the aegis of a permanent international institution belonging to United Nations system. After the 2-nd World War, as road transport and commercial exchanges have been developing, there appeared the necessity to create an international institution related to road transport, in order interests of this type of transport be promoted and protected. There was already in place an international institution which promoted international cooperation in economic and social fields – ECOSOC which has facilitated the activity of five UN regional commissions. These organizations have promoted states' interests, and not private economic interests.

Taking account of road transport role in economic development, it was very important to create an institution directly related to road transport, to protect and promote this industry's interests, and of interests connected to international trade using road infrastructure. This necessity brought into being, in March 1948, an international institution – International Road Transport Union, IRU – reuniting, in the beginning, 8 national associations in road transport area (Alexa, 1995: pp. 30-31); in 1949 IRU gained from ECOSOC/UN consultative status along this UN body which provided it with great capacity and role during negotiations in road transport area under the aegis of ECOSOC/UNECE-Geneva, helping in development of technical-economic instruments which have promoted international road transport activities and have provided protection to those involved in this area of activity.

IRU's active role on international arena has risen during the period which *preceded* the negotiations related to TIR regime's establishment, during these *negotiations*, and *after* they were concluded; furthermore, after TIR Convention was concluded, IRU became the warrant-institution related to application of and compliance with the specific elements of TIR regime.

It important to be noted that, after 1945 states in Europe have become concerned with organization of collaboration among them. But international institutions which were created for this purpose had a closed or sub-regional character (Malita, 1975: p 177), with one important exception: UNECE-Geneva. Other institution such as Marshall Plan, Economic Community for Coal and Steel, European Economic Community, EURATOM in the West and COMECON in the East had a closed character, reflecting global political context characterized by tensions between East-West. UNECE in Geneva was the *unique* institutional framework which facilitated a permanent dialogue between Eastern and Western Europe, favoring and stimulating economic relations among countries with different economic and social systems (U Thant, 1975).

TIR Convention conclusion in 1959 and TIR regime's evolution are good proofs that IRU and UNECE are institutions which can sustain continuous contact and negotiations among multiple actors, facilitating international cooperation among actors (countries) belonging to different economic and social type of organization, springing from opposing ideologies. Of course, International Standardization Organization played an important role related to technical standards of road means of transport, especially when it comes to facilitate multimodal modes of transport.

5. TIR Regime and its Main Traits

As all states aim to provide economic welfare for their citizens keeping in the meantime their political autonomy – these being the main interests of all states – the establishment of some conditions as to promote coordination of interaction at international level through intergovernmental regulations could promote both these interests; classical economists affirm that main aim of economic activities is to satisfy individual desires and rise the welfare level for the society, at large (Gilpin, 2001: p. 41). In order to achieve these objectives, there is needed perfect mobility of production factors, which along with perfect information, low transaction costs, atomistic market, and actors' rationality, provide the base for the efficient resource's

allocation; when market alone cannot provide conditions for this, state's intervention is called upon. That for, when at international level there are elements which impede smooth flow of goods which could be due to transport activities, there we face losses of resources and economic activity does not work with maximum efficiency.

That for, the appearance of international regimes and regulations aiming at removing/reducing barriers related to resources movement becomes inevitable. In the mean time, states guard with jealousy their political autonomy; as the most diffuse principle in international relations is that of sovereignty, it is the base of present international system. The conception of exclusive control upon a specific geographical area and the unhindered right to act at international level have encompassed present international system (Bull, 1977: p. 8-9).

In this context we must understand the importance of identification of a formula characterized by common perceptions related to the establishment of terms of exchanges, and to identify an applicable justice criterion (Zartman and Berman, 1982: p. 95).

International regimes in transport provide both the states' interests related to improving welfare and sovereignty preservation.

The main traits of TIR regime are in the area of principles:

- Free international trade
- Free flow in information;
- Transnational damage control;
- Domestic political control;
- Equity.

No one of these principles is mentioned in TIR Convention, but reading this convention provides proofs that these principles are active and influence states and transport companies' behaviour. These principles of TIR regime are determined and related to those specific to GATT/WTO activities, this being a modern commercial regime (Lipson, 1983: p.241,) facilitating international trade.

Specific *norms* of TIR regime are:

Related to jurisdiction area:

- a TIR convention member state has the right to exert control over transit activity over its territory and to survey this activity (it is related to domestic political control principle);
- transport company from another member state of TIR regime is authorized (through that state's custom authorities) to undertake international transport/transit activities using TIR Carnet over other states' territory (it is related to free flow of commerce);
- the transport company has the right to transit other state's territory and realize commercial activities there, as fuel supply and service, but only with full compliance with TIR regime rules, domestic legal specification in that state, and environmental and security requirements (it is related to free flow of commerce).

Related to avoidance of damage causing circumstances:

- there must be met conditions related to protection of transported goods (it is related to transnational damage control, free flow of goods and information);
- transport company should obey custom legal framework in transit countries and avoid illegal activities which could harm customs/fiscal interests of transited state (it is related to transnational damage control, free flow of goods and information);

- there must be a reasonable compensation for damages generated in another state through breaching customs laws in that state (it is related to transnational damage control, free flow of goods and information);
- there must be taken into account the prevention of damages' reduction of other states' environment (it is related to transnational damage control, free flow of goods and information).

Related to technical and procedural barriers TIR regime's norms aims to:

- provide technical interconnectivity, TIR regime member states looking for equipment and practices standardization, in order to quick fulfillment of customs formalities during transit activity (it is related to free flow of goods and information);
- facilitate international transit and trade (it is related to free flow of goods and efficiency).

6. Conclusions

The success of TIR Convention – which can be seen in the large number of trucks in border crossing points in the world – is a proof that international institutions and international regimes are frameworks which facilitate and promote the conclusion of international agreements which bring important benefits for each state which is part to such an agreement, and for their citizens, and that permanent international institutions are the best way to provide international regimes construction and to sustain their evolution through permanent negotiations; in this way international institutions become foreign policy tools for states with otherwise lower capacity of influence on international arena, and sustain and defend their specific interests.

Furthermore, TIR regime (and convention) brought to life favorable conditions for international road transport and commerce among TIR Convention member states facilitating closeness and integration among them, even if from ideological point of view these countries were opposed; it is the best proof that transport and infrastructure are indispensable base for a world connected around peaceful relations. Interdependence brought by transport infrastructure's interconnectedness and activity facilitate international cooperation, helping in reduction of tensions among those involved in it.

As we look to TIR regime, we can note the great importance of post-agreement negotiations; after TIR Convention was concluded in 1959, because of technical and scientific evolution producing effects in road transport area, the necessity of actualization negotiations is strongly connected to regime's evolution. Continuous negotiations under the framework of permanent international organizations (especially IRU and UNECE) morph into extension negotiations which have a crucial role in keeping together state and market interests even if international context is changing.

Furthermore, as technical evolution brought by containerization was promoted from administrative and legal point of views through TIR regime's adaptation to these new requirements, involving sea and/or rail transport with the specific condition that at least one part on logistical chain be on *road*, TIR Convention was re-actualized (in 1972) extending its principles and norms from European continent

to the whole world; and because of this evolution, this convention could be regarded as one of the most successful international conventions in history. It results from geographical coverage: now the whole world is connected by sealed containers.

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WHY CHOOSING SOCIAL RESPONSIBILITY ACTIONS OVER PLANNED INVESTMENTS IN POTENTIAL WORLD WAR III

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Abstract: *Given nowadays economic issues and challenges on large scale, social responsibility actions became much more appealing over the planned investments at the European Union level for the defense and potential conflicts in case of the third war. This article undertakes a qualitative theoretical approach and aims to answer the question through Chabot interaction of what would be the savings in choosing planned investments in social responsibility action to feed the entire population over investment for the defense of the population in case of war. One basic human right is the access to adequate food, right that is far of being accessible worldwide. As food security is a question of environmental and social justice, the value of this paper findings is addressed to international organizations, policy makers, stakeholders and citizens. We can become more aware about the fact that we all are sharing a collective responsibility in increasing economic growth and social well-being. We can contribute today, in 2025, to boost food security in order to achieve economic access to sufficient safe and nutrition food and that the actual investment for the future would priorities both security and sustainability actions.*

Keywords: *poverty; food security; seed balls; social responsibility; war*

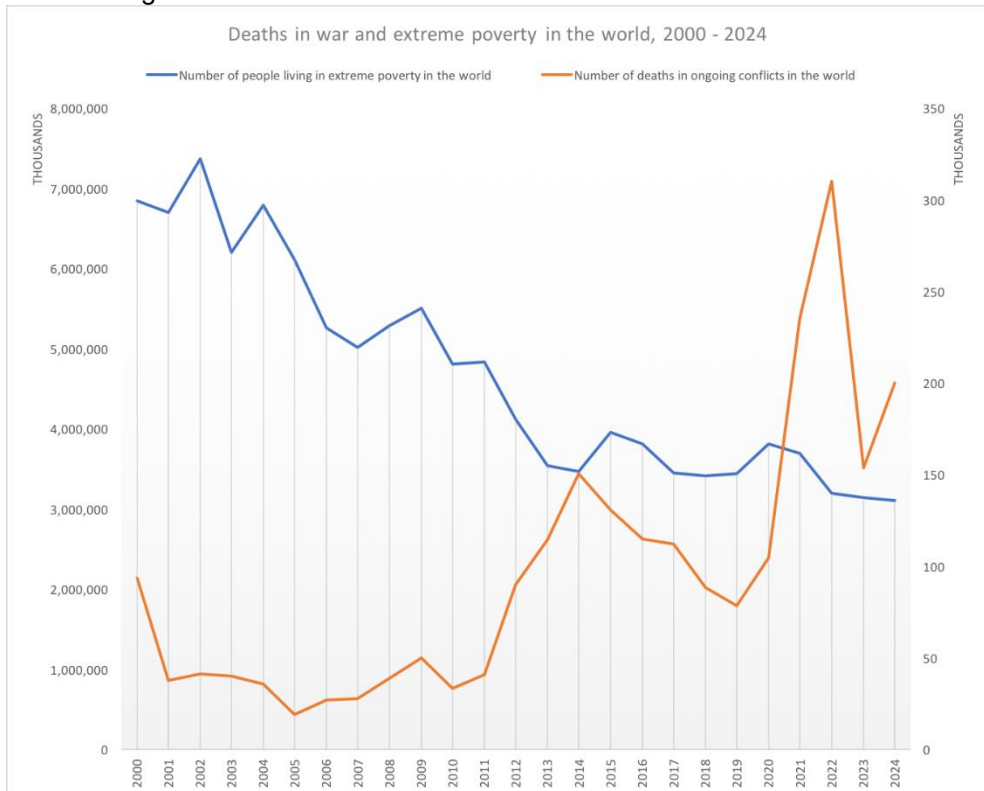
JEL Classification: A13; D16; H56; I15; O19; Q57

1. Countries worldwide and active conflicts

It is estimated that there are 50 countries worldwide that are experiencing active conflicts and other regions of the world that became increasingly vulnerable to uprising. Conflicts surged across the world in 2024 (and over the past five years) amplify the multitude of economic issues and challenges worldwide. According to the estimations of the non-governmental organizations it was found that the political violence increased by 25% globally in 2024, as compared to 2023. The reports are showing that one in eight people was exposed to conflict in 2024. More sadly, there are a total number of 233,000 people killed, and this number is with 37% greater than the previous year. War and conflicts do have severe socio-economic consequences while influences upon the global system and the negative results are felt worldwide. Rabbi et al. (2023) indicates that “the food supply in Europe does not seem to be jeopardized since most European countries are generally self-sufficient in many products”. It might then be that in order to resist to (the negative conflicts) consequences the solution at the country level is to be self-sufficient (in term of food affordability and access)?

In the figure from below, the negative consequences in terms of number of deaths in ongoing conflicts are reported, together with the number of people living in extreme poverty in the world.

Figure 1: Number of people suffering from extreme poverty and victims of war around the globe between 2000 - 2024



Source: Adapted from World Bank data (2024)

But why do wars happen? Can a country anticipate a potential conflict in order to mitigate it? Christopher Blattman (2023) reported: “*bumbling leaders, ancient hatreds, intransigent ideologies, dire poverty, historic injustices, and a huge supply of weapons (...). War seems to be their inevitable result*”. The global crisis will impact each country depending of their level of independence and stability to resist to high inflation, trade restrictions, food price hikes, shortages of fertilizer, and political turmoil can directly impact the EU’s food security pillars.

Even if statistics show a decreasing trend in the number of people suffering from extreme poverty—due, for example, to the implementation of labor market measures that increase youth employment rates or support a greater variety of employment forms—it remains crucial to maintain and accelerate this trend (Niță & Fleșer, 2011). Labor market measures, as a factor in reducing poverty and social insecurity, contribute to reduced spending on social protection and inclusion, higher

household incomes, increased consumption and production, and ultimately stimulate economic growth and sustainable development (Niță & Isac, 2016).

1.1. Food security

As stated by Sevil Omer (2024), *“from armed conflicts and extreme weather events to the lasting socio-economic impacts of the COVID-19 pandemic, global hunger levels are at a critical point”*. Recent examples of crisis situations are the Covid-19 pandemic and the war in Ukraine. As a result, lockdowns and travel restrictions weakened the global economy, therefore, in 2023 the number of people suffering from food insecurity almost doubled compared to 2022. Also, according to World Vision from the conflict in Ukraine one fifth of the global population suffered disruptions in food and energy supplies. These factors (among others) are not the only ones affecting food security. Besides the war, there are also factors such as climate crisis and environmental shocks, as well as food waste that put at risk the very food security for many people.

According to Sevil Omer (2024), facts that we need to know, when addressing the global hunger are as follows:

- as of year 2024, with world population of 783 million people, one out of ten peoples are facing chronic hunger;
- food insecurity is increasing at an alarming rate;
- in 2022, a total of 258 million people across 58 countries experienced crisis-level food insecurity;
- in the context of increasing variety of major drivers of hunger COVID plus weather events plus conflict resulted that in 19 countries, 117.1 million people faced crisis or higher levels of food insecurity;
- as of 2024 the war in Ukraine continues to have a global impact, the war and increased natural gas prices have disrupted fertilizer production and exports globally, threatening supply, spiking costs and jeopardizing future harvests;
- children often became victims of families in food insecurity situations, as they become more vulnerable. As a result, 45 million children suffer from acute malnutrition, and over 1 million children are dying each year. We are specifically talking about children from Asia or Africa mostly, who are exposed to irreversible cognitive and physical consequences, due to food related insecurity issues;
- other consequence that arises from the food insecurities and is fueled by wars, economic crises, and extreme weather events is represented by an important increase in the number of refugees. These are people being displaced, reaching a total of 110 million by the end of June 2023.

The above-mentioned facts, determined the non-governmental organizations to ask for and receive donations from people worldwide. The number of donors increased from 1.2 billion in 2011 to 1.4 billion in 2014, and, by 2030 the number of people donating is expecting to grow to 2.5 billion.

1.2. Policies for better life

Hunger is an issue affecting a fundamental human right. As reported in the previous paragraph, there are gigantic negative consequence on a large scale that needs more than ever to be mitigated. There is an acute need for policies aimed at ensuring the circumstances for a better life for the population worldwide. For the countries inside European Union there is the need of adaption and the need to consider (in their own adaption process) actions based on inter-European collaboration, unified strategy and enacting policy actions (as for their individual needs). At a country level, if we address the shocks generated by the consequences of war, armed conflicts (or other external shocks that are unforeseeable), policies would require an ad-hoc adaption.

The growing world population is predicted to reach 10 billion by 2050. Considering the actual food security situation there will be a need for an increase of 70% in food production (as predicted by United Nations, compared with 2009) in order to sustain the population food necessities. Food security goes hand in hand with mitigating climate changes in order to guarantee and safeguard agriculture in fruits and vegetable production. By boosting a more efficient use of the natural resources (while simultaneously reducing the environmental damage caused) it would be possible to feed more people. In this scenario, a diversified and sustainable food system would minimize (food waste and) environmental impact adding great potential for improving the food security. The impact of the conflicts may vary across different countries (and even regions) considering their degree of dependence on agricultural imports, capacity of producing food locally and vulnerability to food price shock.

Moreover, the need for policies for better life is experienced in the day-to-day activities. If non-governmental organizations (that are estimated to reach a total number of 10 million worldwide) were a country, as stated by John Hopkins University, Center for Civil Society Studies, they would have the 5th largest economy in the world. At the European level, in the Source provided by Donors and Foundations Networks in Europe, there are 53 billion euros annually given (by public-benefit foundations combined with non-governmental organizations) in Europe. Also, Walden University states that eighty percent of global citizens do agree that non-governmental organizations facilitate the involvement in positive social change.

1.2.1. Seed balls as social responsibility action

In the above section, it was highlighted why there is a need for policies for better life. In this section, social responsibility action is addressed, guiding the attention on the use of seed balls.

One important fact is that the degradation of land ecosystem together with the marine ecosystem undermines the well-being of 3,2 billion people and cost about 10% of annual global gross domestic product in loss of species and ecosystems services. As a response, the United Nations undertake as a measure to fight the climate crisis and enhance food security (within the project dedicated to the ecosystem restoration). One previous initiative is the planting of the trees as measure for ecosystem restoration. However, planting trees and the challenges of successful plantation made this initiative one with low return of investment.

Achieving this future goal is depending on the success of the current restoration initiatives. Shoo and Catterall (2013) explored different alternative strategies to restore landscapes other than tree planting.

One emerging, rediscovered technology from the 20th century is represented by the use of seed balls in order to rehabilitate degraded lands. The technology comes with the advantage that the seeds are packaged and protected against possible risk of being consumed by bird and rodents and so, are expected to achieve higher rate of germination and planting than the planet trees. Figure 2 describes the main phases on should proceed in order to construct a flow chart for the seed balls preparation endeavor.

Figure 2: Seed ball assembling procedure



Source: Adapted from Kannan, R., Dhivya, V., Janani, T.S.K. (2021), "Future Perspective of Seed Ball Technology for Creating New Ecosystem", International Journal of Plant and Environment. 7(4), 293-296

The usage of seed balls is a low-cost technology. It is unique due to the controlled manner in which it can be scattered. It can give life to new plants in desert area, vegetation deficient area, deforestation area, agriculture and horticulture cultivable areas. Among other advantages, we highlight the following:

- the success rate of growth is 80%;
- they make the activity less labour-intensive;
- they can just be sprinkled on the ground;
- they are cost-effective, long-lasting and efficient especially in arid regions with irregular and infrequent rainfall;

Seed balls are seeds in balls that germinates through rain usually, when their moisture becomes available. The balls are feed composed of biochar and growth nutrients that stays together with the seed that is indented to be planned through the process of establishing themselves. Seed balls technique can overcome stresses that impact seed germination and viability, increase the successful rate rather than planned trees, contribute to better seedling establishment even in resource-limited conditions. Seed balls are performing even better under non-irrigated conditions than in the controlled ones.

1.2.2. Seed balls accountability framework

An important aspect that deserves to be taken into consideration in the restoration initiative is the correct framework and funds allocation through the lifecycle. If we are to consider the seedlings, Government agencies that are responsible for restoration (should also constrain the actors interested in restoration) to put aside the resources required for proper care of the planted seedlings in the years ahead (up to 7 years after the seed being germanised). A framework needs to be defined and afterword's to be clearly assigned among source of funds and responsibility by tree growing years.

2. European Union Defence

Built as a project of peace, European Union is guided by principals of free economic and commercial exchange, making progress in developing the military union. The threat of an extension of existing war (or military conflict) increases the investments in army industry (one of the most profitable in this geo-political scenario). The European Defence Fund (implemented by the European Commission) have the main objective the modernizations of defense products and technologies (with main arms-producer's countries Germany, France, Italy and Sweden) where other countries inside European Union are obliged to buy products and technologies for the defense. For the period 2018-2023, Romania ranks the second among the countries with the higher values of foreign direct investments, surpassed only by Poland. Both Poland and Romania are not only central to the policies of the European Union, but also play a crucial role in terms of regional security and stability within NATO.

3. The Artificial Intelligence

GhatGPT is a generative artificial intelligence Chabot developed by OpenAI, launched in 2022. GhatGPT is a generative artificial intelligence Chabot developed by OpenAI, launched in 2022. Considering that in the above sections only the benefits and incentives were presented, and given that no monetary estimations were assessed (due to the absence of official data that can support the amount of investment for both defense at European Union level and seed balls initiative at globe level), in this last section, the attention is redirected to the artificial intelligence connecting Chabot interaction with the investment in the defense in case of war and investments in social responsibility.

Chat Generative Pre-Trained Transformer (ChatGPT) received considerable interest from researchers while exploring its potential in process industry. By testing ChatGPT and researching through Chabot the question: “-I would like to know how much money is needed in order to reforest the entire planet with fruit trees so that the food became free cost and so, to decrease the necessity of working 40 hours per week ?” the answer received is that “-With 150 billions euro there could be planned around 263 billions of fruit trees through seed balls, enough to feed 9 billions of people; Each tree is producing on average 50 kg of fruit per year that equals to 25,000 kilocalories for tree; this would assure the abundance of free food for the population worldwide, reducing the need for work for survival”.

On the other hand, if the question address to Chabot is “-How many billions were thrown away recently for the preparation of the third world war”, the received answer is the following: “-European Union planned to invest around 800 billion euro in the future years for the defense and the preparation to potential conflicts in case of the eventuality to a war on a large scale”. After the interactions with ChatGPT it results that it takes 14,375% from the total of 100% from the planned investments in the preparation for potential conflicts to be able to feed the entire population by the use of seed ball.

4. Conclusions

Events such as wars and other social and economic crises are affecting the global food security. The conflict in Ukraine (and Middle East) produced changes in the dynamic of global security, states and companies in the industry of the defense adopting new strategies, deciding to invest in new military capabilities. One important strategy to be covered is also the identification of the ownership of the restoration efforts by local actors and communities. Seed balls technology boost ecosystem conservation in the forest (especially when humans cannot enter in difficult areas) seeds can be spread through aircraft and helicopters, recently emphasized the used also of drone technology in order to disperse them. His value is confirmed by different institutions, political groups, groups of people, and individuals that were actively evolved in the production and distribution of seed balls. When discussing about ad-hoc adaption of policies for better life challenges are multiple and complex, and in order to handle them there is a need of innovative solutions, innovation from different disciplines and innovative ways for their

intersections. There is a need for new approach in relationship to the needed knowledge, solutions and strategies in order to ensure the sustainability and the resilience for what concern the food system in Europe.

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SOME INSIGHTS ON WHY ROMANIA SHOULD BE DOWNGRADED TO JUNK STATUS IN 2025

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Abstract: *In 2025, Romania's potential downgrade to junk status could be driven by a combination of worsening fiscal health, political instability, economic slowdown, and external challenges. A downgrade would likely reflect a loss of confidence in the country's ability to maintain economic stability, service its debt, and attract investment. However, such a scenario would likely be preceded by warning signals, such as increased debt levels, budget deficits, economic contraction, or growing political unrest. Downgrading a country's credit rating to «junk» status is a serious financial move and would typically be based on a range of economic, fiscal, and political factors. If Romania were to face such a downgrade in 2025, the reasons could stem from several issues. Rising government debt level, which is today almost 54% of the GDP, it could become a concern for investors, especially if the country struggles to meet its debt obligations or service the debt. The 7% annual budget deficit negotiated with the European Commission could be in peril and if it increases, it could create uncertainty around the ability to manage public finances effectively. The fail to enact sufficient reforms to stabilize Romania's finances combined with a lack of political will to implement harsh fiscal consolidation measures could lead to a downgrade. If the economy slows down significantly or enters a recession, it could raise doubts about the country's future economic prospects, and the USA tariffs are a big push in that direction, hitting the country traditional European trade partners, due to the fact that more than 70% of goods and services are traded with the EU. Due to these factors, the paper addresses the possibility of a downgrade to JUNK status for the Romanian economy, and what the economic impact should be, plus the necessary measures that have to be addressed in order to put the economy back on track. The paper will analyze statistical data from Eurostat, UNCTAD statistical data base, and TradingEconomics in order to assess the impact and possible measures in comparison the what Greece and Argentina did in order to improve their countries rating. Romania doesn't have to invent the wheel; it can learn from other countries best case scenarios and the good case measures that those economies have taken. Despite some credit agencies downgrade, the Romanian economy has the potential to recover quickly, supported by strong domestic measures, resilient growth sectors, and a proactive governmental approach to economic stability.*

Keywords: rating agencies, junk downgrade, reforms, economic outlook

JEL Classification: F33, F34, H18

1. Some insights on the impact of rating agencies downgrading process

When a country's credit rating is downgraded by the top three rating agencies—Moody's, Standard & Poor's (S&P), and Fitch—it can have a domino effect on its economy. These downgrades indicate that the country is now viewed as a higher risk for lenders and investors, which directly impacts its financial health.

Credit ratings essentially act as a signal to investors about the likelihood that a country will repay its debts. A downgrade means that the country is seen as less trustworthy. To compensate for the perceived risk, international lenders demand higher interest rates on loans. This makes borrowing money more expensive for the government, which can strain its budget.

A downgrade often triggers a lack of confidence among foreign investors, leading to a sell-off of the country's currency. This devaluation means the currency loses value compared to others, such as the US dollar or the euro. While a weaker currency can benefit exports by making them cheaper for foreign buyers, it also makes imports more expensive. This can drive up the cost of living for citizens.

The financial markets react quickly to credit rating downgrades. Investors tend to pull their money out of riskier markets, leading to a drop in stock prices. Domestic businesses that rely on loans to grow may face higher borrowing costs, making expansion difficult. This loss of confidence can lead to reduced investments in the country's economy overall, causing a slowdown in economic activity.

With increased borrowing costs, governments often have to tighten their belts. This could mean reducing spending on essential public services, education, healthcare, and infrastructure projects. Such cuts can lead to slower long-term growth and worsen the quality of life for ordinary citizens.

If borrowing costs remain high and economic activity slows, the country may face the risk of a recession. A recession is a period of economic decline, often marked by rising unemployment and reduced consumer spending. In this scenario, businesses may shut down or downsize, creating further hardship for citizens.

Perhaps one of the most damaging effects of a downgrade is the loss of trust from global investors. A poor credit rating can deter foreign companies and institutions from investing in the country. It can also discourage potential trade partners, complicating the country's efforts to stimulate growth.

These factors combined slow economic growth and can even push an economy into recession, affecting businesses, governments, and citizens alike

2. Literature review

This literature review examines existing research on the economic impact of sovereign credit downgrades, focusing on its immediate and long-term effects on the economies of various countries. Researchers have studied the role of rating agencies in financial markets, focusing on their impact on investor behavior and the macroeconomic implications of their decisions. The Standard & Poor's (2011) report on downgrading the US credit rating sparked a debate on the role of rating agencies in global financial stability. Kiff et al. (2012) examined the history of government bond downgrades and highlighted the economic significance of these events.

The immediate impact of a downgrade is often felt in financial markets, particularly in bond yields, stock market performance, and currency values. Cantor and Packer (1996) found that ratings downgrades can lead to large bond price movements, with the short-term effects being more pronounced in emerging markets than in developed markets. Eichengreen and Mody (2004) argue that ratings downgrades, especially in emerging markets, can lead to currency depreciation, which can worsen current account balances. In addition to the immediate market impact, downgrades can also have lasting effects on a country's economy. These effects include lower foreign direct investment (FDI), slower economic growth, and higher unemployment. Reinhart and Rogoff (2010) highlight the negative correlation between sovereign ratings downgrades and GDP growth, with the severity of the downgrade being a key factor in determining the magnitude of the downgrade. Afonso et al. (2011) studied the relationship between sovereign credit and FDI inflows and concluded that rating downgrades tend to lead to a reduction in FDI, especially in emerging markets.

Countries that experience a credit rating downgrade often take a range of policy measures to stabilize their economies. Beetsma and Giuliodori (2013) study how eurozone countries face greater tightening pressures after a rating downgrade, which in turn affects their macroeconomic stability. Ardagna (2009) studies the effectiveness of monetary and fiscal policies after sovereign credit rating downgrades and finds mixed results: some countries benefit from stimulus measures, while others face tightening fiscal constraints.

Critics argue that rating agencies often fail to adequately assess risks and that their downgrades can have an exaggerated impact on the economy, especially in times of crisis. Hilscher and Nosbusch (2010) found that markets tend to overreact to rating changes. Investors adjust their portfolios based on rating announcements, even if such actions are not fully consistent with underlying economic fundamentals.

3. Short term pain

In the short term, there will be some contraction in economic activity. Based on economic literature, it has been demonstrated that the probability of the following effects manifesting themselves is extremely high when the economy is downgraded from the perspective of international rating agencies:

Increase in borrowing costs. Central government bond yields with around 10 years' residual maturity are crucial because these yields reflect the cost of borrowing for governments and are often used as benchmarks for long-term interest rates. They provide insights into the economic health and stability of a country. The paper analyses the difference between Greece and Romania regarding 10 year bond yields between 2005 and 2024.

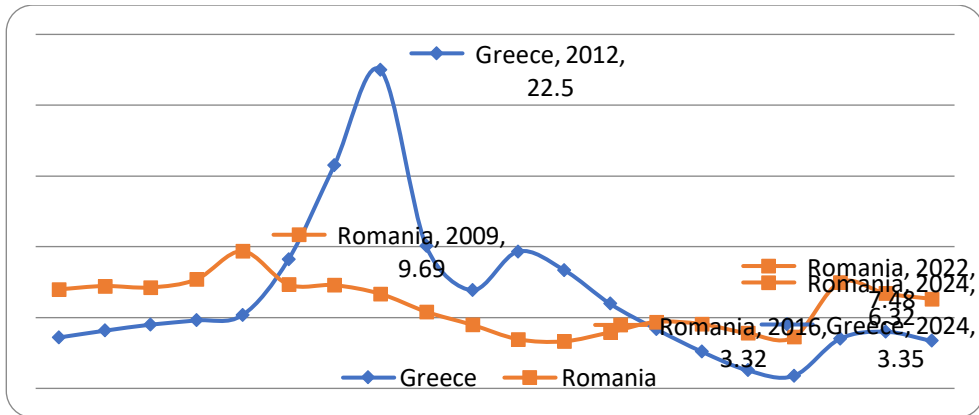


Figure 1: EMU convergence criterion bond yields evolution between 2005 and 2024, expressed in percentages

Source: Eurostat, link <https://shorturl.at/Z4olE> accessed on 14.04.2025

Based on Figure 1, the bond yield rate that Romania is paying now which is situated at 6.32% but after a downgrading episode, it will increase even more. The evolution will be somewhat similar with what Greece suffered between 2009 and 2012 when bond yields turned 22,5%. But after that spike in borrowing costs, the evolution tends to go down. Accompanied by harsh economic measures and a close eye on spending, the bond yield in Greece's case came down to 3.35%. The opposite happens when Romania's economy is analyzed. The data shows that in 2021, 2022, 2023 and 2024 the bond yield interest rate is high due to high inflation rates which have led investors to demand higher yields to compensate, plus the fiscal deficit has remained elevated, raising concerns about the country's ability to manage the debt.

If Romania should be downgraded, for the economy this cost is going to put a pressure on government borrowing, impacting its spending, meaning it will increase the cost for the government to function normally, to pay all the salaries, pensions, health benefits and most important, investments. The interest rates for all the municipalities and companies operating in Romania will increase also, due to the country downgrade.

The downgrading will create an outflow in foreign portfolio investment especially from the Romanian Stock Exchange. This outflow will be done by the portfolio investors in the first couple of seconds, minutes and hours after the downgrade has been issued. It usually takes a few couple of days to register a negative outflow due to the negative news that the Romanian economy has been downgraded to JUNK status.

It will further put a pause on several key foreign direct investments. If big companies see that the reputation of the country is being downgraded, they will reconsider if they will do business in this economy in the short and medium term.

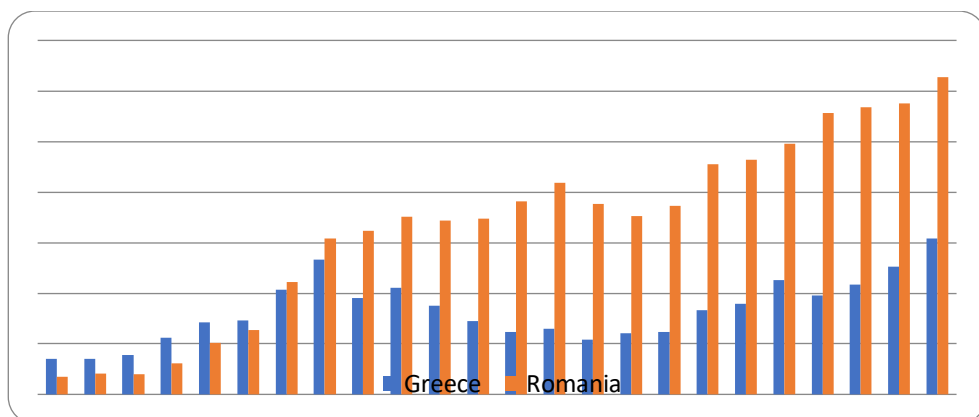


Figure 2: FDI instock evolution by economy between 2000 and 2023, expressed in millions of dollars

Source: UNCTAD, link <https://unctad.org/topic/investment/world-investment-report> accessed on 14.04.2025

It is worth noticing what happened in Greece between 2008 and 2014. There is a significant outflow of Foreign Direct Investment (FDI) from Greece between 2008 and 2014 that can be attributed to high debt levels, austerity measures, and economic instability, plus investors sought safer markets within or outside the region.

Table 1: Growth rate evolution and the Compound annual growth rate (CAGR) FDI instock evolution by economy between 2000 and 2023, expressed in percentages

	2000-2023	2000-2008	2008-2014	2014-2023
Greece	336,4%	13,2%	-9,1%	12,4%
Romania	1705,8%	32,2%	2,5%	5,8%

Source: UNCTAD, link <https://unctad.org/topic/investment/world-investment-report> accessed on 14.04.2025

Looking at the growth rate evolution and the Compound annual growth rate (CAGR) FDI instock evolution by economy between 2000 and 2023, the situation depicts almost to the same conclusions. But the most interesting thing is not the outflow between 2008 and 2014, but the future inflows that occur in Greece between 2014 and 2023. After reaching a bottom, the only way from there is up.

Then it will put a pressure on the National Bank of Romanian, because it will have to fight on two fronts:

1. The first problem will focus its attention on the currency depreciation. Due to this severe downgrade, people and companies will switch their Ron to the Euro, the Dollar or the Swiss Franck. The National Bank of Romanian of Romania will have to intervene in the market in order to stabilize its depreciation.

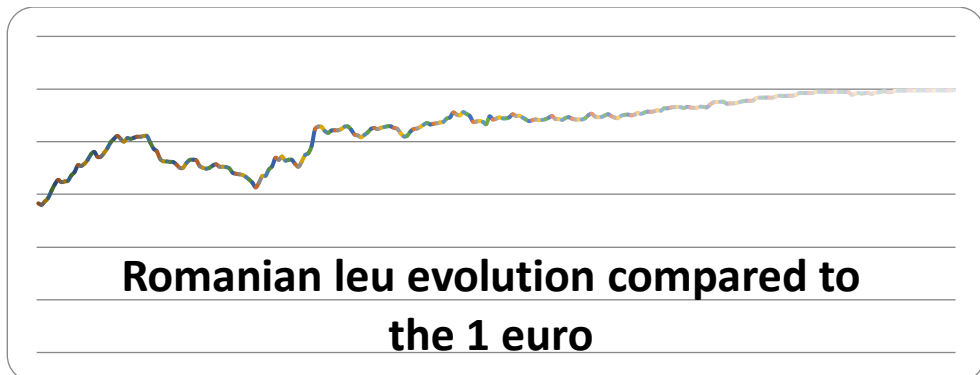


Figure 3: Romanian RON evolution compared to the 1 euro between 2002 and 2025

Source: Eurostat, link <https://shorturl.at/4coH3> accessed on 14.04.2025

The RON depreciated against the euro in 2008-2009 with almost 15%. It was one of the biggest depreciations in our country's history. This depreciation was correlated to the global financial crisis which reduced investor confidence and capital outflows from emerging markets, including Romania. In addition, Romania faced domestic economic challenges, such as a widening trade deficit and inflationary pressures, which further weakened the RON, and a coordinated attack on the RON in October 2008 when the RON depreciated by 11% only in one week.

2. The second problem will be to assess the impact of a rising inflation due to an increase in prices. Because the currency will depreciate, the people and businesses will need more Ron in order to pay for the imports that they need, which in the short run will create an inflationary spike. It is the moment when the monetary policy decision will focus on an increase of the interest rate, due to an increase in inflation, or keep the current interest rate level for a longer period of time.

Imports will become more expensive due to the currency depreciation and in the short to medium term will cause an increase in the balance of payments and current account deficit. All the goods and services imported from abroad will be more expensive.

4. Time to reform

The government is forced to take action in order to reduce all the unnecessary costs. A thorough approach to the government wasteful spending will be imperiously necessary. All activities that before were money draining for the taxpayers should be squashed and eliminated. The word of the day will be REFORM. For the expenses side, the following measures should apply.

- Decentralizing Romania. The processes of decentralization can begin in Romania. It will be one of the biggest territorial reorganizations since the 1950s. It will be the best moment to reduce the numbers of counties, municipalities,

communes. By this reorganization, a large number of communes will disappear, and they will be ascribed to a nearby city. This measure will drastically reduce the number of mayors, secretaries, local councilors, and other employees. Romania has a dire situation where certain cities and communes cannot afford to function due to the gap between low own incomes and high functioning expenses.

- Reorganization of central and local government agencies. All nonessential personnel or government agencies will be erased, reduced in staff or reallocated to a bigger institution. This measure will reduce spending with: salaries due to a reduction of medium and top-level employees; procurement due to a reduction in stationary products or other acquisitions;
- Centralization of acquisitions will increase spending efficiencies, due to large quantities that can be addressed either by big production companies, or by consortiums of companies that can fill all the big orders. Big volumes will bring prices down for all acquisitions;

On the revenues side, the following measures should apply.

- Combat tax evasion. All economic fields of activity with a high probability of tax evasion should receive electronic payments through credit or debit cards. Cash money should be limited to a small quantitative figure. Because the e-factura system is already implemented, it will be easier to follow the ins and the outs for every business by simply following the money trail.
- Less spending with salaries due to territorial decentralization will create a débouché that can be redirected to investments.
- Less spending with salaries due to reorganization of central and local government agencies will create a débouché that can be redirected to investments.
- Less spending due to the centralization of acquisitions will create a débouché that can be redirected to investments.

The outflow of portfolio investors from the Romanian Stock Exchange will be significant in the first seconds, minutes, hours and couple of days after the downgrade. The short-term effect will be determined by the following:

- Because the Romanian Stock Exchange is a marginal trading floor at the outskirts of the EU and does not offer a series of extra buying and selling options like futures, calls, puts, or other trading options, the amount of money traded daily is limited.
- The vast majority of investments are done by local companies or individuals through local brokers
- The biggest pension funds own a vast proportion of the stock issued on the stock exchange

Based on these assumptions, the initial outflow will be followed by a process called "buy the deep". When local traded assets become cheaper, other companies or individuals will buy. This effect will ease the stock exchange exit pain and will offer a short- and medium-term bandage.

Regarding foreign direct investments returns Romania should proceed the same way Greece did regarding subsidies. Based on the Figure below, the subsidies that Greece is offering are way higher than those that Romania. Greece is awarding in

the last 4 analyzed years subsidies raging from 3.1% to 7% of its GDP. At this level, the foundation for future development is real solid.

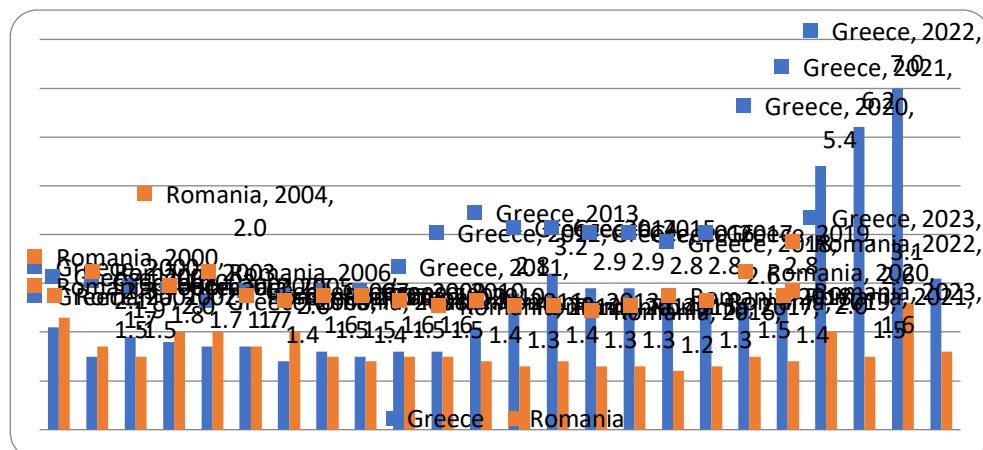


Figure 4: Subsidies evolution given by Greece and Romania between 2000 and 2023, as a percentage of GDP

Source: Eurostat, link <https://shorturl.at/tsqLc> accessed on 14.04.2025

For the currency depreciation and the increase in inflation the National Bank of Romania has a couple of monetary policy options:

- Direct currency intervention to sell euro in the market in order to cool down demand but only after the initial depreciation tsunami. Perhaps even an overnight interest rate increases for the RON in order to discourage further speculation on the currency.
- Increase the monetary policy interest rate in order to attract more Ron in the commercial banks savings deposits, fix the currency exchange course and tame inflation at the same time.

5. Long term gain

Due to decentralization and with the help of digitalization and automatization, the transition to a more supple and flexible central and local government agencies and bodies can be done, minimizing the effects on the ordinary people that benefit from their services.

Due to the centralization of acquisitions, the budget deficit will be drastically trimmed and will have an immediate effect on the necessity for borrowing money on the internal or foreign markets. A more judicious spending will bring Romania's budget deficit in place in a short and medium time and will shine a more positive outlook for the medium and longer time objectives.

Due to the harsh government reforms, redirecting fresh liberated capital from wasteful spending to necessary infrastructure investments, Romania's accession to the OECD, will not only bring back the lost portfolio investors but it will attract even

more. The short- and medium-term bandage will transform in a long-term solid increase for the stock exchange.

The same impact is being addressed to the in-doubt investors that may postpone foreign direct investments in the Romanian economy. A purge in government waste combined with an increase in incomes should bring to light investments and create a solid foundation for future economic development. This should become the basis in attracting more FDI.

Romania should compare its future FDI attractiveness after a downgrade episode with Argentina. The new president and his regime introduced the "Ley de Bases" an omnibus bill that enacted pro-business initiatives and structural reforms. Incentive Regime for Large Investments program provided generous incentives for investments exceeding \$200 million in sectors like forestry, tourism, infrastructure, mining, technology, steel, energy, and oil and gas. Benefits included reduced taxes, elimination of export taxes, and removal of capital controls. It cut government spending and deregulated the private sector, leading to Argentina's first quarterly fiscal surplus since 2008. The country reached agreements with the International Monetary Fund (IMF) to stabilize the economy, and managed this year to repay debts without issuing new ones. The regime depreciated the Argentine Peso to address inflation and improve international competitiveness. The results can be seen in the Merval index below, where the Argentinean stock exchange registered a fantastic upward trend, meaning that the international investors appreciated the regime actions.



Figure 5: Romania's BET Index and Argentina's Merval Index between 2015 and 2025, nominal value expressed in points

Source: TradingEconomics, link <https://shorturl.at/4QVBk> accessed on 14.04.2025

Due to currency depreciation, it will cause a short to medium term deficit in the balance of trade and current account. But in the long term, on one hand imports will decrease due to high costs and on the other hand exports will increase due to currency depreciation, becoming more competitive in the region.

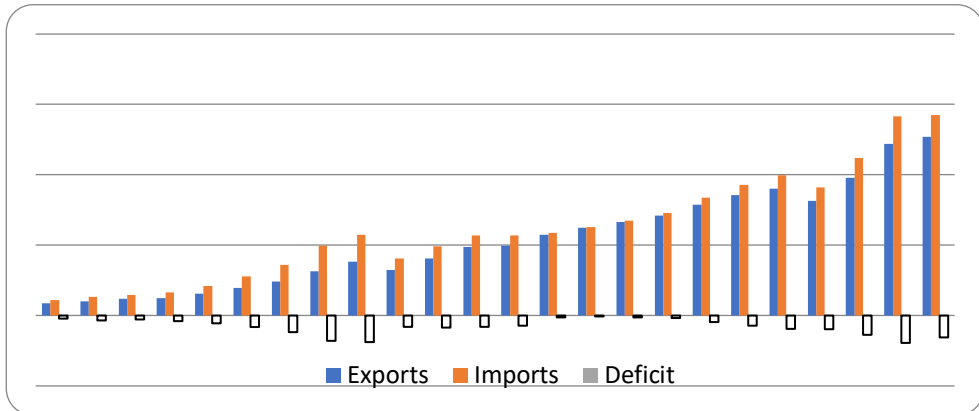


Figure 6: External balance of goods and services with the exports, imports and deficit of Romania between 2000 and 2023, expressed in millions of euros

Source: Eurostat, link <https://shorturl.at/tsqLc> accessed on 14.04.2025

The figure 6 shows what happens in an economic crisis and a pandemic with the exports, imports and deficit. If Romania will be downgraded to JUNK status by the rating agencies, a plunge in imports will occurs in the next couple of years, as it happened between 2008 and 2013. But on the export side, due to the depreciation of the RON, Romania's exports will cost competitive in the region, implying that the volume and value of the exports will increase, resulting a balancing situation for the actual huge and growing balance of trade deficit.

6. Conclusions, paper limitations and recommendations

Even if at first it will be a turbulent economic period, with time and the right economic measures already tested by other countries and taken as cases of good practice, the situation can turn into a movie with a happy ending.

All the tough economic measures taken by Greece and Argentina in the recent period have changed the image of these countries in the eyes of international investors, improving economic activity, a fact also shown in the evolution of the main stock market indices in the 2 countries.

Even if Romania were to be downgraded to the JUNK category by the rating agencies in 2025, this aspect should not be seen as a fateful event. With the right measures tested by others, plus the completion of infrastructure investments and accession to the OECD, it would represent the most solid foundations for future growth.

The paper limitations that have to be addressed in future works are as follows: The value of total Romanian private or public ownership at the companies listed on the stock exchange. This value is important because of the initial exit in a future downgrade moment. First the institutional investors are selling their stock, and only after the retail investors will sell. The theory is that if the stock is owned by the owner

of the company, pension funds or the state, the downside for the selling of shares should be moderate to high, and not see a fire sale in the first couple of minutes.

The impact of downgrades on other economies. All the countries of the world are experiencing cyclical movements for their economies, so at one time, when the cycle registers a downturn and the economies are downgraded, it is important to take into consideration all the measures that those countries took in order to recover and improve their country rating.

The biggest impact which now is not computed is the introduction of new tariffs by one of the largest economies in the world, the United States of America. This episode will impact Romania's economy directly with our exports towards the American market, but also indirectly due to our exports towards other European nations that export on the American market. Future works should focus on the linkages created by this global value chain and try to find solutions in order to hedge better the future risks that can arise.

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**SECTION MANAGEMENT, MARKETING, ECONOMIC,
INFORMATICS AND CYBERNETICS**

**CULTURAL DISTINCTION WITHIN SCHOOL ORGANIZATIONAL CULTURE
AND ITS EFFECTS ON TEACHERS' REGULATION OF EMOTIONS IN ARAB
HIGH SCHOOLS IN ISRAEL**

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Abstract: *This study investigates the influence of organizational culture on the emotion's regulation of teachers in Arab high schools in Israel. It explores how cultural and social dynamics within the school environment affect teachers' emotional regulation and overall performance. Through qualitative methods, including in-depth interviews with principals and teachers, the study uncovers the emotional challenges teachers face, such as a sense of alienation and frustration stemming from their cultural identity as Palestinian Arabs. Findings indicate that the lack of emotional support from school leadership exacerbates these challenges, leading teachers to seek emotional relief through peer support. The study contributes to the understanding of how organizational culture impacts teacher emotions and highlights the need for leadership to foster an environment that acknowledges and supports teachers' emotional well-being within culturally distinct educational contexts.*

Key words: *Organizational culture, Teacher emotions, Arab high schools, Emotional regulation, Palestinian Arab identity, Cultural context in education, School leadership, educational system in Israel, Teacher motivation, School administration.*

1. Introduction:

Schools are educational organizations where human interactions are crucial and inevitable for its existence and growth. Furthermore, it is a powerful resource for shaping identities and intergroup relations within society.

Every organization functions according to values, goals and informal processes that help define what happens inside, and schools are not different in this respect (Oplatka, 2015). However, schools have their uniqueness as learning institutions. In their research, Scardamalia and Bereiter (2010) ask "what would it mean for schools to become learning organizations?" accordingly, they present two quite different ways of answering that question. One would constitute an overhaul in management and the organization of work for schools to do a better job of performing their traditional functions. The other is a much more radical transformation, in which the basic job of the school is altered (Scardamalia & Bereiter, 2010).

A modern school is forced to change in accordance with new tasks and requirements of society, changes in the educational process and the effectiveness of introducing innovations are impossible without a serious analysis of the organizational culture of the school, that occurs in a specific social-cultural, and political contexts.

Many researchers have emphasized the influence of social-cultural factors on educational organizational and leadership aspects. Research on school-based management (SBM) by Omar Mizel (2009) that aims to check key components of SBM in the Arab Bedouin sector in Israel points the social, cultural, and religious factors that contribute to poor academic outcomes. Others, like Shohamy and Awayed-Bishara, describe the Arab educators and administrators in the state-controlled Arab school system who have little power to make decisions (Shohamy, 2003) and are often forced to impose hegemonic Jewish-Israeli values on their learners by means of implementing curricular agendas (Awayed-Bishara, 2021).

Apparently, the organizational culture that “happens” in a specific social cultural context has a strong effect on teachers, as main members of the school. a fact that clarifies the uniqueness of the present research aiming to investigate Arab-Israeli teachers.

The study on teachers has been investigated in many aspects of learning and teaching. Furthermore, since emotional experiences are central aspects of teaching and learning, the research into the role of emotions in education has also increased in the recent years. (e.g., Schutz, 2009; Lee, 2021; Oplatka, 2015). Emotions are part of the learning, teaching, and managing process. It's agreed that they are of a great importance in the daily life of the school and in its leadership. (Nilsson, Ejlerfsson, Andersson & Blomquist, 2015).

The concept “emotions” may sound general and problematic due to the wide range of emotions one can describe. Although there is no one universal definition that is agreed by all researchers, it is still possible to consider emotions as a multidimensional concept that relates to the “desirable” and “non desirable” feelings by which the employee experiences his job (Oplatka, 2015). In other words, emotions in the workplace, the school in this respect, relate to the extent an employee reports/ shows positive feelings and attitudes towards his job.

The research concerning emotions in the workplace is widely spreading in the last few years. Many researchers have indicated the schools' potential for a variety of “emotional episodes” (Frijda, 2000; Izard, 2007). They have described a range of emotions that goes from enjoyment to the intense frustration. Teachers are faced with meeting the needs of students, parents, colleagues, administrators, school districts and governmental accountability officers. (Darby, 2008). The effort to meet the needs of so many varied constituencies often evoke teachers' emotions (Darby, 2008; Adams, 2002; Oplatka, 2015).

Schools, as was mentioned before, are organizations, and because organizations tend to enhance, and support rational thinking, there is a chance that the impact of teachers' emotions in educational settings and organizations was neglected because it was considered as being too illogical in its nature to deserve a proper examination and inspection. Consequently, the way teachers regulate their emotions may be also neglected and not given enough focus.

Researchers pointed on the personal characteristics as dominant factors to affect the employee's regulation of emotions (Bono & Vey, 2007). They described conscientiousness, core-self- evaluation, and emotional intelligence as personal variables that affect emotion regulation (Brotheridge & Lee, 2003; Diefendorff, Croyle & Gosserand, 2005; Austin, Dore & O'Donovan, 2008). Others used the term "surface acting" that may cause emotional dissonance (Seery & Gorrigal, 2009) and "deep acting," that refers to automatic emotion regulation as internal management of emotions.

To contribute to the research on emotions, investigating the role of the organizational culture in teachers' regulation of emotion is what this study aims to reveal. How the school culture, led by the principal and the administration, affect the teachers' emotions and specifically, which is more relevant to work context, is regulating their emotions. The idea emerges from the fact that emotional experience involves person-environmental transactions, which include both "internal" personal characteristics and "external" environments: standards, values, rules (Lazarus & Folkman, 1991). The latter is part of what other researchers have called the "macroscopic level of social, cultural and political structures of schooling" (Zembylas, 2011), referring of the teacher self, on the other hand, as the "microscopic level."

Teachers' emotions in the research field are always connected to different factors such as their relationship with pupils; their career stage; pupils' behavior; quality of teaching; job requirements and the teacher's gender (Oplatka 2015). Still, the effect of the emotion regulation they practice on their motivation -overall, intrinsic, and extrinsic- is also a matter of investigation. On the other hand, the way teachers feel is reflected eventually on their performance. In management terms, teachers who possess an intrinsic motivation to work as educators are doing their teaching job more effectively and more efficiently as proved by the results of their students in all kinds of evaluation of their learning.

Arab teachers in Israel are minority with a unique and complicated professional identity.

In their research about leadership style, occupational perception, and organizational citizenship behavior in the Arab education system in Israel, Arar & Abu-Asbah describe a phenomenon which produces on the one hand high profile of teachers in Arab education, and on the other hand, damage on the occupational perception and even alienation from the teaching profession (Arar and Abu- Asbah, 2013). Haj-Yehya describes how both Israelization and globalization affect the Arab school culture which in turn affects the principals, the teachers, and the students. (Haj-Yehya, 2016).

Since research have not investigated how Arab teachers regulate their emotions and how this is affected by the organizational culture of the school, which is in this case, suffers from a weak presence of the ethnic distinct Arab culture (Haj-Yehya, 2016), the present research intends to analyze the connection between the Arab teachers' regulation of emotions and the organizational culture of the school, assuming that the unique cultural context of Arab schools in Israel would contribute to the findings.

The emphasis on understanding the Arab teacher's self in the context of the school culture through exploration of his emotions in the workplace opens the door

to more understanding that may lead to new practices of the leading system that affects teacher's transformation.

2. The objective of the study

The objective of this study is to examine how the organizational culture within Arab high schools in Israel affects teachers' emotional regulation and teachers' performance, particularly in the context of their unique cultural and professional identity as Palestinian Arabs. The study is part of wider mixed research on the relation between organizational culture and teachers' regulation of emotions. It also aims to reveal how the lack of a distinct Arab educational culture influence teachers' emotions and their ability to manage these emotions in the workplace. Additionally, it seeks to explore the role of school leadership in either supporting or neglecting the emotional needs of teachers, contributing to a broader understanding of the interplay between organizational culture and emotional well-being in educational settings.

3. Review of the Literature:

Interest in the study of the organizational culture of school has appeared since the mid-seventies of the 20th century. The researchers faced the same problems as when studying organizational culture in general: the multiplicity of the concept of "organizational culture of the school," the correlation of the terms "organizational culture," "organizational climate," the interdisciplinary nature of the phenomenon, the problems of the methodology of study, typologies.

The study of the school as an organization should be carried out in the paradigm of organizational culture (Shahamat, Mahmoudi & Sardareh, 2017). The idea of social constructionism that "an organization does not have a culture but is one" seems to be the most suitable for understanding and studying educational institutions. In this understanding, the main content of learning is not the transfer of information (mastery of knowledge), but a change in culture (a change in "being," context).

It is culture that can become the most necessary connecting factor that makes it possible to coordinate both the organizational processes themselves and their perception by different social groups involved in them (Price, 1997; Alvesson, 1987; Gruenert & Whitaker, 2015).

The school as an organization must maintain a certain balance both in relation to the environment in which it operates and between the various systems that form its overall structure.

Many studies are devoted to the study of the influence of organizational culture on overall work efficiency, employee behavior and the comfort of work processes, including within the school. It is believed that values, beliefs, and basic beliefs commonly shared in an organization can shape perceptions, ways of thinking, feelings, and behavior. The core of organizational culture is its ideology, which

manifests itself in public statements reflecting beliefs and goals, and which, in turn, become guidelines for behavior (Price, 1997).

In addition, a strong organizational culture, competently built and debugged, contributes to successful activity, commitment of employees, their motivation, as well as adaptability and flexibility (Ouchi, 1981; Deal & Kennedy, 1983; Peters & Waterman, 1984; Millikan, 1985; Sathe, 1985; Schein, 2007; Lewis, 2002; Reiman & Oedewald, 2002; Scheres & Rhodes, 2006; Jaghargh et al., 2012).

Researchers tried to measure the main elements of a strong school culture and their impact on sustainable school improvement (Lee & Louis, 2019). Heck (1998) consider that strong organizational culture in schools includes factors such as shared values, norms, and a sense of community.

Today, researchers use the term “organizational culture of the school,” but there is no single definition. The analysis of definitions allows us to conditionally divide them into several groups:

- 1) Definitions listing elements of organizational culture.
- 2) Definitions reflecting the impact on the activities of schools, teachers, and students.
- 3) Definitions emphasizing the integrity of the phenomenon.

The relationship between the concepts of “organizational culture” and “climate” has a different interpretation. According to Van Houtte (2005), organizational culture and climate are not interdependent. Climate is a broader concept that includes organizational culture.

There are four components of the school's climate, one of them is culture:

- 1) Ecology (physical and material aspects)
- 2) Environment (individuals and groups)
- 3) Social system (rules and standards of actions and interactions)
- 4) Culture (beliefs, attitudes, values, norms, and meanings reflected in behavior) (Shann, 1999).

Another point of view suggests that climate is a substructure of organizational culture (Schoen & Teddlie, 2008).

The school is also considered as an open social system interacting with its external environment, which serves the purposes of other organizations and institutions of society and cannot exist independently of them (Ballantine et al., 2021). Of course, the allocation of the school as an independent organization is carried out for analytical purposes as part of the entire educational system.

It should be noted here that the school has certain characteristics that distinguish it from other types of organizations. There is a classical opinion that the structure of the school is extremely multifaceted — its goals, objectives, public authority, internal social interactions, and communication system are so developed that we can say that the school is one of the most complex organizations existing in society (Berg & Wallin, 1982).

American psychoanalyst and organizational consultant Kenneth Eisold notes that the school administration, teachers, students, and their parents perceive the school differently, based on their preferences, which represent different expectations, interests and needs, which can easily lead to the emergence of parallel systems in the school, between which communication is difficult.

Therefore, he suggests considering the organization of a school as a loosely connected set of overlapping systems:

- A student system related to the education and development of schoolchildren.
- A teacher system dedicated to maintaining professional standards and effective teaching.
- A parent system focused on the relationship between school and child.
- An administrative system dealing with management in general, including security and external relations.

A good school climate can be seen as facilitating communication between these systems, which otherwise can easily escalate into suspicion and mutual hostility (Eisold, 2009).

It is also worth considering that all subjects of the educational process may have different views on the social functions and tasks of the school (Todd & Higgins, 1998; Fan & Chen, 2001; Addi- Raccach & Arviv-Elyashiv, 2008; Favero & Meier, 2013; Minke et al., 2014).

Thus, the administration, teachers, students, and parents look at the school through different “lenses,” have different interests, needs and expectations and place certain hopes on it. The school social environment can easily differentiate into independent systems that overlap to one degree or another, communicate in terms of their positions, and, therefore, do not always understand each other (Eisold, 2009).

The sphere of interests of teachers is purposeful and is set by the main mission — the qualified transfer of knowledge to students. In addition, they are engaged in organizational work, maintaining discipline, establishing individual contacts with schoolchildren and their parents. A separate large layer of their activities is preparatory and reporting work (Rampa, 2004; Pourrajab & Ghani, 2015).

Researchers speak of school culture as a set of traditions and rituals that are formed and modified over time when teachers, students, parents and administration work together, overcome difficulties, cope with crises and successfully solve tasks (Peterson & Deal, 1999).

In a study conducted by Fitria (2018), he argues that organizational culture has a positive impact on the work of teachers. He notes the special importance of trust in the school, which has a positive impact on the work of teachers. Hargreaves and Fink (2004) suggest that a stable culture provides teachers with a sense of security, trust, and confidence, enabling them to focus on their professional growth and deliver high-quality instruction.

An effective school culture promotes professional development, high productivity, cohesion and cooperation, as well as the creation of a working environment that maximally contributes to the fulfillment of the main task of teaching and educating students (MacNeil et al., 2009; Bush, 2015). In their study, Syaputra and Santosa (2022) come to the conclusion that the influence of organizational culture on the productivity of teachers and their motivation is very significant.

An effective culture assumes that the teaching staff and the school administration arrange their work in such a way that the discussion and adoption of important decisions take place jointly with the participation of parents and schoolchildren. It also allows you to fully control all the processes taking place in the educational institution, maintain their positive dynamics and organize effective teamwork. It is

important that teachers not only meet high professional standards, but also have positive personal qualities and a high moral culture. Thus, they will be able to demonstrate and instill in students socially approved and acceptable models and norms of behavior.

If the above points are not observed, the school culture can realize negative functions. This happens when there is no trust between all participants in the educational process, there is no cohesion and general movement towards the main goal, the qualifications of teachers do not meet professional requirements and standards, there is no effective contact with the school management. In addition, incorrect attitudes, negative personal qualities, biased attitudes and excessive demands on the part of both parents and teachers can complicate the situation. The above factors negatively affect many processes and can cause a deterioration in the quality of education, a drop in interest in learning, which leads to a decrease in the academic performance of schoolchildren (Grayson & Alvarez, 2008). It can also provoke the emergence of conflict situations at all levels between all subjects of the educational process.

Therefore, the creation of a harmonious organizational culture in each school is one of the most effective ways to optimize and improve the quality of the educational process and build a favorable environment for effective cooperation between the school administration, teachers, schoolchildren, and their parents.

Two terms that were used to describe emotions in the workplace, which are going to be related to in the discussion part of this research, are “emotional labor” (Hochschild, 2019) and “emotional work” (Hochschild, 2019). While the first concept describes a job in which the employees’ emotions are controlled by the organization and the employee is getting paid for “showing” or “hiding” them - jobs like public service and waiters, the latest describes a situation in which the person is autonomous in managing his emotions, and thus the emotional work is controlled by the person.

Morris and Feldman (1996) claimed that teachers are expected to display emotions in particular ways. Accordingly, teaching is an emotional labor since it is a work or effort in which teachers present various roles or identities during school related transactions. This means that during transactions in the school context, teachers express, repress, or generate emotions based on perceived needs during particular activities.

Still, all of the above mentioned is not enough to give evidence regarding deep emotions of satisfaction and motivation that are connected to wider range of factors as this research aims to investigate in regard with the organizational culture of the school.

4. Methodology:

The qualitative research method

The qualitative research tool chosen in this study is to hold open interviews, as this causes the interviewee to conduct himself freely and openly, to be honest and a partner in the interview in full. By a semi-structured in-depth interview, a

researcher can reach deeper content by full partnership during the interview and expressing oneself freely on the part of the interviewee.

The qualitative research method mainly focuses on personal interviews with two principals and two teachers who are involved in the educational life of the school. This method tries to understand the actions of the person and since everyone is different, it is important to know the different points of view of each person and how they see or understand things. Qualitative research is research on humans, and naturally engaging in human experiences involves delicate, intimate, sensitive, and sometimes vulnerable situations (Sabar & Sabar Ben-Yehoshua, 2017; Shkedi, 2003).

The qualitative method enables to examine in depth the experience of the research participant and derive insights and meanings from it (Sokolowski, 2000). Making connections between teachers' regulation of emotions and school organizational culture involves a great deal of interpretive practice, through an in-depth look at the content emerging in the study we can deduce patterns and understand essences within the experience. The interviewees are the source of the information, their experiences, and the interpretation they give them occupy a central place in the research and through them the researcher comes to an understanding of the human experience (Englander, 2012).

As mentioned above, the qualitative approach used in the present research was mainly to assert or contradict the results/findings achieved by wider quantitative research that was conducted around the same topic.

In interviewing, two principals and two teachers from two Arab High schools in Israel, who were located by mutual acquaintances, were selected. One principal and one teacher from each different school. The advantage of the detection method is finding teachers in a relatively quick way. interviewees I know before the interview will agree to collaborate.

I held the interviews with the two principals in the schools. With one principal (HH), it has been conducted at the end of the schooling year. With the other principal (ST), it was done during the summer vacation.

The interviews with the two teachers, (JR and SA), were held in the school close to the end of the school year. A period in which final "Bagrut" exams are held and teachers "enjoy" much of free time, less stress of the daily routine after they have finished preparing their students for the ministry final exams. Even though the timing was due to research constraints and deadlines, I think that this was an ideal timing in which teachers specifically allow themselves to reflect on their work and view aspects of the schooling context in contemplation and more neutrality.

To note, the interviews with the principals were separated from the interviews with the teachers, meaning that both sides were not aware about the interview with the other side. I believe that this enables them to express themselves more freely without thinking about what the other side may describe regarding the same workplace or the shared work context.

5. Data Analysis and Processing of Findings of the Qualitative Research:

For the qualitative data we used the content analysis (Punch & Oancea, 2014) in which meaningful statements were detected. The principle of content analysis method (Holsti, 1969) was used to analyze the interviewees responses. This includes the transcription of the findings, identification of meaningful units of content and classification into categories (Creswell & Clark, 2017).

In practice, the data analysis starts with coding; it is the process of putting tags, names or labels against pieces of data. Later, comes the process of identifying main categories and determining suitable subcategories in the data.

6. Ethics and ethical considerations:

Ethics in human-related research addresses four different aspects: the relationship between the researcher, the research topic, the subjects, and the science. Ethics compels researchers by clear guidelines on how to conduct effective and proper research and how to treat respondents in a way that will not harm them, but will respect them (Friedman, 2006).

1) Informed consent - The subjects agreed to participate in this study after receiving the relevant information about the research topic, what questions will be presented and how the data will be presented and agreed to participate out of choice and a desire to help. They were also asked for permission to record the conversation with them, transcribe and analyze the interview.

2) Privacy and anonymity - Prior to the start of the interview, confidentiality was promised regarding details that may reveal the identities of the interviewees. It was emphasized that all the information provided will remain anonymous, that their names will not be displayed, and that no use will be made of the information, but only for the purposes of the research. Therefore, the names of the participants in the present research are only the first letter of their name.

3) Reciprocity and partnership - I will open the conversation with my personal presentation, what the purpose of the research is and I will thank them in advance for the participation and the time they give me. I will try to create an atmosphere of openness and trust in interviews that will allow for a relaxed conversation in a pleasant and friendly atmosphere, and I will also suggest that all interviewees read the final work.

7. Major Findings & Discussion of the study:

The qualitative data reveals the emotional effect of the organizational culture of the school on teachers more clearly. Since identity is part of culture (Arar & Ibrahim, 2016), the teachers' descriptions of identity give clear indication of the way they perceive their school culture.

Both teachers describe the weak presence of a culture that enables free expression of their feelings and of their identity as Palestinian Arabs. One teacher-JR -describes the school as an "official institute" on the one hand, relating to "the

alienating - requirements and procedures", and on the other hand she describes it as a "home" only once she meets her "favorite colleagues" and "share non routine sessions" as JR calls it, referring to meetings in which conversations are held around feelings and attitudes far from "the unreasonable meetings and requirements."

In her statements, teacher JR emphasizes both the organizational culture of the school and the regulation of emotions through her colleagues.

In his research, Haj Yiha (2016) presents the lack of a distinct Arab education in the Arab schools after the "Naqba" and its reflection on the organizational culture of the school. He points to the weak presence of the Arab education, which is practiced only occasionally via school activities, an aspect that goes with the description of the teacher emphasizing the restriction and commitment to the Israeli ministry of education that enforces curricula which is not stemmed from Arab culture values and causes much of the negative feelings she experiences in her work in the school. Other researchers (Abu-Asbah, 2012) agree that Arab schools in Israel focus on materials and assessment ignoring their role in enhancing and strengthening the Arab culture and the collective identity.

The second teacher -SA- says: "...the school may be a nightmare for the teacher if he doesn't manage to balance his feelings... the Arab teacher suffers more than any other teacher in this country, and if the administration doesn't realize this so he is running a factory, not a school..."

The teacher also emphasizes the flaws in the materialistic aspects of the school culture: "...there are many sides in the school that doesn't reflect us, our culture... the name of the building (Mifaal Hapayes-referring to the Israeli financier) shouldn't be there...the (Hozar Mankal.- referring to the Israeli ministry monthly brochure) ...we can't give Arab Palestinian names... we are afraid...so we use numbers instead..."

The teacher is referring here to three important points: one is the challenging school reality for the Arab teacher in specific, secondly, the possibility and the importance of regulating his emotions, and thirdly, the important role of the organizational culture led by the principal or the administration of the school.

Regarding the first point, the description of the teacher goes with the spirit of the few research conducted on Arab teachers' identity in Israel. Arab teachers are described in literature as being in a situation between "globalization" and "Israelization" that sometimes contradicts with traditional values (Ghanem,2000). Arar & Fadia (2016) also relates to this phenomenon of the "lost identity" which is, according to him, caused by loss of cultural distinction in the organizational school culture, which also affects the students themselves.

Both teachers point to the flaws in the value system within the organizational culture of their schools, caused by the neglect of their own self-identity as Arab teachers and the focus on assessment. this is what Abu Asbah (2012), also approves in his description of an education which is unconnected to the social reality and neglecting the value aspect. The values that are emphasized through the educational curricula is prepared by the ministry and doesn't reflect the Arab culture or the teachers' needs and demands. (Haj-Yehya, 2016).

Both teachers refer to preferable colleagues to share their feelings. As JR describes it: "...when I feel that I couldn't stand things any more... I look for MA... my best friend in the school...for outlet and relief."

Also, teacher SA describes a similar behavior when asked about the idea of moving to another school: "...when I heard that they opened another new high school in the village, I thought to move for a better administration and better climate.... But sooner I told myself that what happens here also happens, somehow, in other Arab schools, since grades come first and not values, and because here I have an outlet for anger, two or three colleagues with whom I share a lot and feel better..."

As we can conclude from both teachers, they use specific strategies to regulate their emotions. Soothing (Hofman et. al., 2016) is a repeated pattern in their conversions. Both talked about seeking others when they are angry or upset, to provide them comfort and sympathy.

These results are consistent with the features of the Arab society, in which members share a collective identity, maintain connections and close relations. Principals, on the other hand, limited their descriptions of the organizational culture to school activities and, its effect, they manage to see in the motivational and performance aspects, without the mediation of emotions. As one principal describes- HH-: "...the ministry enables us to dedicate around 25 percent of the curricula to any extracurricular activity, so we have the freedom... but unfortunately, you need motivated teachers...."

The difficulty to view things through emotional lenses was also clear in ST's speech: "...A teacher can't act the feelings he experiences, because it will be reflected on his students and on their performance...."

Both teachers stated that their principals have no role in their regulation of the negative emotions. JR states: "...The principal doesn't ask us about how we feel... he doesn't even use words that relate to feelings... he is the last one to share my frustration with..."

The findings here again support the scene in which principals have limited understanding of how wide the term "organizational culture" is and their difficulty to perceive emotions as a mediating factor between the organizational culture and both the motivation and performance of teachers.

This goes with Agbaria (2015) when relating to Arab education in Israel, suggesting that emotions are related to identity, so if identity is not enhanced, no expression of emotions is enabled. Agbaria describes an "afraid" Arab teacher and an administration that doesn't play a role in expressing these feelings, and even giving the legitimacy to it, because it follows the ministry's requirements.

The qualitative findings support the idea that the school is an open social system interacting with its external environment and can't exist independently of them. (Ballantine et al., 2021).

8. Conclusion:

This study reveals the complex relationship between organizational culture and the emotional experiences of teachers in Arab high schools in Israel. The findings show that the organizational culture within these schools is deeply influenced by external political and social forces, which does not adequately reflect Arab cultural values. This lack of representation contributes to a sense of alienation among Arab

teachers, who often find themselves struggling to reconcile their professional duties with their personal and cultural identities.

Teachers in the study reported feeling emotionally disconnected from their schools, which they describe as “official institutions” primarily focused on meeting state-imposed educational standards rather than nurturing the cultural and emotional needs of Arab students and teachers. The emotional burden on these teachers is exacerbated by the absence of culturally relevant educational content, leading to frustration, disillusionment, and, in some cases, a sense of detachment from their roles as educators.

The study highlights the pivotal role of peer support in mitigating these emotional challenges. Teachers frequently turn to trusted colleagues to share their frustrations and seek emotional relief, as the organizational culture of their schools does not provide a formal mechanism for emotional support. The principal and school administration were found to have limited engagement with teachers' emotional well-being, focusing instead on the functional aspects of school management. This neglect of emotional dynamics further intensifies the teachers' emotional dissonance, as they lack institutional support for processing their complex feelings about their work environment.

Furthermore, the study draws attention to the concept of emotional labor, wherein teachers are expected to manage their emotions in ways that align with their professional roles. Arab teachers, in particular, face the additional challenge of regulating emotions related to their ethnic identity in Israeli educational system. This often leads to feelings of exhaustion and detachment, as teachers struggle to balance their professional responsibilities with their need to express their cultural identity.

The qualitative findings from interviews with both principals and teachers demonstrate a significant gap in how the organizational culture is understood and implemented. While principals emphasize the logistical aspects of school culture, such as curriculum design and teacher motivation, they largely overlook the emotional needs of their staff. This lack of emotional awareness within leadership contributes to a school environment where teachers' emotions are undervalued, despite the clear impact of these emotions on their job performance and satisfaction. Moreover, the findings suggest that the emotional experiences of Arab teachers are shaped not only by their immediate school environment but also by broader socio-political forces. In conclusion, this study underscores the need for a more culturally sensitive approach to organizational culture in Arab high schools. School leadership must recognize the emotional dimensions of teaching and make a concerted effort to integrate Arab cultural values into the educational process. By fostering a school environment that acknowledges and supports teachers' emotional well-being, principals can help mitigate the negative effects of emotional dissonance and improve both teachers' regulation of emotions and consequently their performance. Additionally, the findings call for a reevaluation of the broader educational policies that govern Arab schools in Israel, with an emphasis on creating curricula that reflect the cultural identity of the Arab minority. Only through such reforms can the emotional and professional needs of Arab teachers be truly addressed, ensuring that they feel valued and supported in their crucial role as educators.

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WORK ADAPTABILITY AND TURNOVER INTENTIONS AMONG UNIVERSITY GRADUATES: INSIGHTS FROM ROMANIA AND ZANZIBAR

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Abstract: *Today's work market presents candidates with increasing demands and unaddressed challenges that underscore the importance of adaptability, understood as one's capacity to adjust behaviors, thoughts, and emotions to respond effectively to changing work demands, environments, or situations. Although numerous studies have examined graduates' intentions to leave a job or even a profession, there remains a significant knowledge gap. Drawing on social exchange theory and job embeddedness theory, the present study aims to examine how graduates from Romania and Zanzibar perceive their ability to adapt to workplace demands and their intentions for turnover. To meet this end, the authors conducted an empirical study using the survey technique, with a questionnaire as the research instrument, targeting graduates from the University of Oradea, Romania, and The State University of Zanzibar. Furthermore, it seeks to investigate the differences in adaptability to work and turnover intentions between Romanian and Zanzibaris respondents. Our findings reveal that Zanzibaris graduates scored lower than Romanian graduates in individual adaptability to work, both overall and in specific aspects, as well as in turnover intentions. Additionally, the variability of the investigated variables was lowest among Zanzibaris compared to Romanians. Specifically, respondents from both countries attributed the lowest score to the "Embracing continuous learning" component of individual adaptability to work and the highest score to the individual adaptability to work component, namely "Coping with Work Stress." The paper contributes to a better understanding of how individual adaptability to work, combined with turnover intentions, is perceived by university graduates from Romania and Zanzibar, providing some explanations and opening new avenues for research.*

Keywords: *university graduates, Romania, Zanzibar, individual adaptability to work, turnover intention*

JEL Classification: A23, M20

1. Introduction

In the context of significant changes in the labor market driven by technological advancements that fundamentally redefine work, the discourse of adaptability takes center stage (Kundi, Lo Presti, and Khan, 2025). Universities are urged to ensure they produce "adaptable" graduates (Pan et al., 2018), while graduates themselves are encouraged to continuously develop their capacity to adjust behaviors, thoughts, and emotions—referred to as individual adaptability to work by Ployhart and Bliese (2006)—to effectively respond to changing work demands, environments, or situations (Schleicher, 2020; Amarathunga et al., 2024).

Today's work market presenting candidates with increasing demands and unmet situations that underscore the importance of adaptability (e.g., Arunprasad, 2017). For example, home-based work and digital collaboration tools have redefined the traditional office environment and employment terms introducing new challenges and opportunities (Syahyu, 2024). Platforms like Zoom or Microsoft Teams have enabled employees to work from virtually anywhere and anytime, fostering adaptability and work-life balance (Stankevičienė et al., 2023). Also, employees' adaptability faced significant challenges with the emergence of new forms of work in the gig economy, driven by online platforms. Many workers now engage in short-term, freelance, or project-based roles while teams undergo a digital transformation from conventional to virtual setups (Vuchkovski et al., 2023). Remote and gig work, as well as freelancing, self-employment, or pursuing multiple jobs or diverse roles simultaneously rather than committing to one profession, is widespread among young adults (Shin and Gordon, 2024).

This precariousness and diversity of roles demand individuals' full capacity to adapt to volatile situations and forms of work that generate uncertain and fluctuating incomes (Furlong, 2015). For college graduates who have already invested considerable sums of money during their years of study (Hwang, 2017), adaptability is even more challenging. Moreover, college graduates have often chosen their field of study based on financial prospects set during periods of economic boom—prospects that have changed dramatically, starting from graduation (Shapiro et al., 2016). Furthermore, in uncertain times, which have become long-term trends, graduates increasingly require an overarching ability that enhances other skills and enables effective performance across diverse complex situations, such as adaptability to reassess career paths proactively (Pan et al., 2018).

As highlighted in the review by Amarathunga et al. (2024), a variety of previous studies have shown that university graduates exhibit both strengths and weaknesses in their characteristics, abilities, and skills for coping with work life. However, challenges arise as various surveys reveal that Generation Z graduates exhibit an even higher tendency than Millennials to change jobs (turnover intention), a phenomenon that can adversely affect both the future of organizations and the reputation of universities (e.g., Baker Rosa and Hastings, 2018; Botezat, Fotea, and Fotea, 2023; Minzlaff, Palmer, and Fillery-Travis, 2024). Although numerous studies have examined graduates' intentions to leave a job or even a profession (e.g., Kashfitanto and Febriansyah, 2023; Gaan and Shin, 2023; Lee and Ji, 2024), there remains a significant knowledge gap, particularly in exploring the relationship

between graduates' individual adaptability to work (IAw)— analyzed through its seven components (Botezat et al., 2023)—and their turnover intentions.

In developing countries, such as Romania and Zanzibar, studying the relationship between graduates' IAw and their turnover intention (TI) is particularly important, as these nations often face economic instability and limited formal (qualitative) job opportunities. At the same time, higher education represents a significant investment for individuals and societies, and high turnover among graduates can undermine this investment if organizations struggle to retain skilled workers. Developing countries often experience brain drain as skilled graduates leave in pursuit of better opportunities abroad. Examining individual adaptability to work and turnover intentions can reveal factors that motivate graduates to remain and contribute to their home countries. This issue is particularly significant in Romania and Zanzibar, where large companies, small and medium-sized enterprises, family businesses, cooperatives, and social enterprises face ongoing challenges in attracting and retaining skilled graduates.

Consequently, the study aims to examine how graduates from Romania and Zanzibar perceive their ability to adapt to workplace demands and their turnover intentions. Furthermore, it seeks to investigate the differences in adaptability to work and turnover intentions between Romanian and Zanzibaris respondents.

To meet this end, the authors conducted an empirical study using the survey technique, with a questionnaire as the research instrument, targeting graduates from the University of Oradea, Romania, and The State University of Zanzibar. The paper is structured as follows: after the first section - Introduction, the second section presents the theoretical background regarding adaptability to work and turnover intentions; the third section details the research methodology, results, and discussions in the fourth section; and conclusions in the final section.

2. Theoretical Background

2.1. Overview of Both Countries

The European Employment Services portal mentions that on 1 January 2024, about 19.1 million people lived in Romania. In 2023, more than 8.2 million people were active in the labor market in Romania. The employment rate was 63%, 7.4 percentage points lower than the EU27. In 2023, the employment rate for young people was 18.7%, below the EU average (35,2%). As stated by the Annual report on intra-EU labor Mobility 2023, the EU-Labour Force Survey shows that in 2022, the Romanian mobile workers continue to be the largest group, accounting for 25% (2.1 million) within EU movers. The occupational groups with the highest occurrence of surplus occupations were science and engineering-associated professionals, legal, social, and cultural professionals, and science and engineering professionals, supposed to be higher- education graduates (EURES, 2025).

Located in the Indian Ocean, Zanzibar is home to 1.7 million people within the United Republic of Tanzania. The Zanzibar Office of Chief Government Statistics (OCGS) and the National Bureau of Statistics (NBS) conducted a survey across both mainland Tanzania and Zanzibar. The analytical report, titled *Integrated Labour Force Survey 2020/21*, was published in 2022 and found that the youth

unemployment rate (ages 15–35) in Zanzibar is 27.4%. The Revolutionary Government of Zanzibar and UNICEF1 2022 Report recommended that the Revolutionary Government of Zanzibar (RGoZ) develop a more inclusive labor market by providing better formal employment opportunities, especially for youth and women. Following the same report, structural reforms to the labor market should be accompanied by adequate social investments in key sectors, including tourism, agriculture, and trade. According to Zanzibar's Development Vision 2050, priority industries include the commercialization of cloves, fisheries, oils, seaweed, and dairy, the expansion of the ICT network, and the export of salt, jewelry, wooden products, electronics, and handicrafts. (Revolutionary Government of Zanzibar and UNICEF, 2022).

2.2. Theoretical Basis

Social exchange theory is one of the most used theories in the study of workplace relationships. It explains human behavior and interactions through cost-benefit analysis and reciprocity principles, as outlined by Ahmad et al. (2023). For example, employees' intention to quit an organization often depends on the negative perceived balance between their contributions, such as work effort and loyalty, and their rewards, including salary, bonuses, and recognition. If the expectations regarding salary or acknowledgment of their efforts in completing work tasks and achieving objectives are not fulfilled, the employee may start considering leaving the organization. What is important to highlight here is that each individual has a subjective system of comparison shaped by previous (work) experiences and societal norms.

Acting as an overarching framework, Social Exchange Theory hosts under its umbrella Job Embeddedness Theory, which provides, in our case, additional insights into how employees evaluate their intention to leave the workplace (Jiang et al., 2012). Specifically, Job Embeddedness Theory highlights the importance of "embeddedness" in the workplace—such as compatibility with the workplace, social connections, and community ties. Employees may reconsider their intention to leave, even if they feel inadequately compensated for their effort and dedication, as recognition from the community can help restore the balance between effort and reward.

Social Exchange Theory and Job Embeddedness Theory offer a suitable framework for examining the relationship between graduates' individual adaptability to work and their turnover intentions. This framework is evident in developing countries such as Romania, particularly Zanzibar, where individuals are more likely to stay in work relationships due to a perceived lack of alternatives or the high costs associated with leaving, even when the rewards are limited.

2.3. Individual adaptability to work

Individual adaptability to work is frequently described as an individual's ability to effectively accommodate changes, challenges, and new demands in the workplace. Academic literature, such as the I-ADAPT theory, frames adaptability as a multidimensional concept encompassing cognitive, emotional, and behavioral flexibility (Ployhart and Bliese, 2006). It highlights how individuals navigate dynamic

(socio-cultural) environments and relationships, adapt to learning, manage stress, and acquire new skills to sustain performance. Popular literature tends to adopt a broader perspective, emphasizing resilience, openness to change, and problem-solving abilities. It often focuses on the practical dimensions of adaptability, such as how employees manage technological advancements, organizational transformations, or evolving job roles. In the Romanian socio-cultural context, which shares certain similarities with that of Zanzibar, individual adaptability to work can be regarded as a meta-skill—an advanced or higher-order competency—because it integrates various qualities and abilities, such as flexibility, resilience, and the capacity to learn and adapt to ever-changing environments. Specifically, Botezat et al. (2023) developed and validated a scale for the Romanian population, highlighting seven *components of individual adaptability to work*: 1) managing emergencies and crises; 2) coping with workplace stress; 3) addressing challenges creatively; 4) navigating uncertain situations; 5) embracing continuous learning; 6) adapting to interpersonal dynamics; and 7) demonstrating cultural adaptability. These adaptable components enhance other skills and promote effective performance across diverse contexts and challenges, including the ability to sustain employment.

2.4. Turnover intention

Turnover intention is a precursor to turnover (Apriani and Siregar, 2023). It is defined as an individual's conscious and deliberate desire to leave their current job or organization within a specific timeframe (Lazzari, Alvarez, and Ruggieri, 2022). Previous research has revealed that graduates, particularly those from Generation Z and Millennials, exhibit a strong tendency to switch jobs, leading to higher turnover rates, a trend that negatively impacts both the future of organizations and the reputation of universities (e.g., Baker Rosa and Hastings, 2018; Botezat, Fotea, and Fotea, 2023; Minzlaff, Palmer, and Fillery-Travis, 2024). Different scholars have pinpointed factors such as work-life balance, meaningful work, growth opportunities, and job expectations as significant contributors to these high turnover rates (e.g., Botezat, Fotea, and Fotea, 2023; Minzlaff, Palmer, and Fillery-Travis, 2024). Nevertheless, a notable knowledge gap persists regarding the relationship between graduates' individual adaptability to work and their turnover intentions.

Given that lower adaptability, identified by Abankwa et al. (2021) as a critical meta-skill for navigating the complexities of the 21st century, can lead to job dissatisfaction and subsequently increase turnover intentions—especially in challenging work environments (Rudolph, Lavigne, and Zacher, 2017)—we formulated our research questions:

RQ1. How do graduates from Romania and Zanzibar perceive their ability to adapt to workplace demands, both broadly and in specific aspects, and their intentions to leave the workplace?

RQ2. Are there differences between respondents in Romania and Zanzibar in terms of their general and specific adaptability to work, as well as their intentions to leave the workplace?

3. Research Methodology

3.1. Sample

To answer our research questions, we collected data from 176 graduates of the University of Oradea, Romania, and 61 graduates of the State University of Zanzibar, as can be seen in Table 1. Although the participants studied in the western part of Romania or the capital of Zanzibar, they reside in various regions of their respective countries. It can be argued that the respondents' characteristics are representative of other university graduates in Romania and Zanzibar, given the relatively homogenous traits of Romanian and Zanzibaris people across all regions. In addition, constant connectivity, a digital lifestyle, and ongoing cultural exposure through social media are progressively dissolving physical and cultural barriers.

Table 1. Socio-demographics data

	ROMANIA (N = 176)			ZANZIBAR (N = 61)		
Variable	Level/Category	Frequency	%	Level/Category	Frequency	%
Gender	Female	99	56,26	Female	28	45,90
	Male	67	38,06	Male	33	54,10
	Prefer not to say	10	5,68	Prefer not to say	-	-
Age group or generational cohort	Generation Y (b. 1981-1995)	45	25,56	Generation Y (b. 1981-1995)	15	24,59
	Generation Z (b. 1996-2010)	131	74,44	Generation Z (b. 1996-2010)	46	75,41
Work experience	up to one year	34	19,32	up to one year	23	37,70
	between 1-2 years	32	18,18	between 1-2 years	15	24,59
	between 2-3 years	34	19,32	between 2-3 years	9	14,75
	between 3-4 years	22	12,50	between 3-4 years	3	4,92
	between 4-5 years	10	5,68	between 4-5 years	6	9,84
	over 5 years	44	25,00	over 5 years	5	8,20
Current occupation	Specialist in various fields of activity	65	36,93	Specialist in various fields of activity	32	52,46
	Service worker	25	14,20	Service worker	3	4,92
	Skilled worker in agriculture, forestry or fishing	4	2,27	Skilled worker in agriculture, forestry or fishing	0	0,00
	Skilled worker	14	7,95	Skilled worker	6	9,84
	State employee	25	14,20	State employee	2	3,28
	Self-employed	5	2,84	Self-employed	6	9,84
	Entrepreneur	18	10,23	Entrepreneur	7	11,48
	Other type of occupation	20	11,36	Other type of occupation	5	8,20
Number of jobs	only one	61	34,66	only one	37	60,66
	between 1 and 3	80	45,45	between 1 and 3	23	37,70
	between 4 and 6	33	18,75	between 4 and 6	1	1,64
	7 and over 7	2	1,14	7 and over 7	0	0,00

Source: created by authors

As graduates, we surveyed Millennial individuals (born between 1981 and 1995) and Generation Z individuals (born from 1996 onward) without applying any exclusion criteria regarding enrollment status, field of study, gender, or current work experience. Data collection was conducted in March 2025 using a questionnaire hosted and disseminated via Google Forms.

The final dataset included complete responses from 237 individuals: 176 from Romania and 61 from Zanzibar. Key socio-demographic information is presented in Appendix 1. In Romania, the majority of respondents (56.26%) were women, whereas in Zanzibar, men comprised the majority at 54.10%. Regarding age groups or generational cohorts, in both countries, one in four respondents were Millennials, while three in four belonged to Generation Z. These findings seem to align with the work experience variable only in Romania, where 25% of respondents reported having more than five years of work experience, compared to just 8.20% in Zanzibar—a difference of approximately threefold. Conversely, in Zanzibar, the percentage of respondents with up to one year of work experience was double that of Romania (37.70% vs. 19.32%). For respondents with 1–2 years of work experience, the difference was smaller, with Zanzibar leading by 6.41%.

In terms of current occupation, in Romania, the top roles were held by Specialists in various fields of activity, followed by service workers and state employees, tied in prevalence. In Zanzibar, Specialists in various fields of activity were also the most common occupation—occurring 1.46 times more frequently than in Romania—followed by entrepreneurs and self-employed individuals. Concerning the number of jobs, the most notable difference was in Zanzibar, where individuals with only one job predominated, accounting for 60.66% of respondents compared to just 34.66% in Romania. Meanwhile, the percentage of respondents who had held between 4 and 6 jobs was 18.75% in Romania, but only 1.64% in Zanzibar.

3.2. Measures

Each of the IAw components included in this study was operationalized using existing measures validated on the Romanian population (Botezat et al., 2023), as detailed in Appendix:

- *managing emergencies and crises* — 6 items measuring respondents' agreement with their ability to act appropriately during emergencies, such as maintaining focus or setting aside emotions, and crises, such as remaining objective and making sound decisions;
- *coping with workplace stress* — 5 reversed items measuring respondents' level of agreement or disagreement regarding, for example, reactions to stressful news, emotional disturbances when facing an overloaded schedule, or a large workload;
- *addressing challenges creatively* — 5 items measuring respondents' level of agreement with issues such as developing unique analyses for complex problems or creating innovative solutions;
- *navigating uncertain situations* — 7 items measuring respondents' agreement with situations involving unpredictability, incomplete information, or changing conditions;
- *embracing continuous learning* — 7 items measuring respondents' agreement with concepts such as acquiring new skills and adopting new methods to solve problems;

- *adapting to interpersonal dynamics* – 6 items measuring respondents' agreement with the importance of being flexible, perceptive, and open-minded when interacting with others;
- *demonstrating cultural adaptability* - 5 items measuring respondents' agreement with the importance of respecting other cultures and viewing cultural differences as opportunities for learning.

The operationalization of the items measuring turnover intention (TI) was conducted according to the scale validated by Bothma and Roodt (2013). Specifically, TI was operationalized using six items (as can be seen in Appendix), two of which were reversed, to investigate, on the one hand, respondents' perceptions regarding aspects that would make them consider leaving their job, and on the other hand, the positive appraisal of the workplace, which could influence the abandonment of the potential intention to leave the job.

For all measured items, responses were collected using a 5-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree).

4. Results

In Table 2 we provide detailed descriptive statistics (minimum, maximum, mean, and standard deviation) for the participants' scores on the measures of IAW and TI.

Table 2. Descriptive statistics for the measures of Individual Adaptability to Work Sub-Dimensions and Turnover Intention

Dimension/ subdimension	ROMANIA				ZANZIBAR			
	Min.	Max.	Mean	Standard deviation	Min.	Max.	Mean	Standard deviation
Turnover Intention	1,50	4,50	2,93	0,72	1,67	4,00	2,60	0,53
Individual Adaptability to Work	1,00	4,64	2,15	0,69	1,14	3,25	1,93	0,49
Managing emergencies/crisis	1,00	4,17	2,02	0,69	1,00	3,17	1,68	0,45
Coping with workplace stress	1,00	5,00	3,24	0,91	2,00	5,00	3,58	0,72
Addressing challenges creatively	1,00	5,00	2,01	0,62	1,00	3,20	1,75	0,47
Navigating uncertain situations	1,00	4,29	2,16	0,61	1,00	3,14	1,86	0,47
Embracing continuous learning	1,00	4,67	1,86	0,60	1,00	3,00	1,53	0,44
Adapting to interpersonal dynamics	1,00	4,33	1,86	0,66	1,00	2,67	1,59	0,44
Demonstrating cultural adaptability	1,00	5,00	1,88	0,76	1,00	2,60	1,53	0,43

Source: created by authors

For both groups of respondents, Romanian and Zanzibaris, the scores for IAw (i.e., 2.15 and 1.93) indicate that adaptability to work might be a challenge, with the challenge being slightly more significant for Zanzibaris. The standard deviation values, 0.69 for Romanians, suggest moderate variability around the mean, while 0.49 for Zanzibaris indicates lower variability around the mean. In short, these findings suggest that Romanians exhibit more diversity in their adaptability to work, which may require more tailored interventions to address their differing adaptability levels. In contrast, the Zanzibaris group of respondents shows fewer individuals scoring significantly above or below the group average, indicating that they are relatively consistent in their adaptability to work and could, therefore, be treated with less tailored interventions.

The average scores for IAw components among Romanian respondents ranged from 1.86 (Embracing continuous learning and Adapting to interpersonal dynamics) to 3.24 (Coping with workplace stress). For Zanzibaris participants, the scores ranged from 1.53 (Embracing continuous learning and Demonstrating cultural adaptability) to 3.58 (Coping with workplace stress).

Coping with workplace stress received the highest average rating in both countries, with a standard deviation of 0.91 for Romanians and 0.72 for Zanzibaris. This aspect indicates that while participants, on average, considered this aspect to be an important concern, there is a notable lack of consensus among respondents, more pronounced in Romania.

Embracing continuous learning had the lowest average rating in both countries, with a relatively low standard deviation in Zanzibar (i.e., 0.44) and a moderate one in Romania (i.e., 0.60). Thus, although participants rated this aspect as less important on average, their ratings were more consistent, especially among Zanzibaris respondents.

Regarding turnover intention (TI), Romanian respondents had a mean of 2.93 with a standard deviation of 0.72, while Zanzibaris respondents had a mean of 2.60 with a standard deviation of 0.53. On average, participants from both groups scored "Neutral" on the TI scale, reflecting that they are neither strongly inclined to leave their jobs nor firmly committed to staying. However, the higher standard deviation among Romanian respondents compared to Zanzibaris suggests that Romanian individuals experience more diverse levels of turnover intention.

5. Conclusions

Although graduates' increasing adaptability to work contributes to decreased turnover intentions, our study highlights the importance of the national context. Even within Generation Z—who formed most of our study participants and were raised in an era of globalization and technological progress—university graduates, such as those from Romania and Zanzibar, may respond differently to workplace demands, displaying varied turnover intentions.

In short, the Zanzibaris graduate's score on the measures of IAw, both broadly and in specific aspects, and TI are lower than that of the Romanian graduate's scores. These findings mean that Zanzibaris graduates perceive their ability to adapt to workplace demands as being lower than that of Romanian graduates in

terms of their general adaptability to work and in terms of the following seven components: 1) managing emergencies and crises; 2) coping with workplace stress; 3) addressing challenges creatively; 4) navigating uncertain situations; 5) embracing continuous learning; 6) adapting to interpersonal dynamics; and 7) demonstrating cultural adaptability. Regarding turnover intentions, the situation is similar, considering the fact that Zanzibaris graduates reported lower scores compared to Romanian graduates. Additionally, the variability of the two variables of interest was lowest among Zanzibaris compared to Romanians, indicating less diversity in Zanzibaris graduates' adaptability to work and turnover intentions compared to Romanians. This suggests that Romanians may require more tailored interventions to address their differing adaptability levels in mitigating turnover intentions than Zanzibaris. One can say that this difference may be influenced by Zanzibar's lower level of economic development, the situation of its labor market, and the comparatively low work experience of Zanzibaris graduates.

Despite the differing national contexts, briefly outlined in this paper, graduates from Romania and Zanzibar share at least two similarities in their individual adaptability to work. The first similarity is that respondents from both countries attributed the lowest score to the "Embracing continuous learning" component of individual adaptability to work (IAw). For many in Generation Z, who experienced the COVID-19 crisis as a significant event during their formative years—followed by the pressure to perform in a society undergoing rapid and unprecedented technological change—continuous learning may feel overwhelming.

The second similarity is that respondents from both countries assigned the highest score to the IAw component, "Coping with Work Stress." This finding might be explained by the fact that, fundamentally, work is currently at a highly uncertain juncture, especially when considering the threat posed to any employee, particularly younger one, by artificial intelligence. Furthermore, as is the case for those in Romania and Zanzibar, young individuals placed in unprecedented competitive environments keenly feel the stress caused by the pressure exerted on them.

Although our samples were relatively neutral, on average, regarding TI, the variability in scores in Romania was large. Further research should investigate the extent to which the variability in TI can be explained by IAw components, gender, and work experience.

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Appendix. Study's main variables and subdimensions along with their items and sources

Variable	Subdimension along with their items	Source
Individual Adaptability to Work (IAW)	Managing emergencies/crisis , with 6 items — <i>Agreement with</i> : 1. I am able to maintain focus during emergencies; 2. In an emergency situation, I can put aside emotional feelings to handle important tasks; 3. I think clearly in times of urgency; 4. I am able to be objective during emergencies; 5. I usually step up and take action during a crisis; 6. I make excellent decisions in times of crisis.	Botezat, Crisan, Fotea and Fotea, 2023
	Coping with workplace stress , with 5 items — <i>Agreement with</i> : 1. I usually over-react to stressful news (r); 2. I feel unequipped to deal with too much stress (r); 3. I am easily rattled when my schedule is too full (r); 4. I am usually stressed when I have a large workload (r); 5. I often cry or get angry when I am under a great deal of stress (r).	
	Addressing challenges creatively , with 5 items — <i>Agreement with</i> : 1. I see connections between seemingly unrelated information; 2. I am good at developing unique analyses for complex problems; 3. I am an innovative person; 4. When resources are insufficient, I thrive on developing innovative solutions; 5. I am able to look at problems from a multitude of angles.	
	Navigating uncertain situations , with 7 items — <i>Agreement with</i> : 1. I become frustrated when things are unpredictable; 2. I am able to make effective decisions without all relevant information; 3. When something unexpected happens, I readily change gears in response; 4. I can adapt to changing situations; 5. I perform well in uncertain situations; 6. I easily respond to changing conditions; 7. I can adjust my plans to changing conditions.	
	Embracing continuous learning , with 7 items — <i>Agreement with</i> : 1. I take responsibility for acquiring new skills; 2. I enjoy learning new approaches to conducting work; 3. I take action to improve work performance deficiencies; 4. I often learn new information and skills to stay at the forefront of my profession; 5. I quickly learn new methods to solve problems; 6. I train to keep my work skills and knowledge current; 7. I am continually learning new skills for my job; 8. I take responsibility for staying current in my position (profession); 9. I try to learn new skills for my job before they are needed.	
	Adapting to interpersonal dynamics , with 6 items — <i>Agreement with</i> : 1. I believe it is important to be flexible in dealing with others; 2. I tend to be able to read others and understand how they are feeling at any particular moment; 3. My insight helps me to work effectively with others;	
	4. I am an open-minded person in dealing with others; 5. I am perceptive of others and use that knowledge in interactions; 6. I try to be flexible when dealing with others.	
	Demonstrating cultural adaptability , with 5 items — <i>Agreement with</i> : 1. I enjoy learning about cultures other than my own; 2. I work well with diverse others; 3. It is important to me that I respect others' culture; 4. I enjoy the variety and learning experiences that come from working with people of different backgrounds; 5. I feel comfortable interacting with others who have different values and customs.	
Turnover intention (TI)	6 items — <i>Agreement with</i> : 1. I often dream of a different job that would better meet my needs and expectations; 2. Because I am not given the opportunity to achieve my work-related goals, I often feel frustrated; 3. My workplace completely meets my needs (r); 4. If I received a salary offer at the same level, I would leave the organization immediately; 5. In the next six months, I plan to leave the organization where I currently work; 6. I often can't wait for the next workday (r).	Bothma and Roodt, 2013

THE INFLUENCE OF THE LEADERSHIP STYLE OF SCHOOL PRINCIPALS ON THE TEACHERS' HAPPINESS AND MOTIVATION IN ISRAELI ARAB SCHOOLS

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Abstract: *This paper examines the influence of the leadership styles (transformational, transactional, laissez-faire) used by school principals on the happiness, motivation and job satisfaction of teachers in Arab schools in Israel. The article presents the findings of a quantitative analysis, where the impact of the leadership styles was examined. The data was obtained using a questionnaire that was distributed to teachers. The findings show that transformational and transactional leadership style have a low influence on the happiness of teachers, and a strong influence on the motivation of teachers in Arab schools. Their use by school principals enhances the development of collaborative relations between teachers at school, and thus increases their job satisfaction, too. The authors recommend to school principals to learn and practice a mix of leadership styles, such as transformational, transactional, collaborative and empowering is formulated.*

Keywords: *leadership style; transformational; teachers' happiness; Arab Israeli schools.*

JEL Classification: *I20; J28; L39.*

1. Introduction

This paper examines the relationship between the principal's leadership style and the Arab teachers' happiness and motivation to teach, on the one hand, and their impact on teacher job satisfaction, on the other hand. The school principal is expected by teachers to pursue policies of support, inclusion, encouragement and empowerment of them. When the school has a professional cooperative relationship between teachers, it can develop a strong professional culture based on shared values of work. The main hypothesis is that there are

2. Literature review

"Leadership is the process of influencing others to understand and agree about what needs to be done and how it can be done effectively, and the process of facilitating individual and collective efforts to accomplish the shared objectives" (Yukl

& Lepsinger, 2004: 7). In this regards, J. M. Burns was the first to describe the terms "transformative" and "transactional" in the political field based on historical leadership figures, such as John Kennedy, but emphasized that transformative leadership is also possible in other areas (Khanin, 2007). The latter stimulated the research group around Bass to transfer these concepts to the economic sector.

There are various value-oriented management approaches that school development research deals with. On the one hand, school development research differentiates between transactional, transformational and laissez-faire leadership. The social exchange theory is a theoretical approach that is used to explain power gain or power loss. This theory is often brought into connection with transactional leadership in the literature. The social exchange theory tries to explain the reciprocal process of collaboration and the exchange of rewards and pleasure between manager and employees.

2.1. Transactional Leadership

"Transactional leadership refers to the exchange relationship between leaders and followers to meet their own self-interests" (Bass, 1999: 10). Transactional leadership is based on a reinforcement-based exchange relationship between manager and employee. The basis of the contract is a reward (in the form of money, promotion, praise, appreciation) in connection with the performance or punishment for non-performance. The motivation is primarily extrinsic. Transactional executives focus on the "how" than the "what." They are considered good process optimizers and stand for good quality of the product / service.

The basic principles of transactional leadership are the achievement of the goal is rewarded, and corrective measures are taken if the goal is missed. Two factors play a role: first, Contingent Reward (path - goal clarification as well as performance-related awarding of rewards) and second, Management by Exception (those being led to fulfill their work according to the goals of the leader and receive the desired reward for this). This management approach can certainly lead to clarity of roles and also to job satisfaction in clearly structured companies with hierarchies.

2.2. Transformational leadership

Under a transformational leadership, the school management "transforms" the values and motives of the teachers to a higher level. According to many studies, the concept of transformational leadership represents a suitable leadership concept for school principals in the current situation characterized by several changes and requirements for schools (Oplatka & Arar, 2017, Ng & Rivera, 2018). The focus of transformational leadership is on the development of goals and visions that are closely related to the motivation of those being led. In view of the increasing demands on the school organization and the associated pressure to implement innovations, this management concept turns out to be suitable, as it is designed to implement changes. The transformational leadership style is characterized by a strong orientation towards the beliefs and values of the employees, the manager "transforms" also the behaviours and practices of members of the organization (Stewart, 2006). The manager should convey visionary purpose and goals, stimulating work content and thereby achieve the emotional involvement of the organization's members in terms of the common goals.

2.3. Laissez-faire (passive) leadership

Laissez-faire (passive) leadership style or “not leading” is described as the least successful leadership approach (Bass, 1999). It can be reduced to two basic forms: the first, passive, also known as management by exception and the second form, laissez faire. In both cases the manager holds back and avoids actively intervening with the work of subordinates. The former is shaped by the very famous credo "If it's not broken, don't fix it" (Bass, 1999), i.e. to only react in extreme emergencies. Laissez faire, on the other hand, describes a major misconduct of a manager, since the process and employees are not only left to do their tasks on their own, without the involvement of the manager, but the manager delays making the needed decisions which may result in further ineffectiveness.

3. Happiness and Unhappiness of Teachers and its Association with Job Satisfaction

Given that the leadership styles of transformational and transactional are the most prominent leadership models, this paper will analyze and discuss the impact of the leadership style on teachers' happiness and their impact on teacher's job satisfaction. Yet, there will be a reference to the type of passive leadership how it affects teacher's motivation and job satisfaction. The teacher's job satisfaction is also influenced by factors such as teachers' autonomy at school, empowerment, inspiration, teamwork and team collaboration, participation in the decision-making process, conflicts at school (Oplatka, 2007; Eyal & Roth, 2011, Lee et al., 1991).

In as much as transformational leadership encompasses elements such as personalized and customized considerations, intelligent stimulation, and inspiration by encouraging articulating one's vision, researchers suggest that transformational leadership behaviour is autonomy accommodating (Eyal & Roth, 2011: 257). It asserts that a school principal who is presenting a compelling vision of their school future and involving them fully in its implementation process and progress will give a better meaning to their work. It is fair assuming that more autonomous teachers, who assign meaning to their work, are happier of their job, and vice versa (Warr, 2011).

In contrast, transactional leadership, which encompasses conditional rewards and management by concessions, has been described as manipulating and as obstructing followers' autonomy (Eyal & Roth, 2011: 259). These researchers contend that transactional leadership underlines extrinsic rewards and supervising subordinates' work outcomes. This will generate a controlling environment in which the teachers experience high compulsion and low self-autonomy, which eliminate any sense of motivation to initiate new vision by teachers. Teachers in this situation are concerned about the outcome of satisfying the principal's expectations, rather than doing what in their view is right. Warr's research concluded that workers' perceptions of their manager's autonomy-supportive policy predicted their satisfaction at work and performance (Warr, 2011: 21). Also, teacher's job satisfaction derived from their autonomy, internalization of the significance of the working practices and values, and intrinsic motivation. Under the transactional

leadership style, teachers perform tasks set by the principal, without creativity. This type of management does not make teachers feel happy about their work; they just perform tasks to please the principal.

4. Research methodology

The research population consisted of 209 teachers selected by the easily accessible sampling method among the teachers working in public schools in Israel. The data were obtained by using a questionnaire with a part about demographic data, the Multi-factor Leadership Questionnaire (MLQ 5) by Bass and Avolio (1990), and a third part about happiness at work in school, relations with colleagues at school, work motivation and job satisfaction of teachers. Since data showed normal distribution, the researcher performed the analysis of frequency and Spearman correlation.

5. Findings

The results of the research are presented in Table 1, below.

Table 1. Spearman correlations rank (rs) between research variables

Variables	Relations with Colleagues at Work	Happiness At work in school	Motivation of teachers	Work satisfaction Of teachers
Laissez-faire leadership style	-.279**	.043	-.291**	.009
Transactional leadership style	.532**	.295**	.405**	.490**
Transformational leadership style	.611**	.300**	.499**	.486**

Note ** $p < 0.01$.

Source: Author

The findings show that there is an average positive correlation ($rs = .499$) between the transformational leadership style of the school principal and the motivation of teachers, and that there is an average positive correlation ($rs = .405$) between the transactional (rewarding) leadership style of school principals and the motivation of teachers working in the school. This indicates that this two-leadership style when used by school principals in managing their school are increasing the motivation of the teaching staff of their school. On the other hand, the researcher found that the laissez-faire leadership style used by school principals is negatively and weakly correlated ($rs = -.291$) to the teachers motivation, indicating that the more this style is practiced by school principals the lower the teachers' motivation. The findings point to the fact that laissez-faire leadership style of a school principal has negative effect on a teacher's motivation and is not influencing the teachers' satisfaction at work. ($rs = .009$).

About the impact of leadership styles used by school principals on the variable “happiness of teachers at work in school”, the findings, presented in Table 1, above, indicate that both the transformational ($rs=.300$) and transformational leadership style ($rs=.295$) have a weak and positive influence on the happiness of teachers at work, while the laissez-faire style has no significant impact on the happiness of teachers at work ($rs=.043$).

Also, the findings presented in Table 1, above, indicate there is a strong positive correlation ($rs=.611$) between the transformational leadership style of school principals and the variable “relations between colleagues (teachers) at work”, indicating that the school principals using this style create and stimulate the development of better relations between teachers in the school. The transactional leadership style used by the school principals is only average and positively correlated ($rs=.532$) with the variable “relations between colleagues at work”, while school principals using the laissez-faire leadership style impact ($rs=-.279$) weakly and negatively and the development of the relations between teachers at work, meaning that the more they use this leadership style less intense relations will exist between teachers in their school. Under these circumstances, teachers may enjoy much autonomy, but less satisfaction of their job and less self-efficacy. Teachers working in such a school environment are not happy, especially that under such circumstances, disciplinary measures are loose too, which result in a negative impact on the teachers' mood.

6. Discussion

The study of (Lee et al., 1991) demonstrate that laissez-faire leadership style contributes to increase the stress level of teachers in trying to handle the daily problems of teaching and engenders a reduced sense of self-efficacy and satisfaction. In contrast, extrinsic control in hierarchical organizations, access to information about one's performance mirrors the authority's structure of a rewarding style of the principal. In bureaucratic organizations such as schools. A rewarding principal aspires to maximize subordinates' efficiency and productivity while minimizing the dissatisfaction of workers over their absence of autonomy. On the basis of the type of interaction that takes place over the technical structure in school organizations, two types of authority structures can be identified: the first type, loosely-coupled and, the second type, the cohesive or integrated (Geijsel, et al., 2003). Both are hierarchical structures which may operate under organizational structures that promote loose coupling, instead of incorporation. Thus, it is the cultural relations—the culture of social communication between school staff within the school—that either submit to a bureaucratic strict hierarchy or allows a more room for collaborative policy, situation in which teachers report both higher motivation to teaching and higher satisfaction (Assor et al., 2005). Data from Table 1, above, shows that the influence of a transformational school principal on the work motivation of Arab teachers is somewhat higher than the influence of the transactional school principal on teachers' job motivation.

The researchers' findings about the influence of the leadership style of school principals in Arab schools in

Israel on the level of happiness of teachers were confirmed by some studies, done in several Middle East countries, including Israel. The study of İşeri (2024) found that school principals' transformational leadership and transactional leadership style, is directly and moderately correlated with the happiness at work of Turkish teachers. The study of Şahin & Özgenel (2020) found that teachers happiness at work in school was at a high level only when the school principals were using transformational leadership style at high level, and when they used the transactional leadership style at an average level, and also, when their level of use of the laissez-faire leadership style is low, while significantly predicting the teachers' happiness. The study of Kılıç et al. (2023) found that the transformational leadership style of school principals is strongly correlated with the level of happiness at school of teachers. Their qualitative findings indicated several factors which influenced the happiness level of teachers such as the nature of the relations with the school principal, the relations with their fellow colleagues at school, and quality of the working conditions for teachers. In addition, a study about schools in Israel (Hiba, 2023) reached similar conclusions based on findings indicating the positive and strong influence of all the three leadership styles of school principals on the level of commitment of Arab teachers, while stronger in the case of the correlation intensity between the transactional leadership style and the affective commitment.

Studying the correlation between the leadership style (transformational, transactional and laissez-faire) of school principals and the satisfaction at work of teachers in Arab school in Israel, Bsoul (2022) found the same conclusions about the transformational and transactional leadership style that both are directly correlated with teachers' satisfaction. However, they found that while the laissez-faire leadership style is indirectly correlated with the job satisfaction of teachers, in the case when teachers prefer a large work autonomy, they also are more satisfied at work. The same results about a strong positive correlation between the laissez faire leadership style of Israeli Bedouin school principals and the job satisfaction of teachers, also explained by the freedom enjoyed by teachers in their teaching activities, while school principals execute mostly the administrative tasks related to school management (Aburkayek, 2022). About the transformational leadership style, the findings indicate a positive moderate correlation with the job satisfaction of teachers and about the transactional leadership style the correlations found was weak and positive. These findings were explained mostly by the very conservative, traditional culture of Bedouin society from Negev area, in the south of Israel (Aburkayek, 2022).

The comprehensive study of (Oplatka & Arar, 2017) about the educational leadership and management in the Arab world over a twenty years period (1990-2015), found that the dominant, mostly used leadership style of school principals was the authoritative style, highly transactional. They explained this by the cultural values and behaviours and social structures specific to traditional Arab society, which are quite compatible with this leadership style, and therefore allow for the effectiveness of school processes, despite their negative impact on the happiness at work of teachers.

The way a school is organized and the dynamics of interaction between the principal and teachers strongly influences teachers' overall satisfaction at work (Bottery, 2003; Warr, 2011). Thus, differences in the way formal authority exists in

schools reflect on the type of relationship and on achieving consensus on school goals. Loose coupling refers to an organizational hierarchy, where the activities of employee "A" have slight bearing on employee "B"'s functioning, and vice versa. This type of loose coupling is mainly a reflection of the principal leadership style that exists under a school principal using the laissez-faire style. It could also prevail under a school principal using the transactional style, working with each teacher individually without attempting to foster teamwork. Consequently, teaching activities in a typical school are loosely connected to the school's hierarchical structure and to the school principal, in particular.

In addition, school teachers perform their teaching activities in separation from the school principal and also from their peers. This restricts their awareness of school activities outside their own classroom and affect their motivation to teach and their overall job satisfaction. The natural separation of teaching from the school principal is a buffering zone that allows schools to function as educational institutions. The school can react to external factors without modifying their core functioning, that is education. This means that teachers do enjoy some level of autonomy, yet an autonomy that could be accompanied with dictated policies by the school principal. According to the findings of this study, the loose-coupling between teachers and the principal is related largely to the principal leadership style (Oplatka, 2007). By the same token, major difference between a public and a private school turns public schools into far more likely to conduct both high internal complexity and distant association between the school principal and teachers, given the low external pressure applied on the school by its external constituency. The study asserts that the bureaucratic organization of public schools renders more inclined to react to the political climate within the school itself. The market orientation of private schools, by contrast, encourages responsiveness to students and their parents' demands, usually oriented towards academic performance. These arguments suggest that loosely coupled organizational structures are more typical of the public than of private schools and it is possible also that the passive management style of avoiding is more prevalent in public schools than in private ones.

In Israel, loosely coupled organizational structures are more associate of Arab than of Jewish schools and that laissez-faire leadership style of school principals is more prevalent Arab schools than in Jewish ones. In this sense, teachers in Arab schools do enjoy more autonomy by default but enjoy less an internal environment of collaboration. In Arab schools run by school principals using the laissez-faire the daily classroom teaching activities are demarcated from long-term planning. Furthermore, teachers are separated from one another, so that each teacher functions in a vacuum and unawareness about the whole organization. A result of such ambiguity is the absence of consensus about goals and tasks in these schools. Teachers may set separate goals for their classes, which may be incongruent with the goals of the principal (Oplatka, 2010).

Moreover, in loosely-coupled schools, close interaction among parties may result in a strife, since various goals may naturally require different means to resolve daily problems (de Lima, 2007). Accordingly, tension and dispute at schools are caused by disagreements and by the existence of various groups with like-minded teachers based on failure in finding common understanding, which result in tension and ideological quarrels (Göksoy & Argon, 2016: p.197). Teachers who experience such

a crisis and clashes develop negative feelings such as stress, sadness, and anxiety and may develop dislike to their professions. Such psychological outcomes certainly result in low motivation and low self-efficacy (Göksoy & Argon, 2016: p.204). In such a school environment charged with the creation of like-minded groups and conflicts, the professional interaction among the school teachers is limited, is less collaborative, which results in low happiness at work and lower work motivation. In contrast, schools under the leadership of a transformative principal may display a robust sense of a central goal, and a shared principle about education, a cohesive environment (de Lima, 2007). Integrated schools function under a unified purpose and an agreed set of organizational goals, creating a better cooperation and agreement among the teachers and the school principal about the educational mission of the school. Typically, unified goals, and integrated cultural relations are more likely to be found in private than in public schools and in Jewish than in Arab schools. In schools with unified purpose, principals often seek to link the procedural core operations with this purpose of the school. It should be noticed, however, that in private schools, principals have more authority in dismissing teachers, who are not integrated in the school system, which bestows on school principals more clout than in public schools. Thus, teachers in private schools are under more pressure to monitor operations at a larger scale than their own classroom (Tyler, 1987).

7. Conclusions

In conclusion, the researchers found that the transformational leadership style of the school principal has an average positive impact on the motivation of teachers, and that the transactional (rewarding) leadership style of school principals has a moderate impact on the motivation of teachers working in the school. This indicates that these two leadership styles when used by school principals in managing their school are increasing the motivation of the teaching staff of their school. On the other hand, the researcher found that the laissez-faire leadership style used by school principals is negatively and weakly correlated to the teacher's motivation, indicating that the more this style is practiced by school principals the lower the teachers' motivation. The researcher concludes that both the transformational and transactional leadership style have a low impact on the happiness of teachers at work, while the laissez-faire style has no significant impact on the happiness of teachers at work. An important conclusion is that a single leadership style used by school principals is insufficient to adequately impact teachers' happiness at work. Integrating several leadership styles by school principals, such as transformational, transactional, collaborative, empowering and distributive, allow for better relations between colleagues and increased motivation of teachers. Consequently, the researcher recommends school principals to learn and use a mix of transformational and transactional leadership approach to increase the happiness level of teachers at school.

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COMPARATIVE ANALYSIS OF AUTHENTIC LEADERSHIP MEASUREMENT TOOLS IN A SMALL BUSINESS CASE STUDY

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Abstract: According to international literature, managers who adopt a positive leadership style indicate a number of characteristics that are beneficial to the business organization, both in terms of individual and organizational performance. However, the conscious emergence and diffusion of these styles in the entrepreneurial sphere, as well as their research at the academic level in the Carpathian Basin, is still in its infancy. The aim of this study is to go beyond a general description of the styles and to explore the possibilities of their practical application, including their measurability. In this paper, we compare the measurement instruments (questionnaires) of authentic leadership presented in the literature using a comparative analysis method, and we also evaluate the measurement instruments under study by means of measurements carried out in a Hungarian company. The comparison will identify which measurement instruments, both from the literature and from the empirical point of view, could be applicable for a future larger sample study.

Keywords: authentic leadership, leadership measurement tools, human-centred leadership, human-centred management

JEL Classification: M12

1. Introduction

In the international literature, it is almost axiomatic that the management style of the manager can have one of the greatest, if not the greatest, effects on the performance of the business organization, the commitment, motivation and even the organizational culture of its employees (Kollár, Pierog 2024, Cserhádi, Obermayer et al. 2021, Hadrhazy 2016, Leroy, Palanski et al. 2012, Darvish, Rezaei 2011, Bass, Steidlmeier 2006, Luthans, Avolio 2003). This is also the case by SMEs, where most of them - without an independent HR department and without professional support - require the manager to manage the alignment of organizational goals and employee objectives as a one-man adventure (Gelencsér, Végvári et al. 2022). However, the number of international scientific researches are increasing globally (Gardner, Karam et al. 2021), the authors have found only a minimal academic journal sources on authentic and servant leadership styles in the Carpathian basin, specifically one

Hungarian article (Cserhádi, Obermayer et al. 2021) and one Serbian article (Dramićanin, Banja 2019).

Among the virtue-ethics-based, human-centred and positive leadership styles, authentic leadership is considered by several researchers to play a role as a central common denominator, emphasizing, among others, employee well-being, leadership credibility, long-term organizational sustainability and other ethical practices that benefit both the tangible and intangible well-being of the organization and its stakeholders (Leroy, Palanski et al. 2012, Gardner, Coglisier et al. 2011, Avolio, Gardner 2005)

Authentic leadership emphasizes leadership credibility and caring and attentiveness to subordinates, yet there are differences in style between the different measurement methods. Simplifying the picture is the fact that there is a common basis of interpretation in the researchers' observations and definitions, i.e. different researchers largely agree on the definition of the phenomenon and build their measurement tools on this basis. Nonetheless, the differences in methodological studies on the construction of measurement tools have generated serious, but all the more useful and developmental, debates among the scientists involved, leading the direction of measurement tool development to a higher level (Butterworth, Black et al. 2024, Levesque-Côté, Fernet et al. 2018)

In this paper, we would like to present the three most commonly used measures of this authentic leadership style available in the literature, and then compare them according to given professional criteria, mainly drawn from the literature, using the case of a small Hungarian company. It is worth noting that the measurements carried out in one enterprise were not used to examine authentic management, which would obviously require a much larger sample, but to compare the measurement tools, of which there are three in total. The scales available in the literature and the criteria that make them comparable, together with the results measured in a small enterprise, allow us to select a measurement instrument that, because of its ease of use, could be suitable for a larger sample of small and medium-sized enterprises.

2. Authentic leadership and its measurement possibilities

The scandals of the 1990s and 2000s in several large US corporations over the moral lapses of top management (Enron scandal, DotCom balloon, etc.) have intensified the need for an ethical, morally stable, responsible type of manager who takes the company and the fate of his or her subordinates seriously (Gardner, Avolio et al. 2005, Avolio, Gardner 2005, Luthans, Avolio 2003). This imperative met with the principles of positive psychology, which explores the possibilities of human well-being and meaningful, happy lives, and from this encounter emerged the positive leadership theory trends, of which authentic leadership is a kind of overarching leadership (Leroy, Palanski et al. 2012, Luthans, Avolio 2003). Authentic leadership, as defined by Walumbwa et al. (2008), is a *pattern of leader behavior that draws upon and promotes both positive psychological capacities and a positive ethical climate, to foster greater self-awareness, an internalized moral perspective, balanced processing of information, and relational transparency on the part of*

leaders working with followers, fostering positive self-development. The four dimensions of authentic leadership are therefore self-awareness, relational transparency, balanced processing and internal moral perspective. The factor of self-awareness implies that a person is aware of his or her own strengths and weaknesses, core values, identity, goals and the impact of his or her behaviour on others. In relational transparency, the leader openly shares and honestly expresses his or her thoughts and feelings. In gathering and processing information balanced without influence, the leader analyses relevant incoming information objectively, including allowing his or her ideas, thoughts and beliefs about the organization and its work to be challenged by his or her colleagues. Internal moral perspective, on the other hand, means that the leader's behaviour and actions are based on clear and unambiguous moral principles and that he or she does not compromise these, either by others or in the face of organizational pressure (Butterworth, Black et al. 2024, Crawford, Dawkins et al. 2020, Walumbwa, Avolio et al. 2008)

Authentic leadership as a construct has stood the test of time, with a wealth of research demonstrating that the sound principles surrounding the style have a number of positive consequences in corporate practice, both for the organization and the individual. In terms of organizational consequences, authentic leadership is strongly correlated with subordinate job satisfaction (Azanza, Moriano et al. 2013, Jensen, Luthans 2006), subordinate satisfaction with the leader (Banks, McCauley et al. 2016, Walumbwa, Avolio et al. 2008), group and organization level (Banks, McCauley et al. 2016), and task-level performance (Levesque-Côté, Fernet et al. 2018, Leroy, Palanski et al. 2012), trust in leadership (Clapp-Smith, Vogelgesang et al. 2009), with organizational commitment (Walumbwa, Avolio et al. 2008, Jensen, Luthans 2006), and with organizational citizenship behavior (Zhang, Guo et al. 2022, Walumbwa, Avolio et al. 2008)

The positive outcome factors prove the validity of authentic leadership style and the concept (definition and factors) of the phenomenon has been clarified over nearly two decades of research, which is further strengthened by the fact that the three most commonly used measures in the literature are based on this foundation (Levesque-Côté, Fernet et al. 2018, Neider, Schriesheim 2011, Walumbwa, Avolio et al. 2008)

3. Innovation in authentic measurement tools

Although innovation in measurement tools for authentic leadership has been ongoing since 2008, criticisms of globalized generalization, reliability and consistency of measurement systems, and oversimplification still challenge researchers today (Butterworth, Black et al. 2024, Levesque-Côté, Fernet et al. 2018)

Reliability: measurement tools place a high emphasis on the opinions of subordinates, which can often be subjective, may reflect a desire to conform or may lead to hasty judgements due to the halo effect (Nicolau, Mellinas et al. 2020). Finally, existing tools place less emphasis on the links between personal values, organizational roles and external expectations, which may undermine trustworthiness.

Over-simplification: but equally questionable is the structure of the measurement instruments (questionnaires), to what extent a phenomenon related to behaviour, actions and life management can be assessed with ten to twenty questions per occasion.

Excessive positivity: research often only presents and examines authentic leadership in a positive framework, excluding or at least de-emphasizing its possible downsides and practical difficulties.

However, in addition to these criticisms, the measurement tools developed have an inestimable merit in identifying the authentic strengths and weaknesses of the driver, in addition to recognizing the phenomenon of authentic leadership. With the latest measurement tools (e.g. AL-IQ), it is no longer possible to measure not only how authentic a particular leader or leadership is, but also which factors of his or her leadership style need improvement (self-awareness, relational transparency, unbiased information processing, internal moral perspective). To the dimensions assessed in this way, specific development and training programmes can then be added, with which the leader can improve in practice in both the parts and the entirety of authentic leadership (Levesque-Côté, Fernet et al. 2018)

3.1. ALQ - Authentic Leadership Questionnaire(Walumbwa, Avolio et al. 2008)

Perhaps because of its age (2008), the Authentic Leadership Questionnaire (ALQ) is the most widely used instrument for assessing authentic leadership. Its content assesses the four main factors of the phenomenon, Self-awareness, Relational Transparency, Balanced Information Processing and Internal Moral Perspective, with a total of 16 questions and shows positive correlations with job satisfaction, trust, job satisfaction and employee engagement. The original questionnaire was administered to five samples, including public and private sectors, in three states on three continents (United States, China and Kenya). As the ALQ is the first widely used instrument to measure authentic leadership, it may be associated with a number of methodological teething problems with the construct. It has been frequently criticized for its high level of overlap between factors (conceptual overlap), which has been reported as weak discriminant validity and its versatility has been difficult to demonstrate (Levesque-Côté, Fernet et al. 2018). Furthermore, the aforementioned exclusive subordinate, subjective assessment may also create biases due to compliance constraints or hold-up effects, and part of the questionnaire is paid, which in turn raised accessibility issues (Levesque-Côté, Fernet et al. 2018, Avolio, Wernsing et al. 2018, Neider, Schriesheim 2011). In summary, the ALQ, widely used in leadership research, helps to measure the impact of authentic leadership on organizational outcomes, but its validity shortcomings have generated a need for further development of the measure.

3.2. ALI Authentic Leadership Inventory

Neider and Schriesheim sought to correct the shortcomings of the ALQ (2008) of Walumbwa et al. and created a 14-item instrument based on the same four authentic sub-dimensions, but with improved psychometric adequacy properties (content validity, adequacy), primarily for research and practical applications. Despite the

advantages of the ALI, there is still some overlap between the dimensions, and there is also delimitation issues with the full construct compared to the transformational leadership type (Neider, Schriesheim 2011). The ALI was developed with university and MBA students and validated in a wide range of policy and organizational contexts (both public and private). The ALI, like the ALQ, can serve as a good tool for assessing authentic leadership and behaviour in both research and organizational development, but, like its predecessor, needs to be developed for wider application.

3.3. AL-IQ - Authentic Leadership Integrated Questionnaire

The Authentic Leadership Integrated Questionnaire (AL-IQ) by Levesque-Côté et al. builds on previous authentic leadership measurement tools and combines and extends their dimensions, creating a more refined aspect of authentic leadership and its measurement. The AL-IQ seeks to explore the role of authenticity in leadership and organizational contexts, primarily by examining adaptation and its manifestation in specific organizational situations and circumstances, and also shows a strong positive correlation with job satisfaction, job performance and low psychological distress. One of the aims of constructing the AL-IQ was to correct for overlaps and redundancies between dimensions in the ALQ and ALI, which was achieved by using Exploratory Structural Equation Modeling (ESEM) (Asparouhov, Muthén 2009), as opposed to the other two cases where confirmatory factor analysis (CFA) was used. The resulting measure captures the four dimensions of authentic leadership (Self-awareness, Relational Transparency, Balanced Information Processing, Internal Moral Perspective) through 14 items (questions) and provides a higher level of reliability and validity in the factor structure compared to previous questionnaires. For the samples tested, the instrument was tested in English and French, confirming the invariance and reliability of the model across gender and sectors, both public (health) and private (commerce, manufacturing). The AL-IQ is newer than the other two questionnaires and its uptake is therefore limited, which is further hampered by the fact that the scale is not publicly available, only from the authors. Its validation therefore requires further application in other domains, cultures and sectors to demonstrate the generalizability and robustness of the instrument (Butterworth, Black et al. 2024, Levesque-Côté, Fernet et al. 2018). Overall, the AL-IQ has eliminated the problems of the ALQ and ALI (overlapping dimensions, redundancy) and has provided a robust measure of the strengths and weaknesses of authentic leadership, taking into account the multidimensional nature of the phenomenon.

4. Research instrument

In the comparative study, in addition to the information extracted from the literature, the individual measuring instruments were tested for a micro-enterprise in Hungary dealing with industrial electricity. In this enterprise, the owner-manager and two direct subordinates filled in questionnaires, which were scales of the three measurement tools under investigation. The questionnaires were included in a large common questionnaire, with three superimposed sections, so that the three scales

were completed by one respondent at almost the same time, ensuring consistency in the time taken to complete them. Questions were answered on a five-point Likert scale ranging from 0 (strongly disagree) to 4 (strongly agree). The authentic leadership score was obtained by taking the arithmetic mean of the scores from the responses, where the subordinate and manager averages were averaged separately at the end to give the leadership score. Although for all three sets of questions were derived from the four authentic dimensions, the scales - which are derived from the dimensions with different item numbers - do not allow for a comparison of the individual dimensions, so the summary value for the total authentic leadership from the scales is presented. This is further supported by the findings of Avolio et al. (2018), and Neider & Schriesheim that the value for the overall construct shows a more reliable result and meaning than if the individual dimensions were examined separately. Thus, for the micro- enterprise under study, the authentic leadership value measured by the ALQ instrument was 3.17, by ALI 2.79 and by AL-IQ 2.70.

Following the questionnaire survey, a round of face-to-face interviews was conducted with the research participants, one senior and two middle managers (subordinates). During the face-to-face interviews, the participants were introduced to the definition of authentic leadership available in the literature, which included a definition of the overall construct and an explanation of each of the sub-dimensions. They were then presented with the results of the questionnaire survey, which provided them with the values that emerged for each scale and the sub-dimensions within each scale. After learning about the definition and the values associated with each scale, they were asked to give their personal opinion on which scale they felt the final value for leadership in their company best fit their organization's leadership style. The personal interviews resulted in a unanimous decision, as all three, independently of each other, considered Neider & Schriesheim's Authentic Leadership Inventory scale score (2.79) to be the most appropriate for their company. All three respondents felt that this score best characterized their leadership style, as the ALQ score was considered excessively high and the AL-IQ score low. The small number of sample items was complemented by interviews with personal interviewers and made the research values more relevant, but nevertheless, we cannot ignore the concerns about the scales measuring authentic leadership, such as criticisms of reliability due to the halo effect, oversimplification or over-positivity may have been present during the completion of the questionnaire, however much we would have liked to avoid these in the information provided prior to the interview and the completion of the questionnaire.

5. Comparison of measurement tools

Table 1: Comparison of authentic leadership measurement tools

<i>Viewpoint</i>	<i>Authentic Leadership Questionnaire (ALQ)</i>	<i>Authentic Leadership Inventory (ALI)</i>	<i>Authentic Leadership Integrated Questionnaire (AL-IQ)</i>
<i>Developers</i>	Walumbwa et al. (2008)	Neider & Schriesheim (2011)	Levesque-Côté et al. (2018)
<i>Structure</i>	16 items (questions), in 4 dimensions (Self-awareness, Relational transparency, Non-influential information processing, Internal moral perspective)	14 items, similar 4 dimensions but with better psychometric reliability	14 items, dimensions refined based on ESEM to reduce redundancy and increase validity
<i>Benefits</i>	Widely validated in different contexts; a cornerstone of authentic leadership research	Improved reliability and validity; more accessible for research	Refined construct validity; reduced redundancy and cleaner dimensional structure
<i>Disadvantages</i>	Correlations between high dimensions; limited access due to copyright	Some conceptual overlap with transformational leadership; inconsistent in some contexts	Another tool that does not yet have broad cultural validation
<i>Sample types</i>	Tested in the US, Kenya, China and various private and public sectors	Initially validated on student samples, later applied in different professional contexts	Tested on French and English speaking private and public sector workers
<i>Usefulness</i>	A fundamental tool in management research and practice, although methodological criticisms limit its use	Reliable for driver development and research, but needs further refinement for generalizability	Promising tool for detailed assessment of authentic driving and various situational applications
<i>Psychometric strengths</i>	Good internal consistency but poor discriminant validity; high dimensional overlap	Stronger reliability and freedom from bias, but high correlations between dimensions persist	Improved discriminant validity and dimensional separability through ESEM
<i>Applicability</i>	Widely used in organizational and academic studies, but limited theoretical development potential	Suitable for assessing managers in specific contexts, but limited in global applications	Promising for a detailed assessment of the characteristics and situational applications of authentic driving
<i>Measurement innovations</i>	Traditional confirmatory factor analysis (CFA) was used for validation	Traditional CFA approach; further innovation needed for clarity	ESEM used to analyze more stable factor structure and dimensionality
<i>Company scores on a scale of 0-4)</i>	3,17	2,79	2,70

Comparison table of authentic driving instruments

(**Source:** created by the authors based on Walumbwa et al. (2008), Neider & Schriesheim (2011) and Levesque- Côté et al. (2018))

6. Conclusions

The aim of this study is to provide a comparative analysis of the three main measures of authentic leadership - the ALQ, ALI and AL-IQ questionnaires - with a special focus on their practical applicability in a Hungarian micro-enterprise. Although the instruments differ in their psychometric characteristics and structure, the professional community is starting from a common interpretative framework and definition of the scales, thus helping to make them comparable. During the study, the owner-manager and two subordinate middle managers of the micro-enterprise completed the questionnaire and participated in subsequent face-to-face interviews where they assessed the results of the questionnaires. The highest score for the authentic leadership of the organization was given by the ALQ (3.17), the lowest by the AL-IQ (2.70), but the participants still - unanimously - considered the ALI scale score (2.79) to be the most appropriate for their company. Although the literature suggests that the AL- IQ may be more suitable for conducting a broader survey, the present study showed that other scales could also be used for a broader survey. The study is a preparatory work for the theoretical and practical grounding of authentic leadership in the Carpathian Basin.

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INTRINSIC AND EXTRINSIC MOTIVATION IN ACADEMIA: A MIXED-METHOD EXPLORATION OF MOTIVATIONAL DRIVERS

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Abstract: Research on intrinsic and extrinsic motivation has long shown that, while still popular, extrinsic rewards are mostly ineffective, especially in cognitive and creative tasks. To further research intrinsic and extrinsic motivation, we focused on universities, where tasks are largely cognitive and creative. This article presents a mixed-method literature review on intrinsic and extrinsic motivation in academia. By synthesizing findings from empirical studies employing both quantitative and qualitative approaches, this research highlights how motivational factors influence performance, job satisfaction, and teaching practices in universities. The analysis draws on recent literature (2017–2024), selected for methodological rigor and relevance to higher education personnel. The review identifies core themes such as: the mediating role of quality culture, the importance of psychological need satisfaction, and the connection between intrinsic motivation and engaged pedagogies. Implications for institutional leadership, academic policy, and directions for future research are also discussed.

Keywords: intrinsic motivation, extrinsic motivation, higher education, quality culture, mixed-method.

JEL Classification: M12, I23.

1. Introduction

The distinction between intrinsic and extrinsic motivation remains a central theme in motivation theory, particularly in organizational psychology and educational research. While intrinsic motivation refers to doing an activity for its inherent satisfaction (Deci & Ryan, 1985), extrinsic motivation pertains to actions driven by external rewards or obligations (Matei & Abrudan, 2010). In the higher education sector, understanding how these motivational orientations affect academic staff and students' performance, and satisfaction is essential to ensure institutional development.

This paper represents a continuation of the research conducted and published in 2016 (Matei & Abrudan, 2016). The previous study focused on undergraduate

students' motivational profiles and their academic performance using a mixed-method approach involving surveys and focus groups. The current study builds on that foundation by shifting the focus from students to include higher education employees, while maintaining the dual lens of intrinsic and extrinsic motivation and employing mixed-method analysis. This sequel aims to broaden the understanding of motivational dynamics within academic institutions by exploring how these factors influence performance, satisfaction, and engagement in the post-2017 educational landscape.

2. Methodology

This study employed a qualitative systematic literature review approach, aimed at synthesizing empirical evidence on intrinsic and extrinsic motivation among higher education employees. The review process was structured and iterative, involving the identification, selection, and critical appraisal of peer-reviewed research studies aligned with predefined inclusion criteria.

Relevant literature was sourced from major academic databases and institutional repositories. Search terms included combinations of keywords such as *intrinsic motivation*, *extrinsic motivation*, *academic staff*, *faculty motivation*, *mixed methods*, and *higher education*. To ensure a balance between depth and recency, the search was limited to studies published between 2017 and 2024 (published after our previous paper (Matei & Abrudan, 2016)).

The following inclusion criteria were applied:

- Empirical studies employing a mixed-methods design, integrating both quantitative and qualitative data collection and analysis techniques.
- A clear focus on higher education staff and students.
- Methodological rigor, as evidenced by the use of validated instruments, transparent sampling, and clearly articulated data analysis procedures.

A total of 54 studies were initially identified through keyword-based searches. After screening titles and abstracts for relevance and eliminating duplicates, 32 full-text articles were assessed for eligibility. Of these, 15 studies met all inclusion criteria related to topic focus, methodological rigor, and publication source. The remaining studies were excluded due to a lack of mixed-method design, limited applicability to higher education, or insufficient empirical depth. Although this process was not conducted under a formal PRISMA protocol, it followed the same principles of transparency and replicability.

3. Results and Discussion

3.1. Main results

The key insights derived from the synthesis are threefold. First, intrinsic motivation is consistently associated with enhanced performance, innovation in pedagogy, job satisfaction, and psychological well-being among higher education employees. Second, intrinsic motivation is supported and sustained by the fulfilment of core psychological needs—autonomy, competence, and relatedness—as well as

by a strong institutional quality culture. Third, while extrinsic motivation (e.g., rewards, recognition, and job security) contributes to short-term engagement and satisfaction, it exerts a weaker and less durable influence on long-term professional development and academic performance.

Figure no. 1 (below) presents a conceptual diagram synthesizing the main findings of the analysed studies. The diagram facilitates the visual demonstration of the interconnections between intrinsic and extrinsic motivation, psychological needs, institutional culture, and various performance outcomes in the higher education context.

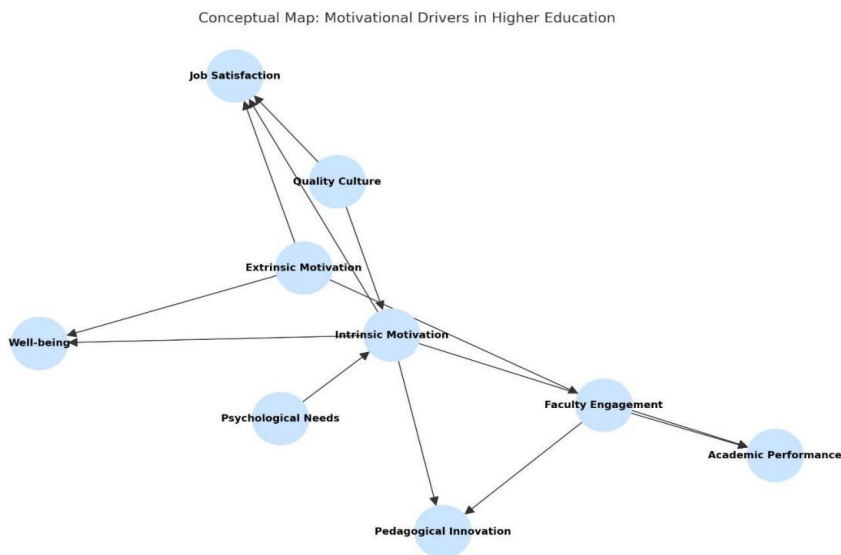


Figure no. 1 Conceptual diagram visualizing the synthesized insights from your literature review. Blue nodes represent core constructs (motivation types, outcomes, institutional factors). Arrows indicate direction of influence, based on findings from the 15 studies.

Source: own representation

The conceptual model presented in Figure 1 synthesizes the dominant themes emerging from the 15 studies summarized in Table 1. Each node and connection in the diagram reflects recurring relationships identified in the reviewed literature—for instance, the influence of intrinsic motivation on job satisfaction and pedagogical innovation, or the mediating role of quality culture. The figure and table provide a visual and comparative overview of how various motivational constructs interact to influence academic performance and engagement in higher education.

Table no. 1 includes an overview of the 15 empirical studies comprised in this review. The table outlines main characteristics of each study, including author(s), year of publication, country of focus, methodological design, and key findings. This comparative summary highlights the geographical spread, mixed-method designs, and primary motivational constructs investigated. The table represents the grounds for the thematic analysis presented in the following discussion sections

Table no. 1. Overview of Selected Studies (2017–2024)

No.	Author(s)	Year	Country	Methods Used	Key Findings
1.	McManus, Haddock-Fraser, &	2017	UK	Survey+ Interviews	Institutional choice driven by both rational (extrinsic) and value-based (intrinsic) motivations
2.	Rands				
3.	Appelbaum & Corpus	2020	USA	Surveys + Interviews	Identified five motivational profiles among undergraduates
4.	Jhantasana, Chanta	2021	Thailand	Survey+ PLS-SEM	Intrinsic motivation improves job satisfaction
5.	Canlı	2021	Turkey	Survey+ Interviews	Teachers are driven more by intrinsic than extrinsic factors
6.	Chism, Kanyon N	2021	USA	Surveys + Interviews	Research motivations are influenced by intrinsic and extrinsic factors
7.	Ratelle, F., Guay, F., et al.	2021	Canada	Surveys + Cluster Analysis	Identified stable self-determined motivation profiles; differences observed by age and gender
8.	Morgan, Amy Rose	2022	USA	Surveys + Academic Records	Higher intrinsic motivation positively related to grades; moderate extrinsic motivation beneficial
9.	Howard, J. L., Gagné, M., & Bureau, J. S.	2022	Canada	Latent Profile + Interviews	Identified student motivation profiles; autonomous motivation linked to engagement and well-being
10.	Iqbal, Razalli, & Taib	2023	Pakistan	Survey+ SEM	Intrinsic motivation predicts performance via quality culture
11.	Gaglio, Matt	2023	USA	Survey+ Qual Interviews	Psychological needs boost intrinsic motivation
12.	Van den Broeck, Hermans, et al.	2023	Belgium	Surveys + Thematic Analysis	Faculty motivation (autonomous vs. controlled) linked to performance, engagement, and emotional exhaustion
13.	Tuma, F., & Muhammed, A.	2023	Iraq	Survey+ Interviews	Found that intrinsic motivation strongly affects academic staff's performance; extrinsic motivation more linked to short-term engagement
14.	Vallerand, Robert & Chichekian, Tanya & Paquette, Virginie	2023	Canada	Surveys + Interviews	Passion influences motivation and goal pursuit in educational settings
15.	Anderson, Olivia & Boswell, Caroline & Gresham, Morgan & Smith- Sherwood, Dawn & Laye, Matthew	2024	USA	Survey+ Interviews	Intrinsic motivation linked to engaged pedagogies
	Ye, X.	2024	China	Surveys + Interviews	Demographics influence intrinsic vs. extrinsic motivation among EFL learners

Source: own representation

3.2. Intrinsic Motivation, Performance and Satisfaction – discussion

A wide range of recent studies have explored the complex dynamics of intrinsic and extrinsic motivation across educational contexts, with particular attention to their influence on performance, satisfaction, and pedagogical outcomes.

Anderson et al. (2024) conducted a mixed-methods study to explore how intrinsic motivation and external pressures influence faculty adoption of engaged learning pedagogies in capstone experiences (CEs). The research revealed that instructors who develop and teach CEs are highly intrinsically motivated, with their perceptions of the value and interest in CEs serving as primary motivators. Faculty with higher intrinsic motivation levels were more likely to implement evidence-based pedagogical approaches, receive greater recognition from colleagues, and have access to more teaching resources. These findings underscore the importance of supporting intrinsic motivation to enhance teaching practices and, consequently, student outcomes in higher education.

Canlı (2021) investigates the teaching motivations of educators using a convergent parallel mixed-methods design, combining quantitative survey data with qualitative interviews. The study finds that intrinsic motivation outweighs extrinsic motivation among participating teachers, who cite internal drivers such as a love for teaching, the desire to support student development, and the emotional satisfaction of witnessing student growth. Conversely, extrinsic motivators like salary and job security were reported as less influential. The qualitative results underscore the importance of professional autonomy, recognition, and emotional investment in teaching, while also identifying demotivators such as excessive workload and bureaucratic limitations. The study calls for policies that enhance intrinsic motivation and minimize systemic barriers.

Chism (2020) explores how participation in an early childhood endorsement program contributes to the development of leadership competencies. While not explicitly framed in terms of motivational theory, the study highlights broader themes of professional identity, role clarity, and internalized leadership—constructs closely tied to intrinsic motivation.

Gaglio (2023) applies Self-Determination Theory (SDT) to examine how teacher evaluation systems influence intrinsic motivational outcomes. Findings suggest that when evaluations support autonomy, competence, and relatedness, teachers exhibit stronger intrinsic motivation. In contrast, controlling or unsupportive evaluation frameworks diminish motivation and job satisfaction, highlighting the critical role institutional structures play in supporting or suppressing psychological need fulfillment.

Iqbal, Razalli, and Taib (2023) examine how intrinsic and extrinsic motivation influence higher education performance among faculty, mediated by the presence of a strong quality culture. Their findings demonstrate that intrinsic motivation substantially enhances performance, particularly when reinforced by an institutional culture oriented toward quality. Extrinsic motivation alone was not a significant predictor of long-term performance, implying that internal motivational structures must be prioritized in faculty development strategies.

Jhantasana (2021), using advanced statistical analysis, explores how intrinsic and extrinsic motivation relate to job satisfaction among Thai university staff. The study confirms that intrinsic motivation has a direct and sustained impact on

satisfaction, while extrinsic factors serve as secondary contributors. This finding aligns with broader evidence emphasizing personal growth and meaningful engagement as critical motivational levers in academic workplaces.

Studies on students and faculty alike (e.g., Ratelle et al., 2021; Howard et al., 2022) emphasize the existence of diverse motivational profiles across gender, age, and context. Ratelle, Guay, Mercier, and Duchesne (2021) investigate self-determined motivation profiles among undergraduate students, identifying demographic influences such as gender and age on the distribution of motivational types. Their work highlights the value of designing context-sensitive interventions that reflect the motivational diversity of learners. In a related student-centered perspective, Howard, Gagné, and Bureau (2022) employ a person-centered methodology to identify five distinct student motivation profiles: Knowledge-Oriented, Controlled, Multifaceted, Unmotivated, and Hedonist. The Knowledge-Oriented profile—rooted in autonomous motivation—correlates most strongly with academic achievement and psychological well-being, suggesting that tailored motivational interventions could significantly improve student outcomes.

Tuma and Muhammed (2023) contribute to this conversation by analyzing faculty motivation at Tishk International University. Their findings reaffirm the predominance of intrinsic motivators—such as passion for teaching and professional growth—over extrinsic factors like compensation and job security, although the latter still play a role in shaping engagement.

Vallerand, Chichekian, and Paquette (2023) focus on the concept of passion in education, describing its dual role in enhancing engagement, persistence, and academic performance. The authors distinguish between harmonious passion, which aligns with intrinsic motivation, and obsessive passion, which may lead to maladaptive outcomes.

Van den Broeck, Hermans, and Lens (2023) further substantiate the centrality of motivation in higher education, demonstrating that faculty motivation—particularly autonomous forms—correlates positively with teaching quality, emotional well-being, and student engagement. Both intrinsic and extrinsic factors are relevant, though intrinsic drivers exert a more enduring and transformative influence.

Ye (2020) examines motivation among Chinese junior secondary EFL learners, revealing how intrinsic factors significantly shape success in language acquisition. Variations in motivation were influenced by demographic and educational contexts, suggesting the need for differentiated pedagogical strategies.

Research highlights the consistent and significant role of intrinsic motivation in promoting sustained performance, engagement, and well-being across educational levels and roles. While extrinsic motivation remains relevant—particularly in supporting short-term goals and satisfaction—it is the internalization of purpose, autonomy, and passion that most effectively drives long-term educational success. These findings support a shift toward motivation-sensitive policies and practices, especially those grounded in Self-Determination Theory, as a means of enhancing both educator effectiveness and student outcomes.

4. Implications for Higher Education Management

Central to the implications for Higher Education Management is the consistent evidence that intrinsic motivation—fuelled by autonomy, purpose, competence, and relatedness—exerts a far greater and more sustainable impact on faculty and student outcomes than extrinsic incentives alone.

Grounded in Self-Determination Theory, multiple studies (e.g., Gaglio, 2023; Canlı, 2021; Van den Broeck et al., 2023) underscore that motivation is significantly enhanced when institutional environments support autonomy, competence, and relatedness.

Higher education management should prioritize the fulfilment of psychological need by:

- a) designing professional development pathways that offer choice, mastery, and meaningful collaboration,
- b) avoiding overly prescriptive evaluation frameworks and
- c) encouraging mentorship structures and peer learning communities to satisfy the need for relatedness.

Institutional culture emerged as a powerful mediator of performance and motivation (Iqbal et al., 2023). Leaders should work toward embedding a quality culture that aligns individual values with institutional mission, emphasizing excellence in teaching, research, and service.

While extrinsic motivation (e.g., salary, promotions) remains relevant, especially in contexts with limited resources (Jhantasana, 2021; Tuma & Muhammed, 2023), it should complement rather than substitute intrinsic motivation. As shown by Vallerand et al. (2023) and Anderson et al. (2024), harmonious passion—a deep, autonomous love for teaching—drives pedagogical innovation and persistence. To cultivate such engagement, management can: provide flexibility and support for faculty to develop signature pedagogies and reduce bureaucratic burdens that stifle creativity and increase emotional exhaustion.

Evaluation processes that are rigid, compliance-driven, or punitive undermine motivation and professional identity (Gaglio, 2023; Chism, 2020). Institutions should instead: a) emphasize developmental feedback, peer collaboration, and reflective practice and b) ensure evaluation frameworks are transparent, fair, and aligned with psychological need satisfaction.

Higher education management must transition from traditional, control-based models to motivation-enhancing ecosystems—environments that value autonomy, support internal purpose, and promote a shared culture of excellence. Such strategic alignment will not only increase job satisfaction and retention but also drive innovation, effectiveness, and institutional resilience.

5. Theoretical Contributions

Our review extends the application of Self-Determination Theory (SDT) in higher education by synthesizing empirical evidence across diverse institutional and cultural contexts. While SDT's core canons—autonomy, competence, and relatedness—are widely recognized, this study demonstrates how these

psychological needs are shaped and amplified by institutional structures such as quality culture and evaluation systems. Furthermore, the findings support a nuanced understanding of motivation as a continuum rather than a dichotomy. Several reviewed studies (e.g., Howard et al., 2022; Ratelle et al., 2021) emphasize the existence of blended motivational profiles, suggesting that hybrid forms of motivation can coexist and interact with contextual factors. This perspective refines earlier theoretical models by highlighting the dynamic, institutionally embedded nature of motivation in academic environments.

6. Limitations and Future Research

This review focused on a specific period and primarily English sources from major academic databases and institutional repositories. The authors state that the analysis was not exhaustive. Articles published in other languages or journals not included in the selected databases were not included in the analysis. The cultural context was not considered in carrying out the analysis. Further research should explore cultural contexts and long-term effects.

7. Conclusion

This review confirms that **intrinsic motivation is a fundamental and consistent driver** of academic staff satisfaction, performance, and engagement in higher education institutions. Across the 15 mixed-method studies analyzed, intrinsic factors such as personal fulfilment, passion for teaching, commitment to student success, and alignment with institutional values were repeatedly linked to enhanced pedagogical innovation, greater well-being, and sustained professional performance.

While extrinsic motivators—such as salary, job security, and external recognition—do play a complementary role, their influence is generally short-term and conditional, often lacking the transformative impact of intrinsic drives. As shown in studies such as those by Canlı (2021), Jhantasana (2021), and Iqbal et al. (2023), extrinsic motivation may support performance when integrated with a strong quality culture, but cannot substitute the deep engagement fostered by autonomy, competence, and purpose.

Another critical insight from the review is the mediating role of institutional structures, such as quality culture and evaluation systems. Studies grounded in Self-Determination Theory (e.g., Gaglio, 2023; Van den Broeck et al., 2023) demonstrate that motivation is not solely an individual construct—it is shaped and sustained by the organizational environment. When faculty perceive that their psychological needs are acknowledged and respected, their intrinsic motivation flourishes. In contrast, rigid, top-down policies can undermine motivation and diminish job satisfaction.

The use of mixed-method approaches in the reviewed literature has proven particularly valuable. These methodologies provide a more nuanced understanding of motivational dynamics, capturing both quantitative patterns and the subjective

experiences behind them. They also allow for the identification of diverse motivational profiles among both educators and students, as emphasized by Ratelle et al. (2021) and Howard et al. (2022), enabling tailored interventions.

In conclusion, higher education institutions must reimagine motivation not as a fixed trait, but as a dynamic outcome of well-designed environments, respectful leadership, and responsive evaluation systems. By investing in the conditions that nurture intrinsic motivation—autonomy, mastery, relatedness, and meaning—universities can build more resilient, innovative, and satisfied academic communities. These findings hold strategic value for educational policymakers, human resource developers, and institutional leaders seeking to enhance faculty engagement and institutional effectiveness in the long term.

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THE PROPOSAL OF AN ONTOLOGY FOR THE RECRUITMENT PROCESS

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Abstract: *The paper presents a useful ontology for managing activities within a recruitment company, using Protégé 3.5. A well-designed recruitment ontology must contain clearly defined terms and relationships. The ontology classes are: Candidate, Job, Company, Department, Interview, Education_level, Experience_level, Skills, Foreign-languages, Recruitment_team, Evaluation, Offer, Status_job. Within the classes, two-dimensional many-to-many relationships and one-to-many bidirectional relationships were established. The article presents theoretical notions of the concept of "ontology" and the recruitment activity. Additionally, scientific articles that focus on different ontologies in the recruitment process are presented. The static modeling of this application is represented by the construction of the class diagram. After adding the instances, the ontology can be queried to provide answers to the following questions: the names of candidates applying for a specific position, the names of candidates who match certain jobs, the names of candidates scheduled for a particular interview, the names of candidates who have received the offer, which positions are accepted or which positions are declined. The purpose of the application is that after the corresponding data for the positions and candidates has been entered, the appropriate candidates to be scheduled for interviews are determined through queries. Also, through the queries, a list of the names of the candidates accepted after the interviews is displayed. These candidates receive the job offer which they can accept or decline. Thus, at the end of the recruitment process, each job receives the status of either 'vacancy' or 'not available'.*

Keywords: *ontology, Protégé, recruitment*

JEL Classification: C63; J23, M12

1. Introduction

Regardless of education level, every adult is a job candidate. Job supply and demand intersect in the labor market, and recruitment plays a crucial role in the placement of labor in any field. A prospering economy needs an efficient recruitment process that ensures the right match between the skills of candidates and the requirements of employers.

Ontology in recruitment appears as an innovative tool that facilitates the understanding and organization of knowledge related to the personnel selection process.

A properly established recruitment ontology must contain clearly defined terms and relationships. In this way, the ontology allows access to information on

candidates, competences, job requirements. Ontologies can facilitate both faster and more accurate assessments of applicants, as well as the creation of automated selection systems. In this context, this article explores how Protégé can be integrated into the recruitment process to optimize knowledge management and support better-informed decision-making.

This article aims to enhance the role of ontologies in recruitment, exploring how they can improve decision-making and selection efficiency, contributing to the identification of the most suitable candidates.

2. What is ontology?

The term "ontology" has been approached from several points of view. Initially, the term was explained in antiquity by Aristotle, as the science of "being qua being," the study of attributes that belong to things because of their very nature (Guarino, 2009). Thus, we can say that ontology is a branch of philosophy that studies existence.

In Computer Science, "we refer to an ontology as a special kind of information object or computational artifact". (Guarino, 2009).

Gruber originally defined the notion of an ontology as an "explicit specification of a conceptualization" (Gruber, 1993). In his articles, Gruber referred to the notion of "conceptualization", quoting the authors Genesereth and Nilsson (1987): a body of formally represented knowledge is based on a conceptualization: the objects, concepts, and other entities that are assumed to exist in some area of interest and the relationships that hold among them. A conceptualization is an abstract, simplified view of the world that we wish to represent for some purpose. Every knowledge base, knowledge-based system, or knowledge-level agent is committed to some conceptualization, explicitly or implicitly."

Ontology is an explicit specification of a conceptualization, which facilitates the exchange of knowledge in a field (Băjenaru, et al, 2015).

In Information Science, an ontology is a structured framework for representing knowledge within a domain. More simply, it connects objects and concepts through defined relationships, creating a model that enables better data organization, interoperability, and intelligent automation (<https://factorfirm.com/posts/ontology-101-what-it-is-why-it-matters-and-how-to-use-it/>)

Enterprise Knowledge defines an ontology as "a defined model that organizes structured and unstructured information through entities, their properties, and the way they relate to one another." (Hilger, J., 2017).

Ontology gives a specific and common understanding based on the different concept of a domain (Uba, et al, 2019).

Ontologies are used to facilitate the understanding, organization and processing of information in a logical, coherently structured way.

Basically, the ontology provides vocabulary to describe data with semantics that computers can understand (Hoag M., 2019). To create an ontology, a thorough analysis of the domain is necessary. Ontology is a very popular research topic mainly due to what it promises: a way of capturing a shared and common understanding of

a domain that can be understood and used as well by humans as programs (Tricot, et all, 2016).

Within an organization, ontology contributes to: manage content more effectively, improve findability and discoverability of information, increase the reuse of unknown information, improve search engine optimization (Patil, et all, 2021). Ontologies can be created for any domain: financial field (Tănăsescu, 2016), medicine, education.

A classification of ontologies from the point of view of conceptual coverage (Gălățescu, 2001) is presented as follows:

- superior ontologies for covering general concepts, applicable in many fields'
- domain ontologies, designed to be useful in a single domain
- application ontologies, designed for a single application within a domain.

In another article (Andone, 2006) these types of ontologies are explained as follows:

- ✓ subject-independent ontologies are called top-level ontologies and define concepts that are valid for all domains.
- ✓ domain ontologies define the relevant objects in a specific field of application.

examples of ontologies in the field are those related to airline planning (Valente, 1999), those related to calendar planning (Smith and Becker, 1997), and those for medicine (Gangemi, 1998).

2.1. Protégé

Protege is one of the most popular tools for creating and managing ontologies. Protégé is an open-source editor that enables the development and visualization of ontologies, including in OWL and RDF formats. It is very flexible software and supports integration with various databases and technologies.

Languages for ontologists began to be created in the early 1990s, normally as an evolution of existing languages of knowledge representation. Among the most relevant languages are: Resource Description Framework (RDF), Ontology Web Language (OWL) and Extensible Markup Language (XML). OWL is a semantic Web language designed for the representation of semantically enriched knowledge. The structural units of the OWL are: classes (describe the concepts), data type properties (describe various attributes of the classes), object properties (represent the relationships between classes), Individuals (instances of classes, representing objects within the field of interest) (Băjenaru L., 2015).

OWL (Ontology Web Language) is being considered as the standard language for representing ontology for semantic web. For ontology editing, Stanford University has introduced the open source Protégé tool, which defines ontological concepts such as classes, properties, semantic categories, and different restrictions (Hoag M., 2019)

An ontology includes the following components (Tănăsescu, Bodea, & Pătrașcu, 2008):

- categories, fundamental concepts or classes (include objects of the same type);
- the properties of the concepts that describe their different characteristics and attributes (slots, roles);

- defined restrictions on slots (facets or defined restrictions on roles). The steps in creating an ontology are: domain analysis, defining concepts, hierarchy of concepts, defining relationships, ontology check.

3. Recruitment process

Recruitment is the process of searching, attracting, and hiring qualified applicants for employment in an organization (Devi M. B. R, 2014).

The recruitment process involves finding as many qualified candidates as possible, so that the hiring company can select the right person for the job. The purpose of a recruitment team is to find the ideal candidates for vacant positions. Unsuitable hiring decisions affect the operations of the department in which a person has been employed. The recruitment and selection process are a critical component of an organization's human resources management, determining the quality of new employees and influencing overall organizational performance.

The recruitment process begins with the publication of the announcement. The advancement of information technology has a major impact on the recruitment process. Internet has become the main medium to select and recruit candidates (Bizer C., et all, 2005).

During the last 15 years, the massification of computers and the Internet have had an impact on the way humans search for jobs and employees (Rafter R., et all, 2000). In the digital era, there are various recruitment channels: websites, social media, specialized platforms. Thus, a person interested applies for a vacant position.

On the other hand, recruitment firms use these recruitment channels to "target" potential candidates. The selection process follows, a stage in which recruiters choose candidates based on the job requirements. These requirements must be clearly stated by the hiring company. After the CV selection process, recruiters schedule candidates for an interview.

The feedback received from the evaluation processes is used to make the final hiring decision. The candidate who passes the interview stage will be offered the position (Singh A., et all, 2010).

The expectations of job seekers are classified into financial criteria (attractive salary), professional criteria (sense of achievement, opportunity for advancement), and personal criteria (friendly team, pleasant working atmosphere).

4. Related works

Over time, there has been research regarding the improvement of performance in the recruitment process. Thus, a decision support system was presented (Singh A, et al., 2010) that assists recruiters in the quicker selection of candidates. These systems can enhance information about job offers and/or resumes.

One paper (Karaa W. B. et all, 2011) showed how to build and implement an ontology that regroups basic information in the resume. The ontology was designed

for both recruiters and applicants. It was named Ereco and was built using the Protege 2000 software.

The proposed ontology (Çelik D, et al., 2013) was summarized as the extraction of information from the CV. The overall objective of the proposed ORP system is based on concept matching task and ontological rules for English and Turkish résumés which provide for semantic analysis of data and parse related information such as experiences, features, business and education information from a résumé. The system contains its own Ontology Knowledge Base (OKB).

Another specialized article focused on using ontology mapping in screening candidates' problem to recommend the best mapped candidate resumes suitable for the job requirement using similarity measurement. The authors (Senthil K. et al, 2013) called the ontology EXPERT.

The system E-Gen (Kessler, 2012) was created in order to automating the recruitment process. E-Gen is a Natural Language Processing (NLP) and Information Retrieval (IR) system composed of three main modules:

- ✓ the first one extracts the information from a corpus of e-mails of job offers from Aktor's database.
- ✓ the second module analyses the candidate's answers (i.e. splitting e-mails into cover letter (CL) and curriculum vitae).
- ✓ the third module analyses and computes a relevant ranking of the candidate's answers.

Other authors (Faliagka, et al, 2013) have implemented an integrated company-oriented e-recruitment system that automates the process of evaluating and pre-selecting candidates by offering scores to candidates that reflect how well their profile fits.

Another researcher (Cabrera Diego et al, 2015) developed a Résumé Detector based on a Support Vector Machine (SVM).

Another ontology (Gang Zhao, Robert Meersman, 2005) was created in order to improving the recruitment process. The authors explained the balance between scalability and logical consistency. They said that the design scalability is concerned with the size (number of vertices and arcs) and complication of ontology models (complexity of logical relationship among the vertices, arcs and axioms). The formal requirement of logical roundness and validity of the model has a big impact on the size-complication relation. Scalability refers to the model's ability to grow without becoming too unwieldy or inconsistent. At a certain point, the ontology may reach a saturation point where further additions or modifications become difficult.

5. Application design with UML

The first step in designing an information system is to establish a model that highlights the important aspects of the software. The UML class diagram is a conceptual model used for designing the logical model of the information system.

The crucial advantage of designing system by utilizing UML lies in its ability to describe, and reflect the real world of information systems better. (Hoag M., 2019) Numerous visualization methods for ontologies have been proposed and many software tools implementing them have been developed, ranging from newly

designed approaches to approaches reusing the Unified Modeling Language (UML) by leveraging on the similarities between Knowledge Engineering and Software Engineering. (Dudáš M., et al, 2018)

UML is a graphical notation used for many years in software design across various fields. UML is supported by widely-adopted CASE tools. These UML CASE tools are more accessible to software practitioners than current ontology tools from the research community such as Ontolingua and Protege, which require expertise in knowledge representation. Real world industrial agent-based systems need to interact with legacy enterprise systems, which often have existing UML models (Kogut, 2002).

There are several options for creating UML diagrams: online tools, specialized software. In this paper, the class diagram was created with Draw.io.

The class diagram is made up of 13 classes of objects (Figure 1). Within the classes, the following association relationships are established:

- ✓ two-dimensional many-to-many relationships (a candidate applies for one or more jobs, and a job can also have one or more candidates; a candidate has one or more job requirements, and a job requirement can also be met by several candidates).
- ✓ one-to-many bidirectional relationships (a candidate receives an offer, but an offer is presented to one or more candidates; a recruitment team selects one or more candidates, but a candidate is selected only by one recruitment team; a recruitment team conducts several interviews, but an interview is handled by only one recruitment team; a department belongs to a company, but a company has multiple departments; a candidate receives an evaluation, but an evaluation is given to several candidates; a job belongs to a department, but a department has multiple jobs; a job receives a status, but a status is given to multiple jobs).

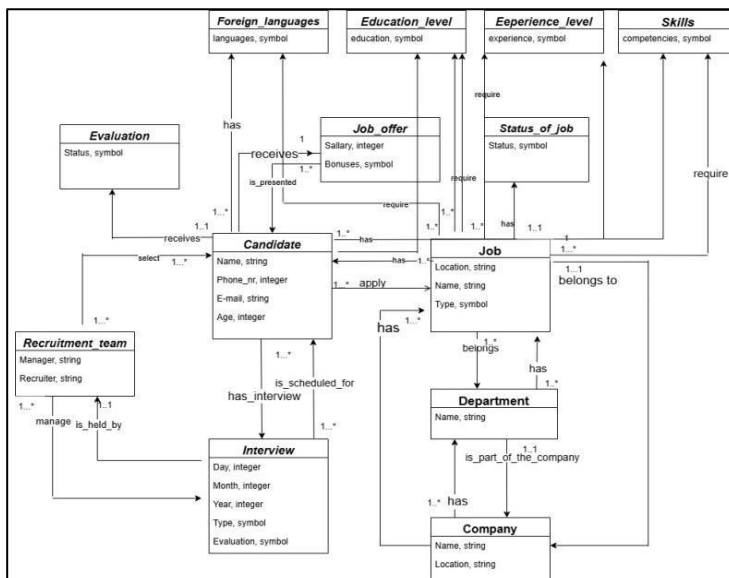


Figure 1 – The Class Diagram
Source: made by author

6. Proposed ontology

The ontology domain is represented by recruitment process. The ontology is composed of the classes: Candidate, Job, Company, Department, Interview (Date_of_interview and Evaluation subclasses), Education_level, Experience_level, Skills, Foreign-languages, Recruitment_team, Offer, Status_job (Figure 2).



Figure 2 – The ontology for recruitment process

Source: made by author

The following relationships are established between these classes: a company has multiple departments, a department has multiple jobs, a candidate applies for multiple jobs, a job has multiple requirements (Education_level, Experience_level, Skills, Foreign languages), a candidate possesses certain qualities (Education_level, Experience_level, Skills, Foreign languages), a candidate is selected for an interview, a candidate is evaluated, a candidate receives an offer, an offer has a status.

The Candidate Class (Figure 3) has the following slots: name, e-mail, age, phone number, competencies, experience level, education, lanuguages. The instant slots that make the links with the other classes are:

- ✓ candidate_has_interview – connects with the interview class
- ✓ candidate_is_selected_by – connects with class recruitment_team
- ✓ for_company – connects with the company class
- ✓ for_job - connects with the job class
- ✓ evaluation_after-interview – connects with evaluation class

Name	Cardinality	Type	Other Facets
Age	required single	Integer	
candidate_has_interview	required single	Instance of Interview	inverse-slot=interview_is_for_candidate
candidate_is_selected_by	required multiple	Instance of Recruitment_Team	inverse-slot=select_a_candidate
Candidate_name	required single	String	
competencies	required multiple	Symbol	allowed-values={JAVA,MS-OFFICE,CSS,PHP}
E-mail	required single	String	
Education	required multiple	Symbol	allowed-values={high_school,University_degree,Master_degree}
evaluation_after_interview	required single	Instance of Evaluation	
experience_level	required single	Symbol	allowed-values={entry_level,mid_level,senior_level}
for_company	required single	Instance of Company	
for_job	single	Instance of Job	inverse-slot=candidates_for_job
languages	required multiple	Symbol	allowed-values={English,Italian,French,German}
Phone_number	required single	Integer	

Figure 3 – The Candidate Class

Source: made by author

The Company Class (Figure 4) has the slots `Company_location`, `Company_name`, `company_has_department` (links to the Department class), `Company_has_job` (instance of the Job class). The Job class has the slots `candidate_for_job` and `job_belongs_to` that link to the Candidate and Company classes.

Template Slots				
Name	Cardinality	Type	Other Facets	
<code>candidates_for_job</code>	multiple	Instance of Candidate	inverse-slot= <code>for_job</code>	
<code>competencies</code>	required multiple	Symbol	allowed-values={JAVA,MS-OFFICE,CSS,PHP}	
<code>experience_level</code>	required single	Symbol	allowed-values={entry_level,mid_level,senior_level}	
<code>job_belongs_to</code>	required single	Instance of Company	inverse-slot= <code>company_has_job</code>	
<code>job_location</code>	required single	String		
<code>job_name</code>	required single	String		
<code>job_type</code>	required single	Symbol	allowed-values={part-time,full-time,remote}	
<code>languages</code>	required multiple	Symbol	allowed-values={English,Italian,French,German}	

Figure 4 – The Company Class

Source: made by author

The Interview Class contains the concrete class `Date_of_interview` which holds the slots `day`, `month`, `year`, `hour`, `location`, `interview_type`, `evaluation`. Instance-type slots are `Interview_for_job`, `interview_is_for_candidate`, `interview_team`. The `Job_offer` class includes the slots `salary`, `bonus`, `feedback`, and the instance slot `for_candidate`. The purpose of the application is that after the relevant data for the positions and candidates are entered, the suitable candidates are established to be scheduled for the interview, through queries.

After entering the necessary data, a query was created (Figure 5) through which the names of the candidates suitable for the position in terms of experience level are displayed (other requirements can be added). For the Data Analyst job, the desired experience level is mid-level, and the candidate who applied for this job and has the required experience was displayed in the query results.

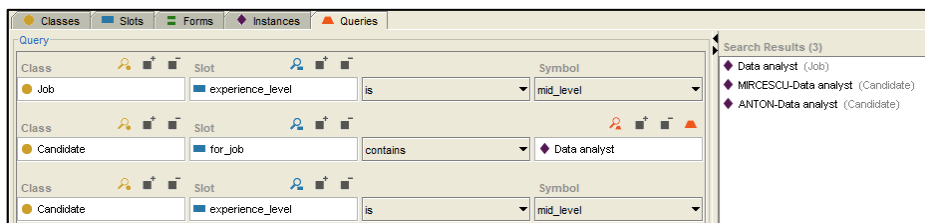


Figure 5 – The query for match the candidates to jobs in terms of experience level

Source: made by author

In this way, the recruitment team can schedule the respective candidates for the interview (Figure 6) by filling in the slot's year, month, day, and hour.

The screenshot shows a web form titled "INSTANCE EDITOR". At the top, it says "For Instance: ♦ 14-4-2025 (instance of Date_of_interview, internal name is recrutare_Class20006)". The form contains several input fields: "Day" with value "14", "Month" with value "4", and "Year" with value "2025". Below these are "Interview Location" (dropdown menu showing "office"), "Interview Type" (dropdown menu showing "behavior"), and "Hour" (input field with value "9"). There are also two sections with icons: "Interview For Job" with a dropdown menu showing "Data analyst", and "Interview Team" with a dropdown menu showing "matei". At the bottom, there is a section "Interview Is For Candidate" with a dropdown menu showing "MIRCESCU-Data analyst".

Figure 6 – An instance for scheduled candidate

Source: made by author

After the interview, the recruitment team provides an assessment of the candidate: accepted or rejected (Figure 7), in the Evaluation Class. This form contains the name of the candidate and the position for which the candidate was interviewed.

The screenshot shows a web form titled "Interview Is For Candidate". It contains a dropdown menu with the value "MIRCESCU-Data analyst". Below this is a section "Interview For Job" with a dropdown menu showing "Data analyst". At the bottom, there is a section "Type" with a dropdown menu showing "accepted".

Figure 7 – An instance of Evaluation Class

Source: made by author

Thus, at the end of the recruitment process, the form for each selected candidate (Figure 8) will include all the information: the candidate's details, the position for which the candidate was selected, the date of the interview, and the obtained status.

Figure 8– The form for each selected candidate

Source: made by author

The admitted candidates will subsequently receive the offer, for which they will give a status: accepted or declined. After the submission of the offers, the query regarding the candidates' feedback displays which positions were accepted or rejected. In example (Figure 9), the author wanted to highlight the name of candidates who accepted the job offer. From Candidate Class the slot "for_job" was used. From Job_offer Class, the slot "feedback" with condition "is accepted_offer" were used

The result of this query showed the names of candidates and the names of jobs.

Figure 9– The query containing the candidates' feedback

Source: made by author

The final step that the recruitment team goes through, after the position has been accepted or not by a candidate, is to determine the job status (figure 10): not available or vacancy. This information is needed in Status of job class.

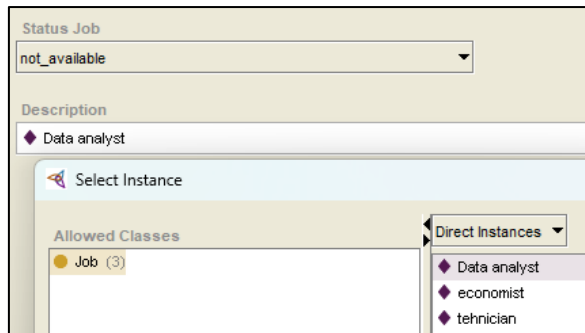


Figure 10– An instance of Status_Job Class

Source: made by author

7. In conclusion

This ontology is intended to enhance the management of activities in a recruitment company. Ontology is organized in classes: Candidate, Job, Company, Department, Interview (Date_of_interview and Evaluation subclasses), Education_level, Experience_level, Skills, Foreign-languages, Recruitment_team, Offer, Status_job. The purpose of the application is the possibility of automatic selection of candidates for the interview. In this way, the recruitment team can schedule candidates who possess the requirements for the position (experience, education, skills). After the evaluation process, the accepted candidates will receive the offer, for which they will give a status: accepted or declined.

After the submission of the offers, the query regarding the candidates' feedback displays which positions were accepted or rejected. The filled and vacant positions appear in the job management system.

8. Acknowledgements

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MAIN CONCEPTS ABOUT ARTIFICIAL INTELLIGENCE. GENERATIVE AI

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Abstract: *The purpose of this article is to provide both researchers and practitioners with a better understanding of the concept of artificial intelligence, by explaining in a simplified way this concept and related concepts, since understanding the concept of artificial intelligence is very important in the current socio-economic context. This paper is a literature review. The main articles in the literature that define the concept of artificial intelligence or related concepts of artificial intelligence have been analyzed. This article provides its own analysis of the concept of artificial intelligence. The analysis is deep, as proof the article does not just summarize what is already written, but provides a holistic explanation of artificial intelligence with the aim of clarification for researchers and practitioners.*

Keywords: *Artificial Intelligence, Machine Learning, Generative Artificial Intelligence.*

JEL Classification: A10

1. Introduction

Artificial intelligence is a concept that has revolutionized the whole society. It can, in a simplistic way, be explained as the ability of machines to mimic human behaviors (Hein et al., 2020; Kok, 2022; Sheikh et al., 2023).

Due to its numerous advantages, artificial intelligence is being used in all fields of activity. In the economic field, artificial intelligence has profoundly changed all its fundamental principles, thus changing the way of doing business (Di Vaio et al., 2020). Nowadays, with the help of this powerful technology, managers can achieve their primary goal, which is to make the activities undertaken more efficient, either by lowering costs or by higher efficiency, both of which are offered by the use of artificial intelligence (Lazăr et al., 2024).

The attention of researchers has been focused on artificial intelligence long before it became popular. The first studies on AI were conducted more than 40 years ago (Di Vaio et al., 2020), even though AI became known among the general population, especially with the launch of the ChatGPT app in late 2022 (Korneeva et al., 2023). However, it is considered that the study of artificial intelligence is still in its infancy (Di Vaio et al., 2020). Therefore, basic concepts such as the definition of AI or the categorization of its main features are not well established; as evidence, there is currently no unanimously accepted definition for this type of intelligence (Wang, 2019).

Observing this lack of explanation of basic concepts concerning the most widely applied technology worldwide, we considered it proper to realize explanations of some key concepts regarding AI, such as its definition, main traits, and main subsets. Also, since artificial intelligence is loosely defined without an unanimously accepted definition, there are numerous articles offering particular definitions for this concept, thus creating confusion among the general public (Kelly et al., 2023). Bearing also in mind that artificial intelligence has become an extremely important one for the world economy, with the contribution of this field created around AI expected to reach 15.7 trillion dollars by 2030 (Murphy et al., 2021), we consider it essential to clarify these concepts.

The article is structured as follows: the second chapter presents the methodology used, followed by the research results, in which the definitions, main features, and subsets of artificial intelligence are presented, emphasizing the concept of generative artificial intelligence, due to its increasing use. The article concludes with a presentation of the conclusions.

2. Methodology

This paper conducts a literature review, analyzing some of the most essential sources discussing artificial intelligence, generative artificial intelligence, and its impact on society. The research process started by identifying relevant articles through a Google Scholar search. Specifically, we searched for the terms “artificial intelligence” OR “AI” and “generative artificial intelligence” and “definitions”, in March 2025 and retrieved approximately 10.200 results. It can be observed that although the study of artificial intelligence is relatively in its infancy, there are numerous articles analyzing this topic, so we considered it necessary to filter them. The main filter used was the year of publication, including in the analysis only articles published after 2019. Applying this filter resulted in 9.230 articles. We considered this criterion relevant because the field of artificial intelligence is evolving so rapidly that some of its features fundamentally change quickly and become irrelevant. Only one article is an exception to this criterion, which is (Simon, 1995). The reason for including this article is that it provided an extremely well-defined definition of artificial intelligence, being cited over 400 times.

Another selection criterion was to provide proper definitions for the concepts, of artificial intelligence, generative artificial intelligence or their underlying characteristics, by analyzing the title and abstract of each article. Thus, after applying these filters we included 132 articles in the analysis. Of these articles, 31 were not accessible, and the remaining articles were read in full to determine whether or not they were relevant to our study. Ultimately, 22 articles were included in the research. The research continued with extracting information from the articles that passed the selection filters. We continued their analysis, focusing on information valuable for our research, such as definitions of the notion of artificial intelligence, or classifications of types of artificial intelligence.

3. Results

3.1. The history of AI

Historically, the development of artificial intelligence came about following an extremely important event in the evolution of the entire economy, which was the invention of the digital electronic computer in 1937 (Wang, 2019). Immediately after the creation of this revolutionary tool, people realized that it could undertake numerous types of tasks, not just mathematical calculations most of which were considered to be specific to human activity (Wang, 2019). Although this technology has become more widely known in the last ten years, the foundations of artificial intelligence were laid in the 1950s, when several researches were carried out to demonstrate that human intelligence can be reconstructed by computers (Hein et al., 2020; Simon, 1995). In 1956 the first definition of the concept of artificial intelligence was also given by John McCarthy who defined it as "the science and engineering of making intelligent machines" (Collins et al., 2021).

Noting that the foundations of artificial intelligence were laid in the middle of the last century, and at the same time taking into account that the field of technology is in a continuous dynamic, it is natural that the form and features of artificial intelligence have changed profoundly over time, the one today retaining only a small part of the one that existed more than 70 years ago. The first form of artificial intelligence goes by the name of Narrow Artificial Intelligence (Saghiri et al., 2022) and is particularized by the fact that it is programmed to perform well-determined tasks in which there are no unknown factors. Since there was a desire to perfect artificial intelligence, an important evolution of artificial intelligence in terms of technology is observed, leading to, General Artificial Intelligence (Saghiri et al., 2022), which possesses a certain consciousness, and is equated by many researchers in the field with human intelligence. The next stage in the evolution of artificial intelligence involves going beyond human thinking capabilities and is called "Higher Artificial Intelligence" (Saghiri et al., 2022).

Analyzing the evolution of artificial intelligence over time, one can see a huge progress, reaching the last known stage of superior artificial intelligence to surpass human potential. Reaching this technological level has generated many opinions in society, some of them supporting the continued development of artificial intelligence, which is seen as a helper of man, but other opinions are against the development of this technology, arguing that artificial intelligence threatens the proper development of human society.

3.2. Definitions

Numerous popularly known concepts in both economics and other fields encounter a problem when discussing their definition, as specialists in the respective fields do not agree on a single explanation for them (Kelly et al., 2023). Artificial intelligence faces the same problem, as there is no universally accepted definition of this concept (Kelly et al., 2023; Wang, 2019). One of the main reasons for this lack is considered to be the fact that the notion of artificial intelligence is relatively new, so there has not been enough time to clarify it (Wang, 2019).

However, in the case of artificial intelligence, sustained efforts are being made by many researchers and practitioners in the field to reach a common denominator regarding the meaning of this concept (Ofosu-Ampong, 2024).

After analyzing more than 30 articles dealing with the topic of artificial intelligence, we identified eight articles that provide a concrete definition of the notion of artificial intelligence. Depending on the emphasis given by the authors, we made comparisons between the main definitions identified. For better observation of the similarities and differences between them, we grouped the definitions according to the emphasis placed within them, thus generating three categories: imitation of human behavior, learning, and autonomy.

Imitation of human behavior: This category includes the definitions offered by (Hassani et al., 2020; Kok, 2022; Sheikh et al., 2023) as these authors emphasize the ability of artificial intelligence to imitate human behavior, considering it as a defining feature for artificial intelligence.

Learning: This category includes the definitions provided by (Enholm et al., 2022; Khanzode & Sarode, 2020; Nikitas et al., 2020) as they present artificial intelligence with a focus on its ability to have its way of thinking, analyzing, and learning. Artificial intelligence can learn from its own experiences and thus become increasingly influential.

Autonomy: This category includes the definitions offered by (Banh & Strobel, 2023; Berente et al., 2021) as they emphasize the ability of artificial intelligence to make decisions autonomously, i.e. without any outside intervention, thus detaching itself from human control.

Analyzing the main definitions of artificial intelligence, we noticed some common aspects that the authors emphasized in their definitions. (Banh & Strobel, 2023; Kok, 2022; Sheikh et al., 2023) present artificial intelligence in their definitions with a developed ability to imitate human behavior. Banh & Strobel, (2023); Berente et al., (2021); Nikitas et al., (2020) emphasize a common aspect illustrated by the ability of artificial intelligence to learn.

Following our research, we came up with our definition of artificial intelligence: Artificial intelligence is the ability of machines to mimic human behaviours and attitudes and to take actions that are naturally performed by humans, all with the help of complex technologies.

3.3. Features Artificial Intelligence

Since the notion of artificial intelligence is essential in the current economic context and beyond, we consider it important, for a deeper understanding of this concept, to present the fundamental features of artificial intelligence.

One of the defining traits of artificial intelligence is represented by its ability to mimic human behaviors, to perform actions that naturally, humans did (Banh & Strobel, 2023; Kok, 2022; Sheikh et al., 2023). This trait is fundamental to artificial intelligence, and is also the reason why it was created: to help humans in accomplishing certain tasks, sometimes even replacing them. With this feature, artificial intelligence has become a highly useful tool for the whole of humanity, regardless of the field of activity, because it can be configured according to present needs.

Another equally important feature of artificial intelligence is illustrated by its ability to learn, even from its own experience (Banh & Strobel, 2023; Berente et al., 2021; Nikitas et al., 2020). This trait provides a significant advantage to artificial intelligence as it, through high- performance technologies, continuously improves itself through learning.

Autonomy is another defining trait of artificial intelligence. It implies the ability of intelligence to make decisions and act autonomously without human intervention (Berente et al., 2021; Ofosu-Ampong, 2024). Certain choices or actions are taken not only without human intervention but even beyond human awareness (Ofosu-Ampong, 2024). This trait shows how evolved the technology used in this type of intelligence is, surpassing even human intelligence, paradoxically, considering who the creator of this intelligence is.

Analyzing the features of artificial intelligence, we believe that it brings a great advantage to all those who use it. First of all, it considerably facilitates the work that people have to do in various fields of activity, simply because they can rely on the expertise it provides at any time. Also, by using this artificial intelligence, which performs multiple tasks autonomously, uninfluenced by human consciousness, people can enjoy purely technological sincerity and action.

Thus, the fundamental characteristics of artificial intelligence make it an indispensable technology for the development of human society.

3.4. Subset of AI

Artificial intelligence has developed a lot in the last decade, so an analysis of this concept is carried out in more depth, dividing the whole, and analyzing component technologies of artificial intelligence. Thus, we will examine two critical components: deep learning and machine learning.

Machine learning is an innovative technology that is mainly concerned with the development of algorithms that enable learning from one's own experience (Banh & Strobel, 2023). This feature is also specific to human learning (Helm et al., 2020). Compared to human intelligence and learning, machine learning enhances its learning and analytic abilities using advanced technologies. Over time, through much practice machine learning manages to predict specific outcomes and provide solutions to various exercises autonomously without human intervention (Banh & Strobel, 2023; Helm et al., 2020).

Autonomy in processing data and providing solutions, as well as learning from one's own experience, requires high-performance technology. To better understand how this machine learning works, (Stewart et al., 2020) categorized the algorithms used by Machine Learning to observe the categories of learning that they determine. The first category is called, "supervised learning" (Ofosu-Ampong, 2024; Stewart et al., 2020) and is characterized by the fact that it uses existing data to refine itself in generating new predictions or solutions for different requirements. The second category is called, "unsupervised learning" (Ofosu- Ampong, 2024; Stewart et al., 2020) and is characterized by the fact that it lacks a well- defined outcome variable, so that classifications within it are also not performed according to well-drawn standards.

Deep learning is an extremely powerful technology and is considered the most potent subcategory of Machine Learning (Banh & Strobel, 2023). It has developed,

similar to human anatomy, in particular the human brain (Banh & Strobel, 2023; Murphy et al., 2021) neural connections to play back various patterns and patterns and to directly realize correlations. Deep learning also manages to process enormous sizes of data, from any domain including photos or videos (Banh & Strobel, 2023).

These technologies are helping artificial intelligence to constantly evolve and provide higher quality services like humans.

3.4.1. Generative AI

Generative AI represents an evolution of artificial intelligence, by the simple fact that before this change AI was viewed as a tool without consciousness, with a single role to assist humans in decision-making. Nowadays, with the help of this new technology, artificial intelligence manages to generate innovative outputs autonomously (Feuerriegel et al., 2024) Generative artificial intelligence has emerged as an effect of the development of learning techniques used in classical models of artificial intelligence, particularizing itself by emitting solutions similar to those naturally offered by human intelligence. The solutions offered are creative and offered in complete agreement with the external input (Banh & Strobel, 2023). By utilizing the solutions offered by this type of intelligence, considerable advantages can be gained in terms of streamlining activities as well as creativity. Generative artificial intelligence is currently being used in numerous fields of activity, including healthcare and education (Banh & Strobel, 2023).

Feuerriegel et al. (2024) explain generative artificial intelligence as an accumulation of computational technologies that generate new instances of data that mimic the ones trained with, but are essentially new and original. The main types of actions that generative artificial intelligence can take, according to Feuerriegel et al. (2024) are:

- Creating new writing styles;
- Creating new images from various textual descriptions: based on the input information, generative AI can transform a simple text into a completely new, original image. This makes the human imagination tangible;

Code generation: based on the information already retained, generative AI can provide code for different tasks, greatly facilitating the work involved in the software programming process. Realizing this deep analysis of the notion of generative AI, we noticed its particular importance, especially in the development of the relationship between human beings and artificial intelligence. Another observation is illustrated by the fact that the development of generative AI will profoundly impact the environment in which we live today. Still surely, the two environments will evolve concurrently so that the state of equilibrium is preserved.

3.5. Social Impact of AI

Artificial intelligence is not only a set of high-performance technologies with which a non- human intelligence has modified its abilities so that it behaves similarly to humans but also an economic and social transformation of society as a whole. Any change, to be successful and to be implemented, needs the acceptance of the parties that are affected by the effects of that transformation. This also applies to artificial intelligence. It entered the market with a promise represented by the

promise that it would help humans perform their tasks (Korneeva et al., 2023). However, currently, society is divided when it comes to the acceptance of artificial intelligence. On the one hand, supporters of this technology note the significant advantages it offers society, especially the easing of human tasks accomplished by delegating to machines. Artificial intelligence can quickly take over repetitive tasks (Lazăr et al., 2024), which are often real challenges for humans. On the other hand, some voices are against the development of artificial intelligence because they consider it, perhaps also due to a profound misunderstanding (Kelly et al., 2023) a threat to the development of the whole humanity (Korneeva et al., 2023). To better understand the points of view of both categories, we will explain in detail, based on studies, the main reasons why artificial intelligence is supported or not. We consider it relevant for the analysis of the effects that the implementation of artificial intelligence produces. These are of two types: augmentation and automation (Korneeva et al., 2023). Augmentation is one of the main arguments supporting the implementation of artificial intelligence. It represents a process whereby both humans learn from machines and machines learn from humans (Korneeva et al., 2023). By learning from each other, both parties develop, and humans use artificial intelligence to make their daily tasks more accessible and improve the quality of the services they provide. On the other hand, automation is the main reason why humans do not accept artificial intelligence.

Automation entails streamlining specific processes by machines taking over certain functions, especially those of a repetitive nature (Korneeva et al., 2023). Through this transfer of tasks, certain jobs are eliminated the main reason being that machines perform those tasks more efficiently. Because of this, fear of being replaced, some people do not accept and do not want artificial intelligence to develop (Korneeva et al., 2023). According to some studies in this field, the use of artificial intelligence is expected to increase significantly, benefiting the whole economy by increasing the global GDP by more than 7%, but at the same time the use of this technology will replace more than 300 million jobs (Feuerriegel et al., 2024).

4. Conclusions

Artificial intelligence is a technology that has revolutionized not just one field of activity, but the whole of humanity. As proof of this, regardless of people's social or economic status, everyone's daily life has been impacted by the development of this technology. In terms of its definition, there is no standard agreement, but many authors agree on a certain characteristic that explains the whole complexity of the term, namely, copying human behavior. From this characteristic, there are secondary ones, the most important of which are autonomy and the ability to learn from one's own experience. We consider these features secondary not in terms of their importance, but because they are effects of imitating human behavior, which is defined by autonomy and learning.

The use of artificial intelligence brings numerous benefits to society, both for the employer and the employee. From an economic point of view, we believe that

artificial intelligence brings only benefits to all those who implement it: managers become more efficient, and human resource costs decrease considerably. However, the development of artificial intelligence has led to numerous discussions about its social impact on society. Within these discussions, some consider artificial intelligence as a collaborator, and those who consider it a threat to their jobs. Analyzing these discussions, we believe the most effective way, of balancing society.

Thus, AI is constantly developing, and this development can lead to various ways to build human society as well. However, we recommend paying attention to the social and ethical aspects when implementing this technology to preserve the societal balance.

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ARTIFICIAL INTELLIGENCE: IMPORTANCE FOR THE ECONOMY AND RISKS FOR THE SOCIAL STRUCTURE OF SOCIETY

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Abstract: *This article examines the potential impact of artificial intelligence (AI) on the social structure of societies in the most economically developed countries of the world. Despite the fact that at present the notion of “artificial intelligence” is quite controversial, artificial intelligence is already widely used in various sectors of the economy, state and municipal administration, and the social sphere. Experts expect the international artificial intelligence trading to show very strong growth momentum in the coming years, with generative artificial intelligence receiving special attention. This is a type of AI that is capable of creating intellectual products similar to the results of human creativity. The use of artificial intelligence makes various production, logistics, and management processes more efficient and cheaper. For a long time, it was believed that current information and communication technologies would not be able to remove people from the sphere of creative and highly skilled labour. However, the development of generative artificial intelligence largely refutes this statement. This has already led to people losing their jobs and social status in the most developed countries in the world. In this context, it is necessary to establish mechanisms that allow people to live with dignity. One of them could be a universal basic income.*

Keywords: *artificial intelligence; AI; generative artificial intelligence; transformation of the social structure of society; unconditional basic income.*

JEL Classification: O33; J24; D63; I31; O31.

1. Introduction

Philosophers and scientists became interested in the problem of creating a "thinking" machine at the beginning of the New Age. However, it was possible to successfully solve it only thanks to the achievements of the scientific and technological revolution of the second half of the 20th century. The use of artificial

intelligence (AI) has already become an integral part of everyday life in modern society.

The first attempts to create programs and systems capable of imitating human intelligence were undertaken as early as the 1940s and 1950s. The term "artificial intelligence" was introduced into wide scientific circulation by John McCarthy in 1956, at a conference at Dartmouth College (USA) (Morhat, 2017).

Artificial intelligence works using technologies such as machine learning, neural networks, genetic algorithms and expert systems. AI is already widely used in various fields of activity: in production, transport, security, trade, medicine, management, including state and municipal, etc.

The capabilities of artificial intelligence include object, image and speech recognition, automatic translation, processing and analysis of various data, decision-making and much more. Artificial intelligence can also be applied to the creation of automated systems and robots that can perform complex tasks and interact with the environment. However, despite all the benefits of artificial intelligence, a discussion has already arisen in society about the ethics of using artificial intelligence and the social consequences of its development.

2. Results

The purpose of this study is to analyze artificial intelligence technology as a factor of economic activity and its impact on the social structure of modern society. The main assumption of the study is that artificial intelligence is capable of replacing people in all spheres of work and, therefore, significantly transforming the system of social hierarchy, increasing the number of representatives of the lower social strata and the marginalized.

Currently, the issue of a clear definition of AI remains controversial. "And despite the fact that many developments are underway in this area, researchers note that, in general, there is currently no universally agreed (generally accepted conventional) definition of the concept of artificial intelligence; there is not the notion of artificial intelligence that would be recognized by all practicing specialists" (Emmert-Streib, et al. (2020).

In this paper, to understand the essence of artificial intelligence, we will use the definition given on the website of the International Organization for Standardization (ISO): "In essence, artificial intelligence is the ability of a machine or computer system to perform tasks that would normally require human intelligence. It involves programming systems to analyze data, learn from experience, and make intelligent decisions" (ISO, 2023).

There is huge potential for the utilization of artificial intelligence in all areas of life and the economy.

Specifically, artificial intelligence has been applied in the business sector to solve the following problems:

- Artificial intelligence is widely used in enterprises and organizations to automate routine and repetitive tasks such as data processing and analysis, information collection and transmission, resource control and accounting, etc. This allows

optimizing production processes within companies, reducing the number of scraps, defects and errors in work, reducing various types of costs and, therefore, increasing overall operational efficiency.

- AI can serve to analyze large volumes of heterogeneous data, revealing hidden patterns and trends in them. This, in turn, makes it possible to make more informed management decisions based on objective facts, as well as anticipate the development of various events and processes.
- Artificial intelligence is widely used in the operation of various services. For example, chatbots, call centres, systems for recommending the most suitable products and customer services.
- Artificial intelligence can serve to identify various business risks and threats, fraudulent and corrupt schemes. This allows companies to increase the level of safety of all operations and production processes.
- Artificial intelligence can analyze historical data on the demand for goods and services and can also take into account the impact of other factors such as weather, inflation, consumer demographics, etc., on the promotion of goods, products, and services.

These are only a few examples of AI applications in business. Almost all manufacturing and service industries have the potential to use AI to optimize business processes, make smarter management decisions, and improve business efficiency.

The implementation of artificial intelligence in the social sphere can also bring significant benefits to society.

- Artificial intelligence can serve to analyze medical data and diagnose various diseases. It can help doctors make more accurate decisions, suggest effective treatments, and predict risks for patients.
- Artificial intelligence can serve to improve educational processes and individualize learning. It can adapt training programs to the personal requirements and needs of each student.
- Artificial intelligence can serve to identify the most vulnerable groups in the population and develop programs and practices to support them. For example, it can help determine the criteria for granting social assistance and independently oversee the provision of different types of social services.
- Artificial intelligence can help detect and prevent various crimes and crimes, especially if there are digital traces or data obtained through digital devices. Big Data analysis allows us to determine the level of crime in a particular area, as well as profile criminals.
- Artificial intelligence can serve to analyze data on environmental and social issues at the municipal, regional, national, and international levels, as well as the availability of certain resources important to society and the economy. It can help in the development of plans, strategies, projects, development programs, optimizing the use of resources and making decisions taking into account environmental and social factors.

The implementation of artificial intelligence in the social sphere can improve people's quality of life and help solve complex social problems.

Currently, AI is already widely used in the practice of state and municipal administration. It helps to solve the following problems:

- **Data analysis and forecasting:** Artificial intelligence makes it possible to analyze large amounts of information collected by government agencies and identify hidden trends and trends. This makes it possible to predict socio-economic and political processes and events, which, in turn, allows for more informed management decisions.
 - **Process automation:** AI can help to automate routine tasks and processes in public and municipal administration. For example, it can help for automatic document processing, classification and analysis of citizen inquiries and complaints, and for the creation of electronic monitoring and management systems.
 - **Digitalization of public services:** AI can help to develop intelligent systems that serve citizens. For example, citizens can get information about government and municipal services, fill out applications, or seek advice without leaving their homes. This improves the availability and quality of services provided by public authorities.
 - **Fighting corruption:** AI can help to detect and prevent corruption in state and local government systems. It can analyze data on state and municipal contracts and budget expenditures, identify anomalies and discrepancies in the use of state and municipal funds, and assist in the development of control and monitoring systems.
- According to expert estimates, in 2023, global spending on application and the putting into execution of artificial intelligence amounted to more than 500 billion US dollars. Over the next decade, the global AI market will grow steadily. Data on this is presented in the following figure (Figure 1).

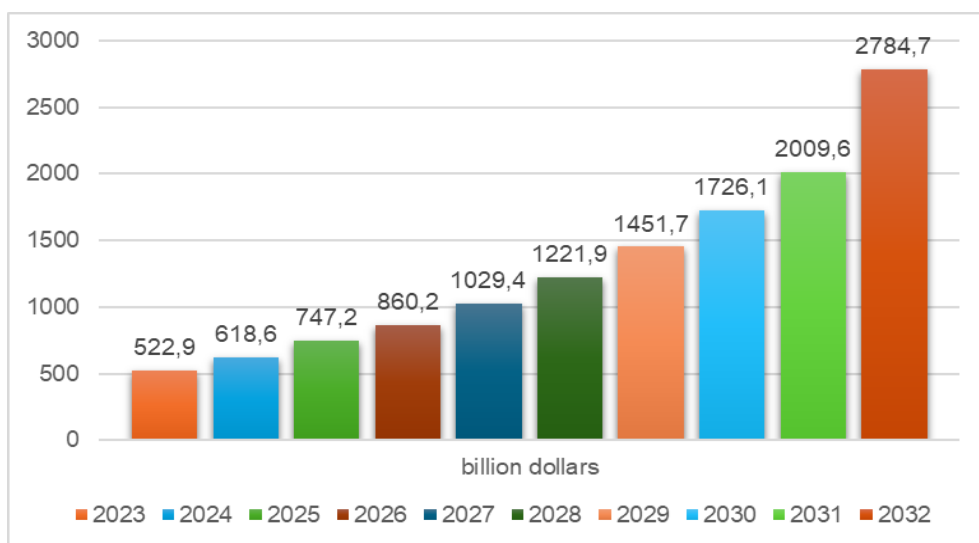


Figure 1. Dynamics of changes in the volume of the global artificial intelligence market

Source: compiled by the authors based on data (Martynov, 2024).

It is noted that more and more funds will be invested in the development of the so-called generative artificial intelligence (Generative AI) - this is a type of artificial intelligence that is capable of creating products that resemble the result of human creative work: unique texts, drawings, music, videos. Generative artificial intelligence is widely used in creative fields: advertising, entertainment, media, marketing, etc. Changes in the volume of the generative AI market is shown in the figure below (Figure 2).

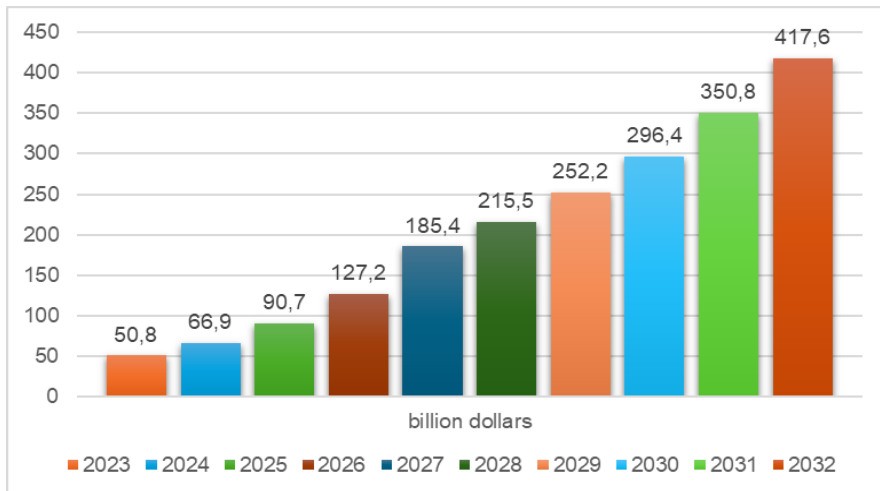


Figure 2. Dynamics of changes in the volume of the global generative AI market

Source: compiled by the authors based on data (Martynov, 2024).

Despite the undoubted advantages of using AI in modern production and management practices, its use also has certain negative effects for modern society, especially for the most developed socio-economic states.

The widespread use of machines, robots and current information and communication technologies has made it possible to largely eliminate people from the industrial production process. Due to this, the service sector has grown significantly in quantity and quality. In some countries, it accounts for about 70% of total GDP. Millions of people are employed in the service economy. The development of such a trend led to the creation in the second half of the 20th century of the concept of "post-industrial societies" based on the valorization of scientific knowledge, innovation, creativity, and a constant increase in the level of human capital due to improved education.

It was assumed that a person, after leaving an industrial or agricultural enterprise, would be able to realize himself professionally in activities related to science, creativity, inventions, and communications with other people.

However, the pace of AI development is currently such that, even in such activities, it is difficult for humans to compete with machines.

It is quite possible that the social structure of the most developed countries will undergo significant changes as a result of the progress of modern information and

communication technologies. A computer with the appropriate software can already replace a salesman, security guard, translator, teacher, bank clerk, travel agent, etc. It will probably not be long before a large number of actors, directors, journalists, artists, marketers, PR people, lawyers, doctors and even engineers (i.e. whose work requires a sufficiently high level of education, creative skills and the ability to interact with other people).

In June 2024, LEAP 71 reported that it had developed a liquid rocket engine design in less than 2 weeks using its Noyron computational model. It took several more days to physically manufacture its components and assemble them. According to the company, the engine started the first time and demonstrated high performance characteristics. According to LEAP 71 CEO Josephine Lissner, a traditional design office of human engineers would need months, if not years, to develop such an engine (LEAP, 2024).

Recently, the media has quite often published publications about AI performing quite complex surgical operations without human participation.

The world of medicine could be on the verge of a revolution after a team of scientists from the International Institute of Neuroscience and Technology announced that artificial intelligence (AI) has independently performed the most complex neurosurgery on the human brain for the first time. News of the discovery has sparked a furious response among experts and could herald a new era in the treatment of neurological diseases.

An AI surgeon developed by scientists was used to remove a tumour from the deep layers of the brain. The operation lasted more than four hours and was performed completely autonomously using robotic instruments controlled by artificial intelligence. The main feature of this discovery is the absence of the need for human touch, which significantly reduces the risk of infections and human error.

The AI software has been trained on thousands of hours of real-world transaction records and millions of data points, allowing it to analyze and make complex decisions in real time. By skillfully manipulating surgical instruments, the AI demonstrates a precision and consistency previously unattainable by a human surgeon.

The patient on whom the experiment was conducted is in stable condition and is already seeing an improvement in his well-being. Doctors plan to monitor his recovery for several months to be completely sure that the procedure was successful. If the results are confirmed, AI surgeons could become a common sight in operating rooms around the world (MKOMOV, 2024).

Society has already reached the point where representatives of the middle social class, including its upper part, may lose their positions, losing the fight for jobs in favour of AI. In particular, in the countries of the Organization for Economic Cooperation and Development (OECD), the middle class comprises 50% to 70% of the population (Hannon, 2019). These are people who are accustomed to a certain stable income and an appropriate lifestyle. Unemployment due to the use of current information and communication technologies, including artificial intelligence, will increase the number of people at the bottom of society. This leads to the emergence

of various sociopolitical conflicts, rising crime rates, a decline in the purchasing power of the population, a shortening of life expectancy, and cultural decline.

According to a study by the International Monetary Fund published in 2024, approximately 60% of workers in advanced economies are exposed to some risk due to the introduction of AI (Cazzaniga, et al. 2024). For some countries, this figure is even higher. The distribution of workers by risk of exposure to AI in the United Kingdom is shown in the following figure (Figure 3).

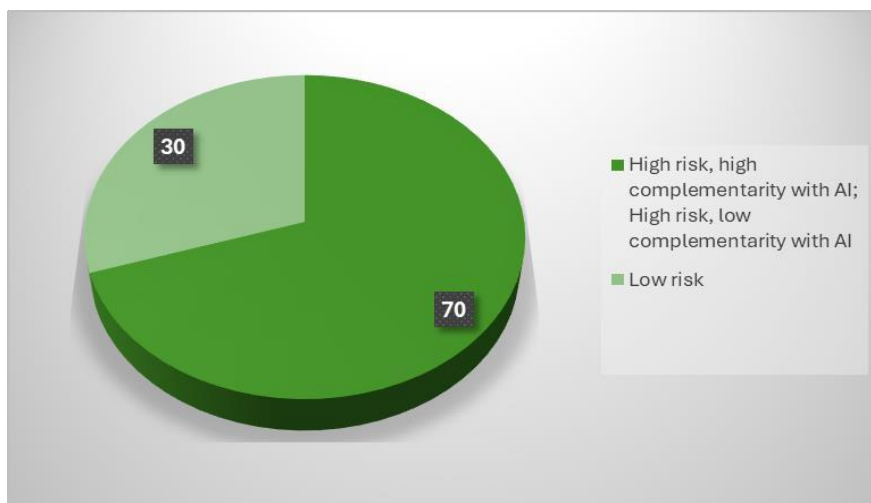


Figure 3. The degree of risk of the impact of AI on those employed in the economy (Great Britain)

Source: compiled by the authors based on data (Cazzaniga, et al. 2024)

According to the McKinsey Global Institute, by 2030, due to automation (including as a result of the use of AI), between 375 (at the minimum estimate) and 800 million jobs could be eliminated (Lyalkova, et al. 2023).

According to reports from global media outlets such as CBS, in 2024 technology corporations (Google, SAP) plan to lay off hundreds of workers due to the improvement of technologies related to artificial intelligence (Cerullo, 2024).

It must be said that the political elites of the most developed countries in the world seem to foresee such negative trends and are working on creating instruments that would avoid a sharp decline in the level of social well-being.

In particular, one such instrument is the unconditional basic income. "An unconditional basic income is an income paid by a political community to all its members individually, without means testing or work requirements" (Kvashnin, 2019). At the beginning of the 21st century, the issue of introducing an unconditional basic income was widely discussed in a number of European countries: Hungary, Germany, Italy, the Netherlands, Switzerland, Finland and a number of others. In Finland, this idea has reached the stage of a fairly large-scale experiment: "The pilot program in Finland, conducted in 2017–2018, received the most publicity. The

National Social Insurance Institution (KELA). Over two years, a basic income of 560 euros was allocated to two thousand randomly selected unemployed people aged 25 to 58. The specified amount was paid regardless of whether they had additional sources of income and whether they managed to find a job during the experiment. Simultaneously, program participants were deprived of traditional benefits, including unemployment benefits, social assistance, housing subsidies, student scholarships, etc. However, to ensure that no one ended up "in the red", if the previous payments that a citizen could count on exceeded the amount of the basic income, the state compensated him for the lost amount" (Kvashnin, 2019). In 2016, Switzerland held a referendum on the introduction of an unconditional basic income, but for several reasons, including the fact that the bill was not well thought out by its authors, the idea was supported by just over 20% of the Swiss.

3. In conclusion

The paradox of modern economics is that the economic system of society, like other social systems, was created by people and for people. The rapid progress of science and technology, which set themselves quite noble goals, including ensuring the comfort and safety of human life, at the beginning of the 21st century led to the fact that a person is deprived of a place in the system of production and distribution of resources, is deprived of the opportunity for self-realization and self-identification through labour activity, is deprived of the opportunity to occupy a worthy place of social mobility in the vertical social hierarchy.

Robots, machines, computers, neural networks have no need, no desire to consume. The displacement of people from the economy may lead to another crisis of overproduction, when the goods, products and services produced will not be consumed because the majority of society members will not have the necessary means to do so.

Therefore, politicians and managers should really think about solving this problem. What will it be like: the creation of new areas of human activity, professions, and jobs, but where are the guarantees that robots, machines and AI will not come there too? Unconditional basic income — is it enough to ensure a sufficiently high standard of living? Or should we return to the scientific heritage of K. Marx and nationalize the production means? But private ownership of the means of production is one of the cornerstones of modern Western civilization; will corporate owners agree with this? Now we can say that the outlines of the future problem have already appeared, but there is no adequate solution yet.

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SUSTAINABILITY, GOVERNANCE AND CAPITAL: REALITIES AND RISKS IN THE ESG ERA

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Abstract: *The introduction of Environmental, Social, and Governance (ESG) principles by the United Nations in 2004 marked a pivotal moment in global sustainability efforts, prompting widespread adoption of ESG frameworks within the corporate and investment sectors. ESG investing, which blends financial goals with sustainable values, has gained significant traction, driving innovations in financial products such as green bonds and ESG indices. This shift in investment strategies aligns with the United Nations' Sustainable Development Goals (SDGs) and is reshaping global markets, notably through exchanges like the Eurex Exchange, which launched ESG-focused financial products in response to rising demand. However, the ESG landscape is not without challenges. The lack of a universally accepted definition and the presence of competing ratings systems contribute to confusion and the potential for deceptive practices like greenwashing. Despite these issues, ESG investments continue to grow rapidly, fostering transparency and sustainability practices while posing risks related to unclear performance outcomes. Sustainability management at the company level includes not only environmental impacts but also social and governance dimensions, with strong reputational benefits for firms adopting comprehensive ESG strategies. By addressing interconnected environmental, social, and economic issues, businesses can foster competitive advantage, gain market trust, and contribute to a more sustainable future.*

Keywords: *ESG, Sustainability, Greenwashing, Climate Change*

JEL classification: *Q56, Q54, R11, E71*

1. Introduction

Since the United Nations introduced the concept of environmental, social, and governance (ESG) in 2004, it has quickly become one of the most widespread recognized ways to measure sustainability worldwide. This transition has been driven by increasing pressure from all pushing companies to be more transparent about their ESG performance. But while this has encouraged businesses to improve their sustainability efforts, it has also created enough space for practices that aim to deceive such as greenwashing, value washing and blue washing. These tactics are often used to attract investments or satisfy stakeholder expectations without truly committing to sustainability. Sustainable investing through tools like green bonds and ESG indices is reshaping the way we think about finance in

general. It blends environmental, social, and governance (ESG) values with traditional economic goals, all with the bigger picture in mind: building a more sustainable future. This approach is becoming a key pathway toward achieving the UN's Sustainable Development Goals (SDGs). Around the world, investment in ESG assets is growing rapidly, setting a new trend in financial markets and highlighting the need for smart risk management strategies. One example of this shift is the Eurex Exchange in Frankfurt, Germany. In response to growing interest in ESG-focused financial products, the exchange launched futures based on the STOXX Europe 600 ESG-X Index in February 2019. Thanks to positive market feedback, they followed up with listed options on the same index in October of that year (Kanamura Takashi 2025). According to Aldowaish et.al (2022) sustainability at the company level covers various aspects, like how well products are recycled, sustainability challenges within operations and the strategies and business routines that a company adopts. A company's sustainability reputation plays an important role in how customers perceive it. For example, one study found that a strong commitment to sustainability (like through CSR and ESG practices) positively impacts a company's reputation. Another study highlighted that public awareness pushes companies to develop better sustainability practices. Sustainability within a company is often defined as the ability to adapt to changes and identify opportunities to offer valuable services that are delivered both efficiently and effectively. Achieving this means balancing environmental, social, and economic factors to boost overall efficiency. The key management areas that specifically address sustainability include: corporate strategy, human resource management knowledge and innovation management, performance measurement, independent assurance and disclosure and integrated management systems. It's been suggested that greenwashing occurs when companies lack the knowledge about how to properly integrate sustainability into their daily operations and strategies. Rising concerns about the environment have increased global awareness of sustainability issues, leading to a shift in investment strategies. Traditionally focused on maximizing profits, investors are now looking to support sustainability-focused initiatives. This shift is commonly referred to as Socially Responsible Investing (SRI), which involves integrating environmental, social and governance (ESG) factors into the investment decision-making process. ESG can be broken down into three main areas. Environmental factors assess how a company manages its impact over the environment. Social factors look at how a company interacts with its employees, suppliers, customers, and the communities where it operates. Finally, governance factors focus on a company's leadership structure, executive compensation, internal controls, audits, and shareholder rights. Together, these factors serve as a set of criteria for evaluating companies during the investment screening process.

According to Hartley et.al (2020) in the traditional linear model of industrial production, resources are extracted, processed, consumed, and eventually discarded, which is a process often referred to as the "take-make-dispose" system. Efforts to promote sustainability have primarily focused on the final stage of this process, dealing with waste through management and recycling. While the linear model is deeply entrenched in industrial systems, there's a growing shift among businesses, governments, and researchers to move away from it and adopt a

circular economy (CE) model. The Circular Economy (CE) model not only aims to minimize waste but also encourages reintroducing waste back into production processes. As a result, research on CE policies largely centers around waste treatment, including approaches to eliminating waste from production processes. Key findings from the literature suggest that there are significant opportunities for waste reduction throughout the entire production process and product life cycle. Achieving this requires companies to invest in analysis, industrial reconfiguration, and worker retraining. Another important topic in the literature is the role of government purchasing decisions in advancing CE, particularly in the context of Sustainable Public Procurement (SPP). SPP is seen as a direct way to link policy with practice, and the combination of SPP and CE has been explored from various analytical viewpoints, including surveys and comparisons of different practices.

2. ESG and Sustainable Management

Environmental, social, and governance (ESG) investing faces a well-known challenge in clearly defining what it actually entails. Research has shown that even among funds that are supposed to follow ESG principles, there is significant variation in how specific ESG investment strategies are accounted for. Furthermore, there is a lack of consensus among ESG ratings, which often contradict each other or fail to align closely. Despite the massive scale and rapid growth of ESG investments, there is significant frustration over the uncertainty surrounding its meaning, goals, and performance. This uncertainty introduces a moderate level of risk—if ESG investments fail to meet expectations, it could lead to a large-scale outflow of capital, along with negative environmental consequences. The challenges in defining and managing shared resources are not new. In fact, Nobel Laureate Elinor Ostrom (1990) gained recognition for demonstrating that the prevailing theory of resource management at the time was too limited. This theory, often referred to as the “Tragedy of the Commons,” argued that the absence of private ownership leads to the depletion of shared resources. Initially, this theory was applied to overgrazing by livestock on common lands without clear ownership boundaries, and it was later popularized in an essay on population growth. Ostrom tested the validity of the Tragedy of the Commons theory through field studies in various real-world contexts, including water management programs across different countries. Her findings revealed that, contrary to the theory, the lack of private ownership of common resources did not always lead to mismanagement. Subsequent research has further suggested that the success or failure in managing shared resources is significantly influenced by broader social and technological factors, beyond just the ownership structure of the commons. ESG investing can also be seen as an effort to manage shared common resources. For instance, the environmental component of ESG, the “E” pillar, applies principles of private governance and investment tools to address the impacts of commercial and industrial activities on shared resources like air, land, and water. A key distinction from the problem of managing common resources, as explored in Ostrom’s groundbreaking research, is that there is currently no widely accepted theory of ESG investing that investors can consistently rely on or test for

accuracy and outcomes. As a result, investors, whether institutional or individual, find themselves navigating an uncertain ESG landscape based on loosely defined principles and varying preferences. An equally important issue of definition arises in the form of competing ratings and reporting systems, which claim to offer extreme precision in measuring the impacts of ESG investments—such as reductions in greenhouse gas emissions within the “E” pillar. The precision of emissions estimates may be misleading, with third-party estimates often failing to accurately reflect actual emissions. Even if the estimates were accurate in a specific case, these rating systems do not always align with the core values that drive ESG investing in the first place. It’s perhaps not surprising, then, that while ESG reporting has led to improvements in disclosure practices, tangible performance improvements in the real world have not always followed. The uncertainties surrounding ESG investment are not just theoretical because they have practical implications. Given the size of ESG investments, they play an important role in determining the effective allocation and performance of financial capital. The rapid growth of ESG funds is expected to continue. For instance, ESG fund assets are predicted to represent up to half of all European fund assets under management within the next three years, implying a compound annual growth rate of 28.8% from 2019 to 2025. The Asia-Pacific region is also experiencing rapid growth in ESG-related investments, particularly in fixed-income instruments. For example, the issuance of ESG-labeled bonds originating from the Asia-Pacific region has quadrupled since 2019, reaching over \$24 billion USD. In contrast, the European Union, with its more technically advanced regulatory frameworks, faces both opportunities and challenges as a leader in this space. One such challenge is the need for coordination and harmonization across the region. A notable example is the proposed introduction of a European ESG benchmark label, which would complement the Benchmarks regime introduced in 2018. This initiative aims to enhance the quality of ESG benchmarks and reduce instances of greenwashing (European Securities and Markets Authority, 2022). While the ESG benchmark label offers the EU an opportunity to lead, it also requires careful attention to harmonization, especially as it affects third-party countries that were previously granted a compliance grace period, which is set to expire in 2023. Similarly, ESG regulations in the Asia-Pacific region are developing quickly, though there is considerable variability among the countries involved (Trahan Thomas Ryan, Jantz Brad 2022).

3. Benefits of Implementing Sustainable and ESG Management

Leading for sustainability presents significant challenges, largely due to the complex and interconnected nature of environmental and social issues. The concept of wicked problems is defined as situations where facts are uncertain, values are in conflict, stakes are high, decisions are urgent and a broad community of stakeholders is necessary to resolve the issues such as climate change, biodiversity loss, freshwater depletion, social inequality and food security. Transitioning toward sustainability inherently involves these characteristics, including stakeholder conflicts, ethical dilemmas, and various layers of uncertainty

and interdependence. Addressing these challenges requires leadership frameworks and practices that are geared toward system-level thinking and collaborative actions across multiple boundaries. Alongside environmental sustainability, half of the interviewees highlighted the importance of economic sustainability, while over 40% emphasized social sustainability. Social justice emerged as an important component in the program directors' definitions of sustainability, with terms like "social," "justice," and "equity" being frequently cited. This suggests a clear emphasis on the "triple bottom line" which is about the integration of economic, social and environmental sustainability, as referenced explicitly in 33% of the interviews, complementing the traditional definition of sustainability as outlined by the Brundtland Commission: "meeting the needs of the present without compromising the ability of future generations to meet their own needs." The prominent focus on social justice is noteworthy, considering that most curricula primarily address environmental management and general sustainability concepts, with limited direct focus on social issues. Although, sustainability has the potential to serve as an overarching theme for leadership, programs should encourage thinking and action that go beyond maintaining the status quo and instead focus on concepts such as restoration, resilience, and other transformative approaches. Sustainability can provide a strong foundation for leadership training, particularly if students are inspired to envision a future characterized by ecological, social, and economic prosperity within a steady-state economy. Most individuals are not inherently driven to simply "sustain" and their motivation lies in creating a better world (Shriberg Michael, MacDonald Lindsey).

Regarding the environmental advantages in 2006, the United Nations (UN) introduced the Principles for Responsible Investment (PRI) to address the global demand for a framework that would motivate institutional investors to voluntarily integrate Environmental, Social, and Governance (ESG) factors into their investment strategies and ownership practices. The term "ESG" was first coined in 2004 in the report "Who Cares Wins: Connecting Financial Markets to a Changing World," created by 20 financial institutions in response to a call from Kofi Annan, the UN Secretary-General at the time. The "Environmental (E)" factor primarily focuses on adapting to climate change, encompassing aspects such as resource usage, emissions, recycling, waste management, and greenhouse gas emissions. It also extends to broader environmental concerns, such as biodiversity preservation, pollution prevention, and promoting a circular economy. The "Social (S)" factor addresses issues related to inequality, inclusivity, labor relations, and investment in people and communities. It emphasizes workforce treatment, human rights, product responsibility, and fostering trust and loyalty among stakeholders. Lastly, the "Governance (G)" factor deals with the governance of both public and private institutions, including management structures, employee relations, and executive compensation. This factor is crucial in ensuring the integration of social and environmental considerations into decision-making processes while adhering to best-practice corporate governance standards. Companies that prioritize ESG principles may benefit from improved access to capital and reduced borrowing costs, largely due to their strong reputation. Investors and partners across the value chain are increasingly drawn to companies with robust ESG performance. As a result, these companies often find it easier to secure funding, negotiate favorable

loan terms, and enjoy lower interest rates. Also, companies with a solid reputation are viewed as less risky compared to those with similar financial performance but weaker reputations. ESG initiatives help build trust between investors and managers, reducing information asymmetry and lowering adverse selection costs when raising equity. Additionally, companies excelling in ESG performance often attract more media attention and appeal to socially conscious investors. Additionally, being part of networks boosts a firm's ability to identify and create innovative opportunities that might otherwise be overlooked. As a result, enhanced innovation performance and the benefits of social capital lead to structural changes within the firm that support a sustainable competitive advantage. The concept of competitive advantage refers to the distinct resources, capabilities, qualities or strategic positioning that allow companies to outperform their competitors in the marketplace. Achieving a competitive advantage is crucial for firms, as research has demonstrated its strong correlation with several favorable outcomes (Cerviño Cabaleiro Goretti, Mendi Pedro).

4. Conclusion

The rapid growth of ESG investing reflects a shift in both the financial and corporate landscapes, where sustainability is increasingly intertwined with economic decision-making. Although the framework offers promising benefits, particularly in promoting transparency and encouraging better corporate practices, the current state of ESG investments is fraught with challenges, including the lack of consistent definitions and the risk of misleading claims. The adoption of ESG principles by companies leads not only to environmental benefits, such as waste reduction and resource conservation, but also enhances social outcomes through improved labor relations and community engagement. Furthermore, companies integrating ESG factors into their operations often experience better access to capital, lower borrowing costs, and enhanced reputations, leading to a competitive advantage. While the path toward widespread ESG integration remains complex, the continued expansion of ESG-focused financial products and the growing awareness of sustainability issues offer a promising framework for achieving both business success and global environmental goals. To fully realize the potential of ESG investments, however, a more standardized approach is needed to reduce uncertainty, promote accountability, and mitigate the risks of greenwashing.

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A BIBLIOMETRIC ANALYSIS OF ENTREPRENEURIAL ECOSYSTEMS FROM A SYSTEMS THINKING PERSPECTIVE

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Abstract: *This paper explores the integration of systems thinking into the study of entrepreneurial ecosystems (EEs), which are conceptualized as complex and adaptive environments comprising interdependent actors and contextual conditions that influence entrepreneurial activity within specific regions. The central research question addresses how systems thinking can deepen our understanding of the structure, dynamics, and evolution of EEs. To answer this, the study adopts a quantitative and empirical approach through a bibliometric analysis of over 1,500 peer-reviewed articles indexed in the Scopus database. The data was processed using Biblioshiny, a web-based interface of the R-based Bibliometrix package, which enabled the mapping of the intellectual structure of the field, including key trends, thematic clusters, co-authorship patterns, and citation networks. The findings reveal a marked increase in scholarly attention toward systemic approaches to entrepreneurship, especially in the past five years. Thematic analysis shows that topics such as innovation, sustainability, and institutional policy frameworks have gained significant prominence. Additionally, co-word analysis highlights the evolving conceptual landscape and the emergence of two dominant research streams: one focused on policy and regional development, and the other on entrepreneurial behaviour and firm strategy. Despite the growing body of work, the field remains fragmented, with a lack of unified theoretical frameworks and limited interdisciplinary integration. This study contributes by emphasizing the relevance of systemic thinking as a holistic analytical lens that captures feedback loops, adaptation, and co-evolution within entrepreneurial ecosystems. These insights are valuable for researchers aiming to build more integrative theories and for policymakers seeking to design resilient and effective support structures for regional entrepreneurship. Ultimately, the research demonstrates that adopting a systems thinking perspective is essential for advancing both academic and practical approaches to entrepreneurship in an increasingly complex global environment.*

Keywords: *entrepreneurial ecosystems; systems thinking; bibliometric analysis; economic development*

JEL Classification: L26; M13; O31; M20

1. Introduction

In recent years, entrepreneurial ecosystems have become a focal point in economic and innovation research, being regarded as essential drivers of sustainable development, job creation, and technological progress (Thai, Mai and Do, 2023). Scholarly sources highlight that entrepreneurial ecosystems (EEs) encompass interconnected element - such as infrastructure, institutions, and cultural norms - and key participants within a defined region, including entrepreneurs, investors, universities, and government bodies, which together influence and shape entrepreneurial activities (e.g., Cavallo, Ghezzi and Balocco, 2019). Due to the dynamic and multifaceted nature of entrepreneurial ecosystems (EEs), research highlights the need for a comprehensive framework capable of capturing the complex interactions among stakeholders, institutions, resources, and policies (Vince et al., 2024). Systemic thinking provides a framework that recognizes behaviors as stemming from structures, values self-organization, and acknowledges emergent properties arising from the interactions and relationships among individual components in a system, rather than being inherent to any single component alone (Monat and Gannon, 2015).

Despite the growing body of literature on EEs (Cavallo, Ghezzi and Balocco, 2019; Thai, Mai and Do, 2023), research remains fragmented, and a coherent understanding of the systemic interconnections within these ecosystems is still emerging. This creates a need for analytical approaches that can synthesize existing knowledge, identify dominant research themes, and highlight theoretical gaps. In this context, bibliometric analysis serves as a powerful tool to quantitatively map the evolution of research, uncovering influential contributors, thematic clusters, and the trajectory of scholarly attention over time (Ghorbani, 2024).

The primary objective of this study is to explore how systemic thinking has been integrated into the study of entrepreneurial ecosystems, using a bibliometric approach. Specifically, the analysis seeks to identify publication trends, thematic developments, collaboration networks, and citation patterns within the academic discourse on EEs. Moreover, it examines the extent to which the systemic perspective has shaped the understanding of entrepreneurial ecosystems, and the challenges faced in consolidating this approach.

The research methodology involves the use of bibliometric analysis techniques, applied to a dataset of over 1,500 scientific articles indexed in Scopus. The data was processed using Biblioshiny, part of the R-based Bibliometrix package, to generate insights into author influence, keyword co-occurrence, and the structural evolution of the research field.

Systemic thinking inherently implies an interdisciplinary orientation, combining insights from economics, management, public policy, and innovation studies (Roundy, Bradshaw, and Brockman, 2018). This interdisciplinary lens not only enriches the analysis of EEs but also supports the development of integrated frameworks capable of addressing the complexity and diversity of entrepreneurial environments (Mason & Brown, 2014).

The structure of this paper is organized as follows: the first section provides a conceptual overview of entrepreneurial ecosystems and the systemic thinking perspective; the second outlines the bibliometric methodology used in the study,

including data sources and analytical tools; the third presents the results of the bibliometric analysis, highlighting publication trends, collaboration networks, thematic areas, and research challenges.

2. Literature Review

The concept of entrepreneurial ecosystems has been widely explored to understand how different economic entities (start-ups, investors, universities, and governments) interact and shape the entrepreneurial environment. Isenberg (2010) emphasizes that a well-functioning EE requires access to funding, support infrastructure, and conducive economic policies. Stam (2015) highlights that EEs function based on a combination of local resources, relationships, and policy frameworks. Pitelis (2012) supports the view that EEs should be analyzed as co-creation processes between economic actors and institutions.

System thinking has emerged as a crucial methodology for analyzing EEs by focusing on interdependencies between components. Stam (2015) suggests that EEs should be viewed as complex adaptive systems, where regional success depends on actors' interactions and support structures. Spigel (2017) indicates that the relational structure of an EE directly impacts innovation and value creation. Similarly, Roundy, Bradshaw, and Brockman (2018) demonstrate that EEs behave as adaptive ecosystems, where knowledge transfer and co-innovation play key roles in economic development.

Entrepreneurial ecosystems are dynamic networks of interconnected stakeholders—including entrepreneurs, investors, academic institutions, policymakers, and support organizations—that collectively influence the development and sustainability of entrepreneurship within a given region (Isenberg, 2011). These ecosystems serve as complex environments where businesses emerge, scale, and adapt, driven by the availability of resources, supportive institutions, and collaborative relationships (Stam, 2015).

A key distinction within entrepreneurial ecosystems is between tangible resources, such as financial infrastructure, regulatory frameworks, and physical assets, and intangible enablers, including knowledge diffusion, cultural attitudes, and trust-based networks (Spigel, 2017). The interaction of these elements creates an adaptive system that evolves over time, shaped by policy interventions, technological advancements, and market dynamics (Autio et al., 2018).

From a systemic thinking perspective, entrepreneurial ecosystems are not static structures but rather fluid, nonlinear systems characterized by interdependencies and feedback loops. Mason and Brown (2014) highlight that entrepreneurial success is not solely the result of isolated efforts but emerges through a combination of resource accessibility, mentorship, and collaborative synergies within the ecosystem.

A Systemic Entrepreneurial Ecosystem Model (SEEM) integrates different components—human capital, innovation drivers, financial mechanisms, and institutional frameworks—into a holistic framework that enhances business sustainability. This model emphasizes the importance of knowledge-sharing

platforms, structured policy support, and strategic collaborations to reinforce the long-term growth of entrepreneurial ventures (Acs et al., 2017).

The effectiveness of an entrepreneurial ecosystem is highly dependent on its adaptability to external factors, including shifts in global markets, changes in regulatory landscapes, and technological disruptions. As a result, aligning local entrepreneurial strategies with broader economic and social trends is crucial for ensuring resilience, long-term impact, and competitiveness in an ever-evolving business environment (Feld, 2012).

3. Methodology

This study uses a bibliometric analysis to analyze the evolution, structure, and thematic dynamics of the academic literature on entrepreneurial ecosystems (EEs) through the lens of systemic thinking. Bibliometric methods offer a quantitative approach to mapping scientific production, allowing for the identification of influential works, collaboration networks, research hotspots, and emerging trends within a specific field.

The dataset was compiled from the Scopus database, chosen for its comprehensive coverage of peer-reviewed literature across multiple disciplines. A total of 1,515 relevant articles were selected based on a refined search strategy, focusing on the period 2006–2025. The search was conducted using a set of carefully selected keywords, including "Entrepreneurial Ecosystems," "Systemic Thinking," "Entrepreneurship," and "Artificial Intelligence", targeting the titles, abstracts, and keywords fields to maximize the relevance and coverage of the dataset.

The distribution of publications reveals an increasing scholarly interest in the subject, with a notable concentration of papers published in recent years: 302 articles in 2024, 215 in 2023, and 225 in 2022. This upward trend suggests a growing recognition of the complexity of entrepreneurial environments and the necessity of systemic approaches to their analysis and development.

The analysis was carried out using Biblioshiny, the web-based interface of the Bibliometrix R package (Ghorbani, 2024), a widely adopted tool in scientometric research. Biblioshiny allows for the interactive visualization and statistical analysis of bibliographic data, supporting both descriptive and network-based methodologies.

The study focused on several key bibliometric indicators: Author influence and productivity, including metrics such as H-index and total citations; Source impact, highlighting the most prolific journals in the field; Citation network analysis, to map the intellectual structure and identify key publications; Thematic evolution and co-word analysis, to uncover clusters of concepts and their development over time.

The dataset includes publications from some of the most reputable journals in entrepreneurship and innovation studies, such as:

Journal of Business Venturing (72 articles, highest citation density in EE research), Entrepreneurship Theory and Practice (50 articles),

Small Business Economics (40 articles), Journal of Technology Transfer (36 articles),

Technological Forecasting & Social Change (32 articles).

These sources contribute significantly to shaping the theoretical and empirical discourse on entrepreneurial ecosystems, particularly in relation to innovation systems, firm dynamics, and policy frameworks.

A key insight from the citation analysis is that the citation distribution follows a power law: a small number of publications receive a disproportionately high number of citations, while the majority of articles exhibit low citation counts. This reflects a common phenomenon in scientific literature, where seminal works act as conceptual anchors for the field (Mason & Brown, 2014).

Beyond citation metrics, the study applies co-word analysis to identify thematic clusters and the conceptual landscape of the field. This technique is instrumental in mapping the semantic proximity between recurring keywords, enabling the detection of research fronts and emerging topics. The results of this analysis are later visualized in the form of co-occurrence networks (see Figure 4), offering a graphical representation of how terms such as entrepreneurship, ecosystem and innovation, interrelate and shape the evolution of the field.

Through this multi-dimensional bibliometric approach, the study provides a comprehensive and data-driven overview of how entrepreneurial ecosystems are conceptualized and analyzed in contemporary scholarship, offering a foundation for deeper theoretical reflection and future research development.

4. Results

The bibliometric analysis provided valuable insights into the evolution of research on entrepreneurial ecosystems from a systemic thinking perspective. The study examined publication trends, key contributors, thematic clusters, and citation patterns, offering a comprehensive overview of the academic landscape in this field. The analysis revealed a significant increase in publications related to entrepreneurial ecosystems and systemic thinking over the past decade. The annual growth rate of publications has accelerated, particularly in the last five years, indicating a rising interest in understanding entrepreneurship through a systemic lens.

A closer examination of the time distribution of articles shows that early studies focused primarily on defining entrepreneurial ecosystems and their components, while more recent works emphasize dynamic interactions, adaptive capacities, and resilience mechanisms within these systems. The increasing number of collaborative international studies suggests that entrepreneurial ecosystem research is transitioning into a globally interconnected field of study.

Citation metrics highlight the most influential publications in the field, with the highest citation counts found among foundational studies on entrepreneurial ecosystems. However, the average citation rate per article has declined in recent years, likely due to an expansion in the number of published papers, leading to a more fragmented citation distribution.

The analysis of journal impact factors indicates that high-quality research on entrepreneurial ecosystems and systemic thinking is primarily published in journals

specializing in entrepreneurship, innovation, and regional development. Figure 1 illustrates the annual growth of publications in this research field.

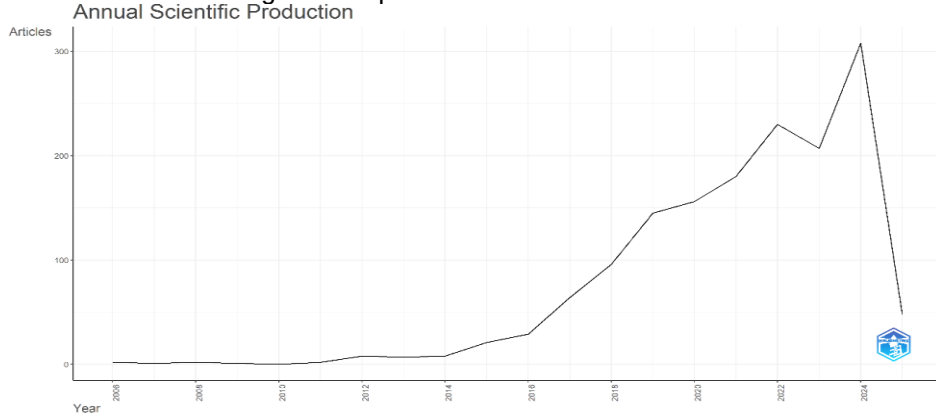


Figure 1: Evolution of Publications on Entrepreneurial Ecosystems (2006- 2025)

Source: Author's analysis /processing based on own data

This exponential growth trend—particularly in the last five years—demonstrates the increasing relevance of the entrepreneurial ecosystem perspective in both theoretical and applied research. The integration of concepts like systemic thinking, innovation, and resilience has broadened the scope of the field, attracting contributions from diverse disciplines such as economics, management, public policy, and regional development.

2006–2015: The field experienced a relatively low and stable volume of publications, suggesting that entrepreneurial ecosystems were still an emerging concept with limited theoretical consolidation.

2016–2021: A steady increase becomes visible, indicating the gradual recognition of the ecosystem approach as a valuable framework for understanding entrepreneurship in complex environments.

2022–2024: The most substantial growth occurs in this period, peaking in 2024 with over 300 articles, which confirms a strong surge of academic interest, possibly fueled by the integration of systemic thinking and the growing complexity of entrepreneurial challenges in the post-pandemic era.

2025 (incomplete): The sharp drop in publications visible in 2025 is not indicative of a real decline, but rather reflects the incomplete nature of the current publication year. As data collection was likely conducted early in the year, this trend is expected to normalize once the annual publishing cycle is complete.

The upward trajectory in publication volume is also aligned with global trends emphasizing cross-sectoral collaboration, digital transformation, and sustainable development goals (SDGs), all of which are deeply embedded in ecosystemic approaches to entrepreneurship.

Among the most frequently occurring keywords in EE research, the following stand out:

- Entrepreneurship (540 occurrences)
- Entrepreneurial ecosystem (460 occurrences)
- Entrepreneurial ecosystems (320 occurrences)
- Innovation (178 occurrences)
- Ecosystem (118 occurrences)

These terms emphasize the interdisciplinary nature of the field, integrating business, economics, and policy studies. Figure 2 illustrates the collaboration networks among authors, highlighting leading researchers and institutional partnerships.

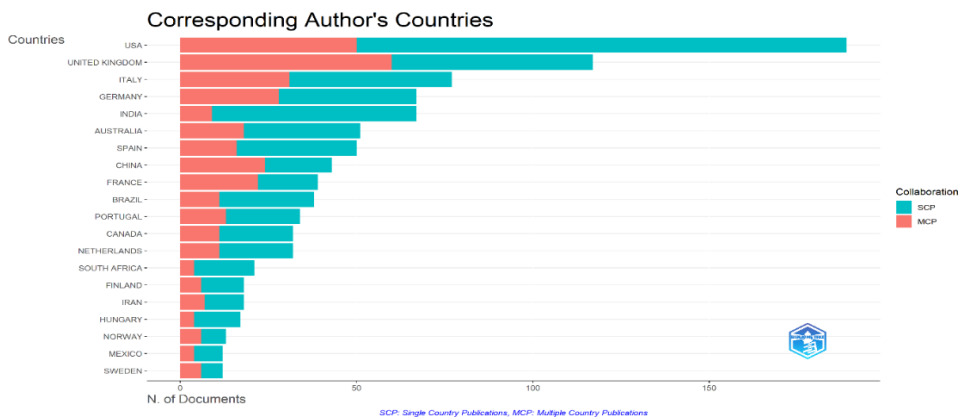


Figure 2: Collaboration Network among Authors in Entrepreneurial Ecosystem Research

Source: Author's analysis /processing based on own data

Figure 2 presents the country-level distribution of publications in the field of entrepreneurial ecosystems and systemic thinking, based on the affiliation of the corresponding authors. The chart differentiates between: SCP (Single Country Publications) — articles written by authors from the same country.

MCP (Multiple Country Publications) — articles written in international collaboration. The United States dominates the field, with the highest number of publications, most of which are produced in international collaboration. This suggests that U.S.- based researchers are central to the global knowledge network on entrepreneurial ecosystems.

The United Kingdom follows, also with a high proportion of MCPs, reinforcing its role as a key global player in collaborative entrepreneurship research.

Italy, Germany, and India exhibit relatively high research activity, but Italy and Germany show stronger international engagement than India, which tends to favor domestic (SCP) production.

Countries such as Australia, Spain, France, China, and Brazil also contribute significantly, but with varying degrees of internationalization.

The presence of countries like South Africa, Mexico, Hungary, and Iran demonstrates the geographical expansion of this research field beyond traditional academic hubs, albeit with a more limited volume.

The high proportion of Multiple Country Publications (MCPs) among leading countries reflects a strong international orientation in entrepreneurial ecosystem research. This is consistent with the systemic nature of the concept, which inherently involves cross-border learning, global innovation flows, and comparative institutional analysis.

Countries that combine high publication volume with high MCP ratios (such as the USA, UK, and Germany) tend to serve as nodes of international research collaboration, facilitating knowledge diffusion and network building across regions. Conversely, countries with a higher concentration of Single Country Publications may benefit from more active participation in global research networks, particularly in emerging economies where local ecosystems are rapidly evolving but remain underrepresented in international discourse.

Additionally, thematic analysis shows a shift towards integrating sustainability principles into EEs, as highlighted in recent literature (Mason & Brown, 2014). Figure 3 presents the most frequently used keywords, emphasizing research focal points.

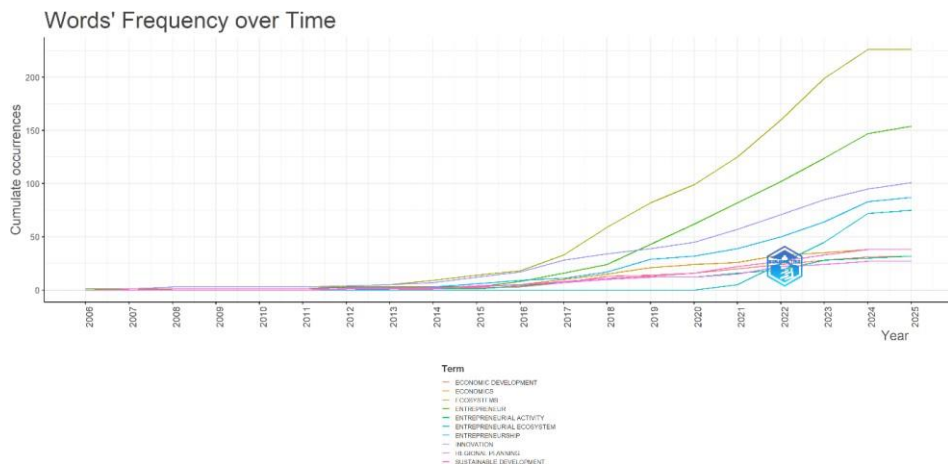


Figure 3: Most Frequent Keywords in Entrepreneurial Ecosystem Research

Source: Author's analysis /processing based on own data

Figure 3 illustrates the cumulative frequency of selected keywords used in the literature on entrepreneurial ecosystems and systemic thinking between 2006 and 2025. This visualization allows for an understanding of how certain concepts have

evolved in prominence over time, revealing thematic shifts and emerging research priorities.

The term “entrepreneurship” dominates the chart, showing a steady rise starting around 2010, with a sharp increase between 2020 and 2023, indicating its central role in academic discourse. Closely following is “innovation”, which exhibits a similar trajectory, reflecting the strong conceptual link between innovation and entrepreneurship in recent studies. Notably, the term “entrepreneurial ecosystem” begins to gain traction around 2015, growing rapidly in subsequent years. This signals the emergence and consolidation of the ecosystem approach as a major theoretical and analytical framework in the field. The term “ecosystem” also shows increasing frequency, often used either as a standalone concept or in combination with entrepreneurship.

Other relevant terms such as “entrepreneurial activity”, “sustainable development”, and “economic development” demonstrate more moderate yet consistent growth, suggesting their continued relevance as part of the broader discourse. Conversely, more traditional terms like “economics” appear less frequently in recent years, indicating a possible shift from classical economic frameworks toward more interdisciplinary and systemic paradigms.

Despite its growing prominence, the field of entrepreneurial ecosystems continues to face several conceptual and methodological challenges that hinder the consolidation of a cohesive research agenda:

Lack of a Unified Theoretical Framework: A wide array of models defines entrepreneurial ecosystems in different ways, leading to conceptual ambiguity and limited comparability across studies. This theoretical plurality, while enriching, also complicates the development of standardized analytical approaches (Isenberg, 2010; Stam, 2015).

Context-Specific Adaptability: Existing ecosystem models often struggle to capture regional and cultural variations. The application of general frameworks to diverse entrepreneurial contexts can result in limited policy relevance and poor scalability, especially in emerging economies or underrepresented geographic regions (Pitelis, 2012).

Fragmentation of Research Output: As illustrated in Figure 4, the growing volume of academic publications has not been matched by a proportional increase in citation impact, suggesting potential saturation or dispersion of knowledge. The network structure also reveals the presence of two main thematic clusters: one focused on ecosystem-level and policy-driven approaches, and the other on firm-level strategies and entrepreneurial behavior. While these clusters share some common terminology, their limited overlap highlights a fragmentation in the literature and the need for stronger interdisciplinary integration.

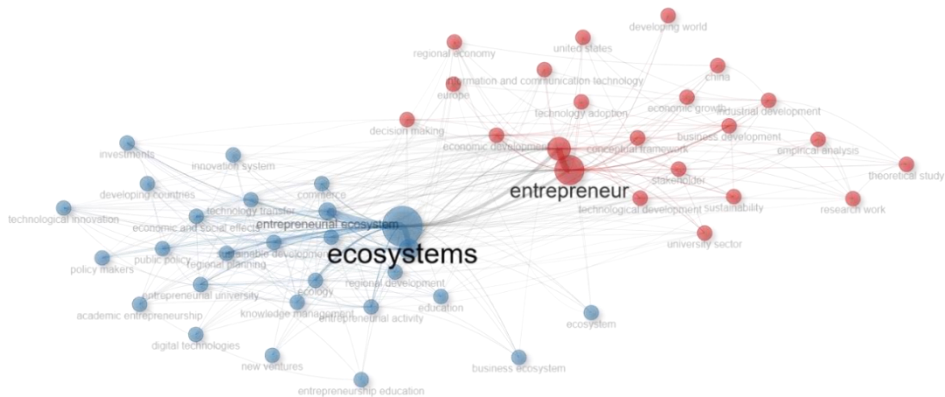


Figure 4: Keyword Co-occurrence Network

Source: Author's analysis /processing based on own data

The keyword co-occurrence network generated through Biblioshiny reveals two major thematic clusters within the academic literature on entrepreneurial ecosystems and systemic thinking. These clusters, visualized through color-coded communities (red and blue), illustrate the dominant research directions and their interrelationships.

The blue cluster, anchored around the term “entrepreneurial ecosystem”, reflects a systemic and policy-oriented approach. Keywords such as innovation, sustainability, governance, policy, and value creation suggest a strong focus on the institutional and infrastructural dimensions that support entrepreneurial activity. This cluster emphasizes the ecosystem as an enabling environment shaped by external factors, including policy frameworks, regional development strategies, and innovation ecosystems.

The red cluster, centered on the term “entrepreneurship”, represents a more organizational and behavioral perspective. Closely associated terms like entrepreneurial orientation, strategy, performance, and business models point to a micro-level analysis of entrepreneurial behavior, decision-making, and growth dynamics. This strand of research investigates how firms and individual entrepreneurs operate within or influence the broader ecosystem.

The structure of the network demonstrates that while these two clusters are thematically distinct, they are not isolated. Bridging terms such as entrepreneurship, ecosystem, and innovation form the connective tissue between them, indicating that current research increasingly embraces interdisciplinary perspectives. The network thus underscores the relevance of systemic thinking as a unifying framework capable of integrating structural, strategic, and institutional elements of entrepreneurial ecosystems.

5. Conclusions

This bibliometric analysis confirms the growing significance of systemic thinking in the study of entrepreneurial ecosystems. The findings highlight a steady and notable increase in academic interest in this field, especially over the past decade, reflecting a broader recognition of the complexity and interconnectivity that characterize entrepreneurial environments.

Through the identification of key trends, influential authors, collaborative networks, and thematic clusters, this study demonstrates how the integration of systemic thinking offers valuable insights into the dynamic structure and functioning of entrepreneurial ecosystems. The bibliometric evidence also underlines the fragmented nature of the field and the lack of a unified theoretical framework, which continues to challenge researchers and policymakers alike.

Moreover, the analysis reveals important disparities in the citation impact of publications, suggesting an uneven consolidation of knowledge. While certain foundational works continue to shape the discourse, the growing volume of literature calls for more synthesis, theory-building, and cross-disciplinary integration.

Going forward, research should focus on developing scalable and adaptable ecosystem models that can be applied across diverse regional and institutional contexts. Greater emphasis should be placed on the relational and adaptive nature of EEs, integrating perspectives from innovation studies, complexity theory, and public policy.

In conclusion, the systemic approach not only enhances the understanding of entrepreneurial ecosystems but also provides a solid foundation for designing more effective strategies, both in academic research and policy implementation. Future work should aim to bridge existing gaps by fostering interdisciplinary dialogue and constructing robust analytical models capable of guiding entrepreneurial growth in a rapidly changing global environment.

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ADAPTING THE PROFIT AND LOSS REPORT BY BUSINESS LINES IN ROMANIAN ACCOUNTING

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Abstract: *In this paper we will present the creation of indicators used in the economic and financial analysis of the company based on the existing data in the company's accounting. More precisely, we have proposed the possibility of analyzing the company's activity on business lines, and within each business line we will have expenses and revenues distributed so that the profitability of each business line will be calculated and not only of the company's activity as a whole. The use of such a mechanism allows us a more detailed analysis and the possibility of identifying problems more accurately when they arise. We set out to translate the Profit and Loss (P&L) report into business lines.*

Keywords: *P&L, business lines.*

JEL Classification: *L86*

1. Introduction

“A profit and loss statement (P&L), or income statement or statement of operations, is a financial report that provides a summary of a company's revenues, expenses, and profits/losses over a given period of time. The P&L statement shows a company's ability to generate sales, manage expenses, and create profits.” (Vipond, 2025)

“A profit and loss statement is a financial report that shows how much your business has spent and earned over a specified time.” (-, 2025)

This type of report is a very useful report especially for people who do not have accounting experience and do not know or it is too difficult to interpret a balance. The report essentially does nothing more than collect the data from the balance sheet and reinterpret it on various predefined activities that the company may have. A P&L report contains several clearly defined chapters of income and expenses transposed so that they will be much easier for management to interpret. The main chapters are as follows: Revenue, Cost of Goods Sold, Selling, General & Administrative Expenses, Marketing and Advertising, Technology/Research & Development, Interest Expense, Taxes, Net Income. (Vipond, 2025)

2. Purpose of study and research

This paper will present a case study. During this research we analyzed different situations within company and employees and client's needs.

After a preliminary study, the following requirements are defined that a system must fulfill in order to make the entire activity more efficient.

Sales of goods must be divided by business lines and the Selling chapter.

Expenses for goods sold must be divided by business lines and the Cost of Goods Sold chapter.

Various expenses incurred at the management level must be recorded by business lines and expense chapters.

Depreciation of fixed assets must be divided by business lines and chapters.

Various expenses and revenues recorded at the accounting level must be divided by business lines.

Salaries must be divided by business lines.

All the operations performed at the inventory management system should be reflected in the accounting on business line and chapters.

P&L Statement	Business Line 1		Business Line n
Sales Revenue Sales Discounts Cost of goods Rents Insurance Marketing Job expenses Other Expenses ... Other Incomes			
Profit or Loss			

Fig. 1 P&L on business line

3. Requirements analysis and concept realization

Since all operations at the management level are reflected in accounting, it is necessary to start with the accounting part. One identified issue was the ability to operate accounting entries or to intervene on existing accounting entries and to try to minimize intervention. Accounting in Romania is organized on a double-entry basis, which means that an accounting entry has two accounts, one on the debit side and the other on the credit side, and a value that influences both accounts.

3.1. Accounting

We started from simulating several cases of organizing accounting data in order to measure the operator's adaptability to given situations such as:

- Placing a business line and an expense chapter next to an accounting note.
- Placing two lines of business and a finite number of chapters next to an accounting note.
- Placing next to an accounting entry any line of business or expense chapters

In the similarities that followed with the first method, in which a line of business or a chapter from the ones mentioned earlier can be selected next to an accounting entry, it was found that the operator's workload nearly doubles because each accounting entry would need to be turned into multiple accounting entries to allow for the correct distribution of values.

The existence of particular cases which occur in our simulations, in which the same expense can be allocated to multiple chapters demonstrated the limitations of the second approach.

We followed the third method (generalization), the one with the highest degree of adaptability, which has proven capable of modeling all the encountered cases. Since next to each accounting entry we have a value, this value had to be allocated across different business lines and chapters.

Value or percentage? What should we use in the context of a distribution? These are the questions we had to answer.

If a value had been chosen for a line of business, any change in the value of an accounting item would require intervention on each distribution to adjust the value there, which would be a disadvantage in the case of a large volume of changes. The second option, namely placing a percentage next to a distribution, allows for changes made to the value of the accounting item without needing to intervene on already made distributions. We chose the second option, namely to use a percentage.

Since the profit and loss statement should be represented in the form of a table as can be seen in Figure 1, through the intersection of business lines and various chapters, it is necessary to have two groups of allocations, namely:

- The group of business lines
- The group of chapters

Each group will be composed of distinct categories either from lines of business or from the chapters of the P&L report.

In order to have allocations related to the debit account or the credit account, or both, it was decided to introduce two columns with percentages, one for debit and one for credit. To increase the accuracy of the data, restrictions were imposed so that the sum of the percentages on the debit, respectively the sum of the percentages on the credit, should equal 1 within each allocation group, meaning that the value should be distributed in a proportion of 100%.

3.2. Fixed Assets

Part of the expenses that contribute to the creation of the P&L report is represented by fixed assets, specifically their depreciation. Therefore, the expenses generated by these will need to be allocated to business lines and to chapters in the P&L. Of course, these expenses are recorded in accounting, and there we can make allocations. In this case, we wanted to optimize the operation of depreciation by creating allocations at the level of each fixed asset, with these allocations being done only once. Moreover, it was desired that based on these allocations, accounting entries with the corresponding allocations can be generated. Exceptional cases where changes in allocations are desired can be resolved directly at the accounting level through the mechanisms already created. Since the expenses related to fixed assets belong to a single chapter in the P&L, it will only be necessary to allocate them to business lines.

3.3. Goods

Goods are analyzed in the P&L report from several perspectives, namely: the revenues we obtain from their sale, the expenses related to the sale of goods, and the discounts we have granted.

Through the revenues obtained, we will understand the operations at the management level that influence my income accounts. In Romanian accounting, the income accounts are influenced by the documents Invoice and Notice issued to the client. The invoice issued based on the notice does not affect our revenues. Since the revenues related to goods go directly into the Goods Revenue section, the distribution of these revenues will be realized only on the lines of business.

The expenses related to goods are calculated based on the management method used by carrying out the management discharge. Of course, there are expenses generated by the management discharge produced by their sales, but there are also other types of expenses that are recorded at the management level with the help of documents such as consumption receipts, inventory shortages, etc. Regardless of their type, for goods, there are specific chapters to which they must be allocated in the P&L such as Cost of Goods. Similarly to revenues, these can only be allocated by lines of business.

Just like the revenues from the sale of goods, discounts appear on the delivery documents and will need to be allocated only to business lines.

We observe that all three types of information need to be allocated only to business lines. Another observation is that all three types of values are allocated together to the same business line. The expense and the revenue generated by a product on a delivery document can be allocated to a business line. Of course, there may be practical situations where all products on a document are allocated to the same business line, but there may also be situations where different products influence different business lines. To achieve generality, we can allocate business lines to products in the product catalog for informational purposes, and these allocations will turn into actual allocations when the products appear on documents. The operation of the Invoice and Delivery Note documents is done at the management level.

3.4. Database modeling and modification of some processes

It was necessary to create entities for the registration of business lines and the corresponding P&L chapters. These entities can be used within distribution groups. Within a group, we must have entities of the same type. It was necessary to create allocation mechanisms for chapters and business lines at the level of fixed assets, at the level of the product catalog, at the level of the partner catalog. It was necessary to create distribution mechanisms at the level of accounting notes and to intervene in the process of interpreting the documents recorded at the management level.

As can be seen in fig.2, it was necessary to create a table called Entities used for recording the lines of business and the chapters from the P&L. Each line of business or chapter will be recorded in this table as a record, having a unique identifier.

Next to each accounting entry, because we need to make distributions as I explained, it was necessary to create another table called AccountDistribution. In this table, each distribution will be a record for which the accounting entry it belongs to, the line of business or chapter in the P&L, the group it belongs to, and the percentage associated with the value of the accounting entry will be specified. The allocation of business lines for assets will be done through an adjacent table called Assets Distribution. For each asset, multiple business lines and a percentage can be specified.

The allocation of business lines for the products in the product catalog can be done directly on the product, as in the modeled situations a product belongs to a single business line. This allocation can be done directly in the Products table.

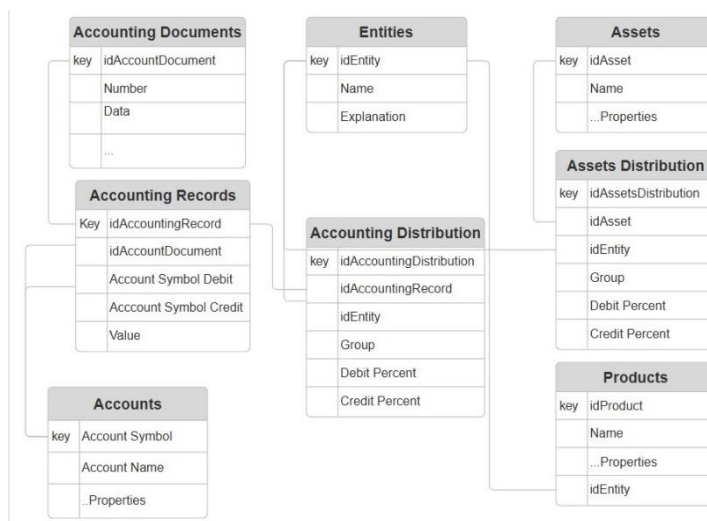


Fig. 2 A part of the database models
Source: Author

3.5. Report creation

Since the data is stored in a relational database maintained in Microsoft SQL Server, the idea was to create the report directly within it, through a stored procedure, as there is the possibility to interact with the data either through an SSRS Report or through a direct connection to the database from Excel.

In order to perform the calculations, we will take the following distribution of expenses as an example.

Debit	Credit	Value	601	=	301	Chapter	Percent	Group
1000						BL1	0.51	
						BL2	0.21	
						BL3	0.31	
						Cost of Goods	1	2

Fig 3. Distribution of expenses by centers

Source: Author

P&L Statement	Business Line 1	Business Line 1	Business Line 3
Cost of goods	$1000 \cdot 0.5 \cdot 1 = 500$	$1000 \cdot 0.2 \cdot 1 = 200$	$1000 \cdot 0.3 \cdot 1 = 300$

Source: Author

The calculation can be made for a rubric by multiplying the value of the accounting note by the percentage of the business line and the percentage of the chapter from the P&L. It can be observed how the total value of 1000 lei has been distributed over the three business lines.

A problem identified in creating this report is that there are situations where the distribution of some expenses across the P&L chapters is overlooked. There arose a need to signal expenses or revenues that had not been distributed or for which there were partial distributions. The result of this report must also be identical to the result obtained by closing the revenue and expense accounts. It was necessary to compare and signal the differences between the result of the report and the accounting result to identify any possible errors in the simplest way possible.

Also, in order to identify certain accounting or allocation errors, I created a section next to each item that signals all the accounts that have been taken into account for that respective item.

We had to take into account the type of accounts such that an active account located on the debit side will have a value with the same sign calculated in the report, however, if the same account appears on the credit side, its value will change sign. The same happened in the case of passive accounts, which if they appear on the credit side, the distributed value retains its sign, and when it appears on the debit side, the sign will change.

We create this report in Excel, and it has four sheets, one for defining the period on which the report has to be created, one sheet for the report itself, one sheet for

specifying which cell should be verified, and the last sheet which shows data taken into consideration for those values. The report looks like in the image bellow

[illegible]

Fig. 3 Sheet for defining period
Source: Author

ArCrt	Chapter	Chapters	BL1	BL2	Total	Account list
7	Cheltuieli directe	Cost of goods	750000	150000	900000	607,711,609
8	Cheltuieli directe	Salary expenses	25000	15000	40000	641,6461

Fig.4 Chapters of P&L distributed on different business line
Source: Author

	A	B	C	D
2	Line		74	
3	Column	BL1		
4				
5				
6	Verification Data			
7				
8				

Fig 5. Verification data based on user selection
Source: Author

As can be seen from the previous figure, the user has the ability to check the expense component for any existing cell in the report. This feature exists in pivoted Excel reports, but in this case, due to the large volume of data involved in generating a report (over 100,000 records), the data arrives in the P&L report already generated, consisting of up to 100 or even 200 records. The report does not use pivoting. This way, we have reduced the data traffic between the server and the client, with the report being directly connected to the database. If there is a need to analyze a cell, we will only generate the data corresponding to that cell.

Through restrictions, checks, and flagging of unallocated accounts and accounting notes, the time required to correct the allocations made was reduced.

4. Conclusions

In order to have allocations related to the debit account or the credit account, or both, it was decided to introduce two columns with percentages, one for debit and one for credit.

To increase the accuracy of the data, restrictions were imposed so that the sum of the percentages on the debit, respectively the sum of the percentages on the credit, should equal 1 within each allocation group, meaning that the value should be distributed in a proportion of 100%.

It was necessary to create allocations for fixed assets or products, these allocations aimed to achieve automatic distributions at the time of creating the accounting entries related to them.

The report should contain a section signaling the accounts that participated under a specific heading.

The report should include a section signaling the accounts and amounts that have not been distributed for easy identification of distribution issues.

The report should contain a verification section through which all accounting entries and the calculation method for a cell within it will be displayed.

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LEADERSHIP SUCCESSION IN THE NORTHERN GREAT PLAIN REGION - RESULTS OF A PILOT STUDY

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Abstract: *The aim of this study is to explore how the issue of leadership succession is evolving in the North Great Plain region among NGOs working with ageing populations. The research primarily examines current practices in filling leadership positions, organisational attitudes towards succession, and factors that hinder or facilitate organisational continuity. The study was carried out in the framework of a pilot study using quantitative methodological elements. The research instrument was a structured questionnaire, which was completed by a purposive sampling involving a total of 14 pensioner organisations. The research results show that, although the managers of the organisations interviewed generally have many years of professional and practical experience, succession processes are predominantly ad hoc and ad hoc. Organisational planning for leadership change is mostly absent, processes are not supported by formal documents and a strategic approach is rarely put into practice. Responses suggest that the issue of leadership succession is typically only addressed when the organisation is in a crisis situation, such as the retirement or unexpected departure of the current leader. This can be particularly problematic for civil society actors where organisational functioning is highly personalised and the role of the leader is decisive in day-to-day operational and strategic decision-making. The key leadership competences identified by respondents - in particular empathy, effective communication skills and the ability to think strategically - reflect the multidisciplinary and complex nature of the civil society leadership role. This underpins the need for not only management skills, but also a high degree of social and emotional intelligence and long-term planning skills to lead civil society organisations. The results of the research suggest that it is essential to create a supportive organisational and social environment that encourages conscious and forward-looking succession planning. In addition, ensuring the institutionalised transfer of leadership knowledge, experience and organisational values is of particular importance and can contribute to the long-term sustainability and effective functioning of retirement organisations. The study contributes to deepening the research discourse on leadership succession in the country, with a particular focus on the specific operating conditions, challenges and opportunities of rural organisations.*

Keywords: *leadership, succession, pilot research*

JEL Classification: Z13

1. Introduction

The concept of leadership is of central importance to the functioning of organisations, as leadership is a key determinant of the achievement of organisational goals, the effectiveness of resource utilisation and the motivation of employees. Leadership is not only about managing, but also about influencing, inspiring, making decisions and building relationships between members of the organisation, thus ensuring continuity and development.

Closely linked to leadership is the issue of succession, which becomes particularly important in planning for the filling of management positions and in maintaining organisational stability. Succession is not only about refilling positions, but also about passing on knowledge, organisational culture and strategic vision. The study of succession therefore requires a complex approach, including the mapping of leadership competencies, succession development strategies and alignment with organisational culture.

Several lines of research have emerged on the subject, focusing on different aspects. Some approaches focus on the effectiveness of succession strategies for managers, while others analyse the structural and psychological factors of succession planning at organisational level. The common aim of these approaches is to help ensure leadership continuity and contribute to long-term organisational success.

In the present study I present the results of a pilot study conducted in the counties of Szabolcs-Szatmár-Bereg, Hajdú-Bihar and Jász-Nagykun-Szolnok. The aim of the research was to explore the current practice of leadership succession, attitudes and challenges related to leadership succession, with a special focus on middle management level and the specificities of rural institutions.

2. The concept of leadership

Leadership can be defined in many different ways, as there are several approaches. According to Ternovszky (2007:24), leadership is an activity aimed at influencing the behaviour of individuals or groups. Csepeli (2001) considers leadership to be a series of short episodes of communication and interaction.

Maxwell (2013:15) interprets leadership as a passion in which others are motivated to contribute to common goals.

Bakacsi et al. (1999) describe leadership as the activity of direct influence, whereby the leader communicates organizational goals and motivates employees to support them. An effective leader is able to influence and collaborate with his or her co-workers. According to Dobák (2002), leadership is the activity of working with employees to achieve goals together.

Tóth (1998) lists a number of characteristics of leadership, such as: the establishment of a division of labour, goal-oriented organisational functioning, the provision of resources (subjective and objective factors), and the ability of the leader to exercise power.

Organisational leadership is a complex activity: it involves strategic planning, the use of resources, motivation and the achievement of objectives. A good leader inspires, communicates, makes decisions and adapts flexibly to challenges. Its core values are integrity, transparency and collaboration.

3. Leadership and management

Leadership, based on the process principle, takes a different approach: it seeks not only to influence but also to motivate and empower members of the organisation to achieve common goals (House-Javidan, 2004). According to Bakacsi (1996:150), leadership is at the heart of mobilising human resources.

Both concepts share the common element of influencing people to achieve goals, but while leadership is a more practical activity, divided into concrete tasks, leadership is more complex, relying heavily on human relationships and cognitive competencies (Balogh et al., 2004).

In my view, leadership is more easily delineated, while management involves deeper human and strategic levels.

4. The succession

Grusky (1960:105) defined succession as "the replacement or substitution of key people", suggesting that succession can lead to changes in key management positions in the life of an organisation. The importance of key managers has also been highlighted by Pfeffer and Salancik (2003), who in their resource dependency theory pointed out that "environmental factors influence the selection and replacement of top managers in order to make the organization more effective in adapting to its environment" (Pfeffer & Salancik, 2003:226). According to Pfeffer and Salancik (2003), the transfer of top management is a strategic response to

environmental opportunities (Pfeffer and Salancik, 2003:228). Friedman (1987) interprets the succession process as a decisive moment when a decision is made on the issue of succession (Friedman, 1987:192). Although this definition may seem straightforward, it has raised a number of interpretative problems, as succession as a process was not sufficiently emphasised in the initial stages of research. Several researchers have pointed out that succession cannot be treated as a single event, but that its processual nature needs to be examined in more depth. The process approach was later introduced in all definitions and drew attention to the need to focus succession research on the process.

One specific line of research on succession became a focus of attention in the early 2000s. In this period, the emergence of succession tasks in organisational functions emphasised the managerial tasks of succession planning and management, which were linked to different organisational development models. As a result, succession planning has become recognised as a key element of organisational functions (in particular of human resource managers). Garman and Glawe (2004:120) provide a broader definition of succession as "a structured process that involves identifying and preparing a potential successor to assume his or her new role". This conceptual framework focuses primarily on the transfer of leadership and the function of succession planning, but also emphasizes the importance of succession succession planning.

According to Rothwell, succession is "a carefully planned, systematic effort designed to ensure continuity in key leadership positions, to preserve and develop intellectual and knowledge capital for the future, and to support individual development" (Rothwell, 2003:6). The first step in succession is to identify talent within the organisation, and then, if internal candidates are not suitable, to seek external successors.

Closely related to this is Chand and Bronner's (2008:1) conceptualisation of succession as not simply a process of filling leadership positions, but rather as a process of shaping the future of the organisation. In their view, '... it is necessary to look down the road, identify what obstacles the organisation faces and ensure that the organisation reaches the desired destination'. A key element of both definitions is that succession must be consciously planned and closely linked to the future of the organisation. As a consequence, the current leader of the organisation must make every effort to ensure that the successor can take up his or her new role properly.

The above definitions attempt to describe succession in general terms, emphasising its importance, its process nature, the need for planning and its strategic role in shaping the organisational vision. From the definitions reviewed it is clear that succession is a key and inevitable factor in the life of organisations.

5. Different research directions in the study of succession

The first steps in the study of succession date back to the 1950s. Researchers have become increasingly interested in the factors that influence the transfer of leadership in organisations and how this process affects different aspects of the organisation. In the 1950s, a few less thorough but significant studies (Gouldner, 1954; Gordon and Becker, 1964; Dalton, 1959) emphasised the importance of continuity.

Initial research has been mostly useful in identifying leadership changes, but has typically focused on the transfer of leadership of sports teams and succession at lower levels of management. Brady and Helmich (1984:260) were the first to suggest that although succession has a significant impact on companies, it is surprising that so few researchers have addressed this area. In their view, it affects not only the members of the organisation but also the economic and political environment of society.

In the early stages of succession research, the focus was on establishing three basic theoretical models and then exploring their contradictions. These three basic models are the common-sense theory, the vicious-cycle theory and the ritual-scapegoating theory. In the following, I will present these three theoretical perspectives, as they can be considered as the defining basic models of succession research. Moreover, researchers have spent many years proving the contradictory approaches they generate.

According to common sense theory, poor organisational performance leads to the replacement of the leader (Grusky, 1963). The theory assumes that there is a positive relationship between succession and organisational performance, i.e. that a change of leader can contribute to improving organisational effectiveness. A new leader can bring fresh perspectives, new changes, knowledge and resources that can help increase the profitability of the organisation (Kesner and Dalton, 1994). The vicious circle theory, in contrast to the common sense theory, emphasises the existence of a negative relationship between succession and organisational performance (Trow, 1960, 1961). Beatty and Zajac (1987) found in their research that leadership change disrupts existing work routines and organisational structures, which negatively affects performance. This process can lead to a permanent downward spiral that further deteriorates organizational performance.

According to the ritual scapegoating theory (Lieberson and O'Connor, 1972; Fazel and D'Itri, 1997), succession per se does not affect organisational performance. Instead, it is the power of leaders that determines whether they can retain their position. Leaders with greater power are more likely to find someone to blame for poor performance, thereby avoiding their own replacement.

These three fundamentally contradictory findings have provided the starting point for a series of studies (Salancik and Pfeffer, 1980; Wulf and Stubner, 2008; Brown,

1982) that have examined the relationship between succession and organisational performance, a line of research that continues to this day. In the early 1990s, the accumulation of often conflicting findings led practitioners to develop an integrative approach to the topic.

Kesner and Sebor (1994) attempted to create a unified model that would link the different approaches and focus researchers' attention on the different areas of succession that have been studied to varying degrees. In their attempt to integrate the literature, they summarized the research to date and laid the groundwork for developing a comprehensive model for the future.

According to them, the four main components of succession can be defined as: antecedent factors, the transfer process itself, the post-transfer effects, and specific situational circumstances.

The model was developed along the four main components and is proposed as a unified research model for a more integrated approach to future research. In addition to the integration efforts, it was also pointed out that certain areas have received little or no attention so far. Examples include the nature of the industry, the organisational culture, role expectations in the succession process, the age and type of the organisation, and process factors. In addition, it has been emphasised that, although there has been a large body of research on organisational performance in terms of the justification of the three basic theories, the time has come for a deeper examination of other factors associated with succession (Kesner and Sebor, 1994). Giambatista et al. (2005:963-991) summarised the literature by analysing and summarising the main studies on succession from 1994 to 2005. He divided the literature into three main categories, taking into account the components already mentioned: the preconditions for succession, the consequences of succession, and research on both aspects.

Giambatista et al (2005) also pointed out the main shortcomings of succession theories. Research often lacks theoretical models that provide deeper and more detailed answers to succession questions. Relevant theoretical approaches include organisational learning and adaptation (Rowe et al., 2005), change and inertia (Haveman, 1993; White et al., 1997) and institutionalist theory. Giambatista also stressed that succession, especially leadership transfer, is particularly important for small and medium-sized enterprises (SMEs). He pointed out that successful succession is only possible if managers have the knowledge to carry out the process (Giambatista et al., 2005).

Another proponent of the integration approach is Bocatto et al. (2010), who summarised the main areas of succession research based on Handler's (1994) literature review.

The review of the main trends in succession research showed that some areas have received more attention while others have remained less researched. Research has focused primarily on process models of succession, the

characteristics of ancestor and successor, and the components of effective succession. At present, succession research is moving along two main lines: one focuses on the understanding of succession as an organisational function and its implementation in practice, while the other focuses on the impact of succession on organisational performance.

Succession as an organisational function emerged in the 1980s, when researchers began to look at succession planning as a key factor in successful succession. Since then, the topic has evolved and expanded into succession management, and has even become part of the consulting services of many US companies. Mehrabani and Mohamad (2011) and Kim (2010) provide an overview of research directions in succession planning.

In the 1980s, researchers emphasized the importance of succession planning and its emergence in organizations. During this period, it was not yet clear exactly what elements it should include or what issues it should address. Subsequently, the focus of research has shifted to identifying the determinants of effective succession planning, primarily by exploring the content aspects. Later on, there was a growing emphasis on more comprehensive studies that considered both content and effectiveness, and succession management emerged as an organisational function in its own right. Today, research focuses on analysing the key success factors in succession planning and management, with a particular emphasis on comparing good and failed practices.

A review of the trends in succession research suggests that, while the initial basic models continue to explore the impact of succession on organisational performance, a number of integrative initiatives have emerged to analyse succession more comprehensively. These integration efforts draw attention to the need for a more detailed analysis of the succession process and the impact of different environmental and organisational factors, but this approach is not yet sufficiently emphasised in research. At present, succession research is increasingly focusing on the importance of planning as an organisational function, although in many cases there is still no coherent definition of the basic concepts.

6. Pilot research details - Sampling frame and methodology

The sampling frame for the research was formed by associations, clubs and NGOs working with older people in the counties of Szabolcs-Szatmár-Bereg, Hajdú-Bihar and Jász-Nagykun-Szolnok. The common feature of these organisations is that their activities focus on improving the quality of life of older people, promoting community integration and organising leisure, cultural and health promotion programmes. The research included organisations that are active in their respective areas and have regular contact with the elderly.

The sampling was purposive, as the leaders and members of these organisations have practical experience of their role in local communities and can provide relevant information on leadership succession and succession. Associations for older people are particularly valuable sites for the study of formal and informal leadership roles, as in these communities active members often take on leadership roles out of civic engagement and intrinsic motivation, thus highlighting how leadership and its transmission are also manifested in non-hierarchical contexts.

The study therefore focused not only on the way leadership is exercised, but also on attitudes towards succession, the importance of succession and the practices of succession in this organisational context.

In the pilot research, data was collected using a questionnaire. A total of 14 organisations participated in the study, selected from active associations and clubs for older people in all three counties concerned - Szabolcs-Szatmár-Bereg, Hajdú-Bihar and Jász-Nagykun-Szolnok. The questionnaires were filled in voluntarily. A total of 44 questions were asked, covering both demographic characteristics of the respondents (e.g. gender, age) and basic information about the organisations, such as year of foundation, number of members, geographical location and type of municipality. The questionnaire also focused on how organisations approach the issue of succession, their ideas and practices in terms of generational change and succession planning. As the data collection was linked to the preparatory phase of the research, the pilot nature of the survey provided an opportunity to test the questions used, to fine-tune the survey instrument and to test the relevance and interpretability of the themes.

7. The state of leadership development of pensioners' organisations in the Northern Great Plain region - summary of a questionnaire survey

The aim of the study was to explore how pensioner organisations in the North Great Plain region prepare for leadership succession and to what extent they consider this to be a conscious and strategic process. The questionnaire survey collected responses from several counties, mainly Szabolcs-Szatmár-Bereg, Hajdú-Bihar and Jász-Nagykun-Szolnok, which is a good representation of the rural and small-town civil society in the Eastern region.

The activities of the organisations represented by the respondents are predominantly cultural, traditional, recreational or advocacy, and can therefore be seen primarily as operators of community spaces that strengthen the cohesion of local society. The majority of organisations were established in the 2000s, but there are also communities within the spectrum with a history spanning several decades, indicating a significant difference in organisational lifespans.

In terms of membership, the typical size of organisations ranges from 30 to 75 people, but there are also radically different figures, implying differences in the intensity of organisational operation and the depth of social embeddedness. The demographic background of the respondents is highly homogenised, with the majority of them being women and the majority of them aged over 60. In terms of highest educational attainment, they are predominantly college and vocational school graduates, indicating both an experience-based management culture and a lower level of formalisation of knowledge-based management.

The responses show that organisational leaders spend a long time in their positions - typically 10-20 years - and through this experience acquire the skills needed to lead. Although many said they had trained themselves, this was often in informal settings - self-study, reading, practical learning. Formal, structured training was much less common, highlighting the lack of, or limited access to, sector-specific management training.

The issue of succession has already been raised by the majority of respondents, mainly due to excessive workload, deteriorating health and the desire to relax. This is particularly relevant in the light of the fact that a significant proportion of managers are now in retirement. At the same time, conscious succession planning is still in its infancy: while the majority of respondents see potential successors, few have started to systematically prepare them. As a result, succession is often contingent, non-institutionalised and lacking in transparency, which carries risks, especially for organisations where a change of leadership is due in the foreseeable future (1-3 years).

The absence of a formal succession plan is a common feature: the vast majority of respondents do not have such a document, but where it does exist, it is limited to senior management positions or general frameworks. This indicates a lack of strategic forward planning and a lack of formalisation of organisational processes. There is a tendency towards internal succession planning, which is a positive trend in terms of commitment and the preservation of organisational culture. However, several responses indicated that the lack of adequate succession and the complexity of succession planning are major challenges.

The expectations of future leaders are clear: empathy, communication and team leadership skills, and strategic thinking are among the most important competences. In addition to these, change management and financial skills are also emphasised. This suggests that respondents are aware of the complexity of leadership roles and the importance of the multidisciplinary knowledge set required.

Preserving organisational culture is a top priority: respondents believe that transitional cooperation between old and new management and mentoring and supporting key people are key to this. Transparency in succession processes is stressed by many, but some argue that certain elements should be handled with

discretion, especially in communicating with external partners. This shows that publicity can be a sensitive issue in order to maintain trust and stability.

Among the long-term goals, the most frequently cited are the preservation of organisational stability, growth and the opportunity for innovative renewal. An attitude of integration and cooperation implies a greater openness towards younger generations, which is confirmed by the evaluation of the responses: older managers tend to recognise that the new generation may prefer different relationships and operational frameworks.

In the final section of the questionnaire, respondents assessed the potential impact of a change of leadership. Although a proportion did not expect significant change, the majority believed that new leadership could generate significant organisational changes or transitional challenges that can only be addressed through careful preparation and appropriate communication.

The research suggests that the leadership of NGOs in Eastern Hungary is experienced and committed, but that there are serious structural weaknesses in the area of succession. Conscious and planned leadership change is not yet an embedded practice, which increases the risk of organisational instability in the near future.

The key to successful succession is formal planning, providing training opportunities and institutionalising the transmission of organisational values and culture. To address these gaps, it would be essential to create a supportive policy environment, including training, advice and financial resources, to help the civil society sector to make generational changes.

8. Summary

This paper focuses on the issue of leadership succession, with particular reference to the results of a pilot study among NGOs working with older people in the Northern Great Plain region. Following a theoretical grounding of leadership and succession, I will present in detail the aim of the research, the methodology and the synthesis of the empirical data collection.

The aim of the study was to explore the extent to which these organisations are consciously addressing the issue of leadership change and the attitudes and practices with which they approach the challenges of generational change. The research was carried out using a purposive sampling and a questionnaire method, involving 14 organisations, mainly in the counties of Szabolcs-Szatmár-Bereg, Hajdú-Bihar and Jász-Nagykun-Szolnok.

The results show that, although the majority of managers have been performing their tasks with a high level of commitment for a long time, the issue of succession is still not an integral part of the organisational strategy. The lack of formal succession

plans, the low rate of formal training and the ad hoc nature of the coaching processes point to structural weaknesses. These shortcomings may have particularly serious consequences in a context where the issue of management succession is already becoming relevant in the short term.

The expectations for the future expressed by respondents, such as empathy, strategic thinking or an emphasis on change management competences, clearly reflect the growing expectations of civil society leadership. The transmission of organisational culture and values, and the emphasis on transparent and planned succession processes, can be a crucial element in ensuring future organisational stability.

The integration of professional succession planning is a prerequisite for the sustainable functioning of pensioner organisations, for which adequate policy and financial support, as well as the strengthening of institutionalised knowledge transfer and training, are essential.

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