



**FACULTY OF FINANCE - ACCOUNTING**

---

**THE JOURNAL  
CONTEMPORARY ECONOMY**  
Volume 8, Issue 1/2023

---

**REVISTA  
ECONOMIA CONTEMPORANĂ**  
Vol. 8, Nr. 1/2023

---

**”Independența Economică” Publishing  
2023**

**SCIENTIFIC BOARD:**

*Professor PhD Ovidiu PUIU*, “Constantin Brâncoveanu” University of Pitești, Romania  
*Professor PhD Manuel Salvador Gomes ARAÚJO*, Instituto Politécnico do Porto, Portugal  
*Professor PhD Iuliana CIOCHINĂ*, “Constantin Brâncoveanu” University of Pitești, Romania  
*Professor PhD Emil DINGA*, Senior Researcher, “Victor Slăvescu” Financial and Monetary Research Center, Romanian Academy, Romania  
*Professor PhD Emilian M. DOBRESCU*, Senior Researcher, Institute of National Economy, Romanian Academy, Romania  
*Professor PhD Mădălina DUMITRU*, Academy of Economic Studies of Bucharest, Romania  
*Professor Hab. Leszek DZIAWGO, PhD*, “Nicolaus Copernicus” University in Toruń, Poland  
*Professor PhD Marius GUST*, “Constantin Brâncoveanu” University of Pitești, Romania  
*Senior Researcher PhD Mărioara IORDAN*, Institute for Economic Forecasting, Romanian Academy, Romania  
*Professor PhD Dumitru MARIN*, Academy of Economic Studies of Bucharest, Romania  
*Professor PhD Ion MIHĂILESCU*, “Constantin Brâncoveanu” University of Pitești, Romania  
*Professor PhD Doina MUREȘANU*, Université de Québec in Abitibi-Temiscamingue, Canada  
*Professor Hab. PhD, Rodica PERCIUN*, National Institute for Economic Research, Republic of Moldova  
*Professor PhD Vasile RĂILEANU*, Academy of Economic Studies of Bucharest, Romania  
*Professor PhD Ion STEGĂROIU*, “Valahia” University of Târgoviște, Romania  
*Professor PhD Alexandru STRATAN*, Corresponding member - National Institute for Economic Research, Republic of Moldova  
*Professor PhD Dumitru VIȘAN*, Academy of Economic Studies of Bucharest, Romania  
*Associate Professor PhD Mihaela ASANDEI*, “Constantin Brâncoveanu” University of Pitești, Romania  
*Associate Professor PhD Elena CIGU*, “Al. I. Cuza” University of Iași, Romania  
*Associate Professor PhD Florin DIMA*, “Constantin Brâncoveanu” University of Pitești, Romania  
*Scientific Researcher PhD Ionel LEONIDA*, “Victor Slăvescu” Financial and Monetary Research Center, Romanian Academy, Romania  
*Scientific Researcher PhD Edith DOBRESCU*, Institute of World Economy, Romanian Academy, Romania  
*Associate Professor PhD Sebastian ENE*, “Constantin Brâncoveanu” University of Pitești, Romania  
*Associate Professor PhD Mihaela GÖNDÖR*, “George Emil Palade” University of Medicine, Pharmacy, Sciences and Technology of Târgu-Mureș, Romania  
*Associate Professor PhD Oana-Ramona LOBONȚ*, West University of Timișoara, Romania  
*Associate Professor PhD Camelia-Cătălina MIHALCIUC*, “Ștefan cel Mare” University of Suceava, Romania  
*Associate Professor PhD Mircea DUICĂ*, Valahia University of Târgoviște, Romania  
*Associate Professor PhD Mihaela-Roberta STANEF-PUICĂ*, Academy of Economic Studies of Bucharest, Romania  
*Associate Professor PhD Maria Cristina ȘTEFAN*, Valahia University of Târgoviște, Romania  
*Associate Professor PhD Daniel ȘTEFAN*, “George Emil Palade” University of Medicine, Pharmacy, Sciences and Technology of Târgu-Mureș, Romania  
*Assistant Professor Michal BUSZKO, PhD*, “Nicolaus Copernicus” University in Toruń, Poland  
*Lecturer PhD Andreea GANGONE*, “Constantin Brâncoveanu” University of Pitești, Romania

**EDITOR-IN-CHIEF:**

*Associate Professor Ph.D. CRISTINA GĂNESCU*

**EDITORS:**

*Lecturer Ph.D. ANDREEA GANGONE*, *Lecturer Ph.D. GIANINA NEGRĂU*, *Associate Professor Ph.D. MIHAELA SAVU*, *Lecturer Ph.D. CORINA DUCU*, *Lecturer Ph.D. NICULINA STĂNESCU*

**EDITORIAL SECRETARY:**

*Lecturer Ph.D. IULIANA TALMACIU*

**LANGUAGE REVIEWERS:**

*Lecturer Ph.D. GEORGIANA MÎNDRECI*, *Lecturer Ph.D. CAMELIA RIZEA*

The Journal is printed under the patronage of  
“Constantin Brâncoveanu” University, Faculty of Finance-Accounting.  
© “Independența Economică” Publishing, 2023 - Recognized by C.N.C.S.  
Pitești, Calea Bascovului no. 2A, Argeș County, Romania, Phone/Fax: +00248-216427.  
The Journal is currently indexing in the following international databases:  
**EconPapers (RePEc), IDEAS, BASE, SCIPHO, OAJI, ResearchBib,**  
**CEEOL (Central and Eastern European Online Library),**  
**Index Copernicus International – ICI Journals Master List.**

*The views expressed in these articles are the sole responsibility of the authors.*  
ISSN 2537 – 4222, ISSN-L 2537 – 4222

**CONTENT**

<b>Gabriela ANDRIȘAN, Andra MODREANU</b>	THE ROLE OF INNOVATION IN A SUSTAINABLE BUSINESS MODEL: THE CASE OF ALLEGORIE	<b>6-13</b>
<b>Ana-Maria ANDREI, Adriana HORAICU, Marilena ZUCA</b>	THE LINK BETWEEN ACCOUNTING ANALYSIS AND SUSTAINABLE DEVELOPMENT	<b>14-26</b>
<b>Mădălina ALBU</b>	INNOVATION AND EDUCATIONAL MANAGEMENT	<b>27-32</b>
<b>Diana-Andreea DUMITRACHE, Delia Mioara POPESCU, Cristina Roxana IONESCU, Andrei MATICIUC</b>	INNOVATIVE METHODS FOR MOTIVATING EMPLOYEES	<b>33-38</b>
<b>Corneliu-George IACOB, Emilia IORDACHE</b>	MEASURING REGIONAL COMPETITIVENESS AT THE LEVEL OF THE EUROPEAN UNION	<b>39-47</b>
<b>Elena ENACHE, Sorin ENACHE, Cristian MOROZAN</b>	THE PARAMETRIC INSURANCE. CLIMATE CHANGES AND THEIR IMPACT ON THE INSURANCE INDUSTRY	<b>48-52</b>
<b>Galina SAVELIEVA, Svetlana ZAHAROV</b>	SOCIO-DEMOGRAPHIC FACTORS OF TRANSITION FROM LABOUR ACTIVITY TO PENSION IN THE REPUBLIC OF MOLDOVA	<b>53-72</b>
<b>Denisa MARICA (SOPÎRLĂ), Ovidiu TIȚA</b>	SUSTAINABILITY IN APPLE JUICE EXTRACTION TECHNOLOGY	<b>73-80</b>
<b>Gica Gherghina CULIȚĂ</b>	PUBLIC EXPENDITURES FOR EDUCATION IN ROMANIA AND THE EUROPEAN UNION	<b>81-85</b>
<b>Alina Georgeta AILINĂ</b>	IS PROGRESSIVITY A SUPPORTER OF TAX REVENUES FOR THE PUBLIC BUDGET OF EU27 COUNTRIES?	<b>86-93</b>
<b>Kenny Adedapo SOYEMI, Mariam Abosede TIAMIYU, Emily OMALE</b>	AUDIT QUALITY ATTRIBUTES AND FINANCIAL PERFORMANCE: A PANEL STUDY OF QUOTED FIRMS IN NIGERIA	<b>94-106</b>
<b>Georgiana-Tatiana BONDAC</b>	CHANGES CAUSED BY THE COVID-19 PANDEMIC IN THE EDUCATIONAL ENVIRONMENT	<b>107-112</b>
<b>Lilia SAVA, Valentina TÎRȘU</b>	THE MANAGEMENT OF PROFESSIONAL STAFF TRAINING WITHIN ECONOMIC ENTITIES	<b>113-127</b>
<b>Kinga LÁZÁR</b>	TOURISM IN THE CENTRAL REGION AFTER TWO YEARS OF THE PANDEMIC	<b>128-136</b>

<b>Mădălina TOCAN</b>	EFFICIENCY OF THE ROMANIAN RDI SYSTEM IN GLOBAL CONTEXT	<b>137-144</b>
<b>Lucian IVAN, Irena (ARĂDĂVOAICEI) APOLZAN, Cosmin Sandu BĂDELE</b>	PREDICTIONS OF THE SOCIAL AND ECONOMIC IMPACT OF GLOBAL TRENDS	<b>145-152</b>
<b>Vasile SECRIERU</b>	SUBSTANTIATING THE ROLE AND IMPORTANCE OF PUBLIC FINANCIAL AUDIT IN THE EFFICIENT MANAGEMENT OF PUBLIC FINANCIAL FUNDS THROUGH THE LENS OF PUBLIC SECTOR RISKS	<b>153-160</b>
<b>Abimbola Oluwaseyi ADEMOLA</b>	DETERMINANTS OF DEPOSIT MONEY BANKS' CREDIT TO MANUFACTURING SECTOR IN NIGERIA	<b>161-175</b>

## THE JOURNAL CONTEMPORARY ECONOMY

<http://www.revec.ro>

- Peer Review -

The peer review process has a vital role in achieving both the goal and the objectives of the journal, evaluating originality and quality of articles submitted for publication. Within this process, reviewers may suggest improvements of form and content of the articles reviewed.

After receiving the article, the editorial board will verify the eligibility, depending on the respect of the editing requirements. Authors will be notified by email of the result of the eligibility verification within 15 days.

The Journal CONTEMPORARY ECONOMY uses the double-blind peer review system for the articles submitted for publication. Thus, the identity of the author(s) of the article and the reviewer (reviewers) is not known to any party, the editor being the one who assigns the reviewer for a certain article and the only one who knows the identity of both the author(s) and of the reviewer.

Authors will be informed by email about the outcome of the review.

The criteria that guide the peer review process of the manuscripts are divided into four main categories:

1. Originality and importance of the topic addressed in relation to the current stage of the research, to the purpose and objectives of the journal
2. Presentation in a highly coherent and comprehensive manner of the current stage of the research, plus the accuracy and quality of references
3. The structure of the manuscript must comply with the drafting recommendations presented in the **Redaction** section. Articulation must be clear, coherent and logical. Special attention is given to the translation into English which must be done in a scientific and academic language specific to the related field of research, avoiding the possible errors of speech, grammatical errors, errors of sentence syntax and colloquial expressions specific to common English. The journal accepts as standards of English both the British and the American speech.
4. Ethics emphasizes three categories of practices considered unethical and improper to the research activity:
  - a. Plagiarism, as defined in the literature
  - b. Fraud, as defined in the literature
  - c. Other ethical reasons (confidentiality of data used, obtaining permissions for quoted material, etc.).

The above-mentioned criteria are communicated and detailed to the reviewers with whom the journal works. Based on these recommendations they express their final recommendation on the publication or non-publication of the manuscript submitted to review in a *Peer Review Report* whose form is provided by the journal editorial office.

The Journal is indexed in:

*EconPapers (RePEc), IDEAS, BASE, SCIPPIO, OAJI, ResearchBib, CEEOL (Central and Eastern European Online Library), Index Copernicus International – ICI Journals Master List.*

The article will be sent to:

”Constantin Brâncoveanu” University of Pitești  
Faculty of Finance-Accounting  
Pitești, Calea Bascovului no. 2A, Argeș County, Romania  
Phone +400248-212627, int. 1019, fax +400248-221098  
Email: [revec@univcb.ro](mailto:revec@univcb.ro), [cristina\\_ganescu@yahoo.com](mailto:cristina_ganescu@yahoo.com)

Contact person:

Associate Professor Ph.D. CRISTINA GĂNESCU  
Phone +400744420742  
Email: [cristina\\_ganescu@yahoo.com](mailto:cristina_ganescu@yahoo.com)

## THE ROLE OF INNOVATION IN A SUSTAINABLE BUSINESS MODEL: THE CASE OF ALLEGORIE

**Ph.D. Student, Gabriela ANDRIȘAN**

Bucharest University of Economic Studies, Romania

E-mail: gandrisan31@gmail.com

**Ph.D. Student, Andra MODREANU**

Bucharest University of Economic Studies, Romania

E-mail: andramodreanu@yahoo.com

**Abstract:** *The last several years have had a significant impact on how opportunities are evolving and how adaptive the business sector must be to continue pursuing successful corporate plans. Many businesses have begun to innovate and reuse their resources as a result of these structures, allowing them to continue operating despite the current economic circumstances. The goal of this paper is to highlight the importance of innovation within the context of a sustainable company strategy. Furthermore, it leads to a clearer understanding of how this type of organization has been able to respond to changing market conditions and thrive rather than merely survive. Following an examination of the available literature, a summary of the most common traits and principles may be extrapolated, allowing the option of further investigation in forthcoming studies. The findings indicate that innovation plays a significant role in the success of some firms, generating distinct niches in which even a start-up can thrive. To better demonstrate their views, the writers chose Allegorie as an example, a company that relies on fashion innovations and employs this to keep its sustainable ideals. The study's findings can also be used to gain a better understanding of the current state of business models and the critical roles adaptability and sustainability play in this volatile economic climate.*

**Keywords:** *business models, innovation, sustainability, value creation, value proposition.*

**J.E.L. Classification:** *M1, M9.*

### 1. Introduction

Environmental, ethical, and societal concerns have been the subject of scholarly inquiry since the 1960s, but the pace of this inquiry has accelerated considerably over the past few decades. Sustainability studies has grown from merely assimilating existing hypotheses to incorporating novel frameworks, especially in the age of globalization (Cornescu et al., 2004; Toma, 2005). The development has centred around integrating aspects of institutional theory, stakeholder theory, the resource-based view, the political economy paradigm, and innovative conceptions. In order to provide scientifically driven foundations for pertinent business theory, sustainable business models must be founded on economic, social, and environmental considerations.

Existing business theory disregards the reality that the Earth is the primary stakeholder and origin, where everything begins and concludes (Svensson and Wagner, 2012). Additional elements of sustainable business theory and practise include return of goods, source optimisation, recycling, resource substitution, reuse of supplies, waste disposal, refurbishment, repair, and remanufacturing (Stock, 1998).

Increasing resource and energy efficiency facilitates business innovation in technology and enhancements to the production system. Innovation within the business model is an established topic and one of the most frequently employed buzzwords in management research. It discusses a new approach to conducting business that strives for profitability in an ever-changing marketplace by rethinking the logic underpinning value creation, capture, and delivery (Richardson, 2008; Teece, 2010).

Based on the prior context, the following research questions were formulated:

1. What is the definition of sustainable business model?
2. How does innovation correlate to this idea?
3. How would a strategy for a business model based on these concepts be constructed?

This research paper aims to emphasise the significance of innovation within the larger framework of a sustainable business strategy. In addition, it clarifies how this form of organisation has been able to adapt to shifts in market conditions and thrive, as opposed to merely survive. The article is organised as follows: the following chapter illustrates the literature review, which emphasises some of the most relevant contributions to this field. The study's methodology is described in the third section. The authors affirm the study's conclusions in the fourth section, and the final section serves as an overview of the findings.

## **2. Literature review**

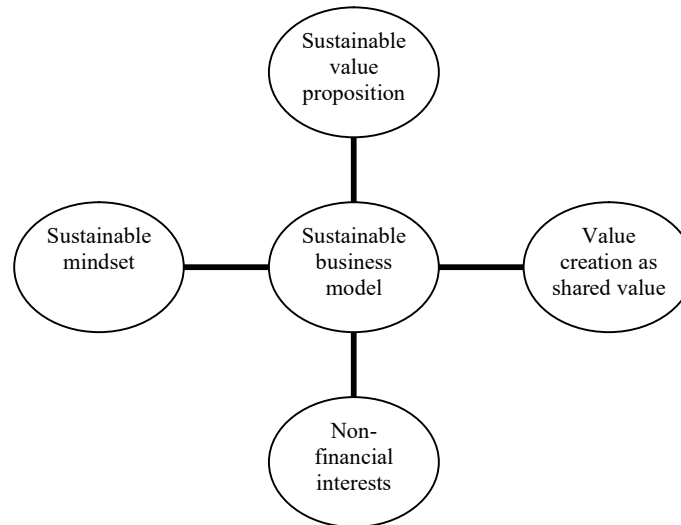
Business models constitute a major topic in the literature. The concept of business model is interconnected with the concept of strategy (Toma and Grădinaru, 2016; Toma et al., 2016a; Toma et al., 2016b). As change has been a certitude (Toma, 2013; Toma and Marinescu, 2015) in the Fourth Industrial Revolution, business models have become not only more and more innovative (Tohănean and Toma, 2018), digitalised (Tohănean et al., 2018; Toma and Tohănean, 2018) but also entrepreneurial (Grădinaru et al., 2017), socially responsible (Toma, 2006; Toma, 2008b; Toma et al, 2011; Imbrișcă and Toma, 2020; Zainea et al., 2020) and environmentalist (Toma and Tohănean, 2019), and related to modern managerial methods and techniques (Toma, 2008a; Marinescu and Toma, 2008; Toma and Naruo, 2009; Catană and Toma, 2021).

In the past ten years, the focus of business model research switched from delineating elements to business model innovation. It disputes the notion that innovation is only feasible when applied technologically to an item or operation. Thus, it lies in the evolution of the business model and conveys a new approach to conducting business. Business model innovation has become recognised as an essential endeavour that companies must engage in to successfully counter the threat posed by new and creative entrants (Lantano et al., 2022).

Business model innovation typically refers to the creation of a business model which is unique to the product-market arena in which a new company competes. A business model strategy of an established firm is innovative when the firm modifies its operations system so that its new structure is original for the firm and perhaps also in the product-market arena in which it engages (Amit and Zott, 2020).

A sustainable business model is characterised by four major components (Figure no. 1.):

- a. The integration of sustainable values or objectives into the present value proposition;
- b. the expansion of the notion of value creation from financial benefit to shared value;
- c. the inclusion of nonfinancial interests in the process of making decisions; and
- d. executives who serve as leaders in sustainability to encourage a new mindset throughout the entire organisation.



**Figure no. 1. Sustainable business models**

*Source: adapted from Ferlito and Faraci, 2022*

The primary task consists of converting the value proposition into a sustainable value proposition that enables value creation by taking into account the requirements of consumers, investors, vendors, collaborators, community, society, and the natural world (Baldassarre et al., 2017). It must demonstrate economic, environmental, and social results. Managers who wish to avoid value degradation by means of innovation in business models should adopt a sustainable value proposition (Roome and Louche, 2016). The sustainable business strategy has to minimise the loss of societal and environmental value. In order to accomplish this, managers must comprehend precisely what value is on the cusp of being lost and act accordingly according to the business model. The sustainable business model additionally takes into account the value creation in the conducted activities and its distribution as eco-social advantages that are distributed equitably among all stakeholders. In other words, it may involve altering energy inputs in the industry through the utilisation of alternative sources of energy, such as solar power and the wind, or altering the method by which products are transported to the market. The final aspect about a sustainable business model that innovation needs to take into account is the system for value capture, or the quantity of value that each stakeholder appropriates for themselves. It requires enterprises to capture both economic and social as well as environmental benefits for stakeholders (Ferlito and Faraci, 2022).

To fully understand how innovation would integrate into the aforementioned model, one must comprehend the constraints concerning innovation within a company. Someone in management might not succeed at innovation if they are incapable of generating creative ideas or avoids implementing and scaling such concepts. Rarely do conditions that foster creativity facilitate the implementation of projects. Maximising the conditions that foster inventiveness is unlikely to result in a rise in innovation because the type of knowledge rearrangement required for creativity generates uncertainty regarding the future applicability of ideas. Likewise, conditions that facilitate practise may not be conducive to innovative thought. For example, eliminating uncertainty may improve implementation since it depicts standard procedures for execution and decreases the cost of incorrectly estimating a project's value. Thus, incremental innovation is more prevalent than radical innovation. It is unlikely that a manager who chooses to stay away from uncertainty will pursue extremely innovative ideas. In conclusion, managers who desire to increase sustainable innovation may attempt to



boost creativity, improve their tolerance for unpredictability, or separate creativity from the apparent risk of an idea (Calic et al., 2020).

In the following sections, we will examine a case study of an innovative and sustainable startup and discuss their business model, as they do not present the same limitations that an already established business has and as such, has more liberty to explore innovatively and create a strategy and a model that can be based on such ideas.

#### **4. Research methodology**

The present study employs qualitative research methods, acquiring and analysing secondary data on the topic from previously published books, reviews, reports, and research papers. In the first part, the authors examine the definition of the notions of innovation, sustainability, and business models before listing their essential components. Consequently, this strategy employed a number of pertinent concepts, such as business model innovation, the creation and capture of value and sustainable business models.

As is conventional in previous studies, the investigation began with a briefing and discussion of the principles that were subsequently assimilated and demonstrated via the use of a case study in an attempt to meet the declared purpose of this research. The perspective of this paper is based on research performed over the past decade by an array of eminent academicians in the same field.

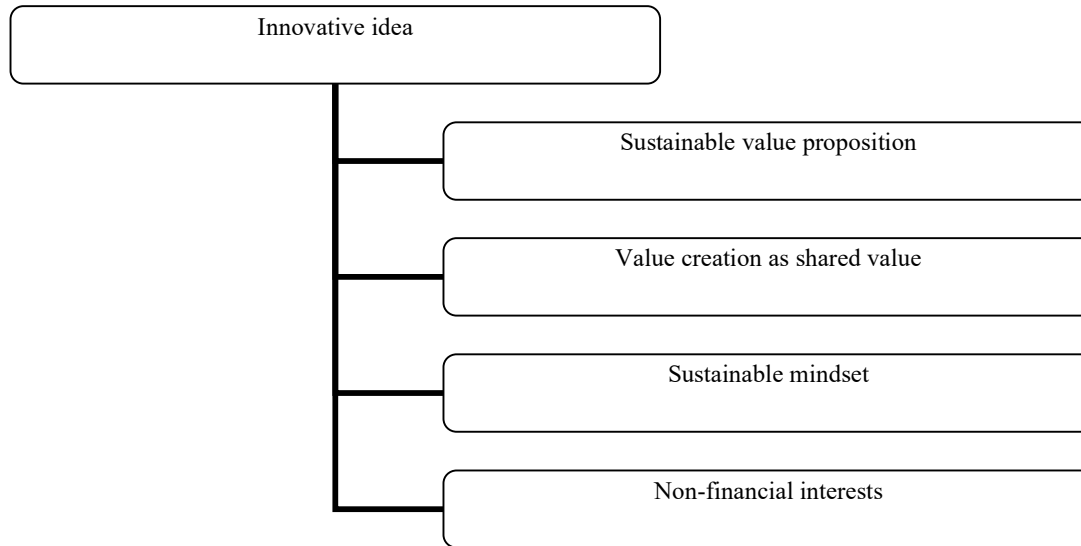
#### **5. Case study and findings: Allégorie**

The following company was chosen by the authors based on its business model and long-term objectives. This business has been able to pursue profit without compromising its sustainability goals and has found a novel method to attract customers to its products. Allégorie has remained true to its ethical and sustainable paradigm since its inception. Allégorie is distinguished by its pursuit of eco-friendly materials, passion for uplifting communities, and desire for positive change, which enables the development of purposeful and enduringly attractive objects. Allégorie, a women-owned, autonomous, and socially-responsible company, is committed to stretching the boundaries of sustainable fashion whilst addressing the issue of food waste, one fruit at a time. A forthright conversation about a shared astonishment in the food waste as well as greenwashing practises of the fashion industry led to a desire to improve fashion. With the assistance of family and friends, the two proprietors began their search for sustainable replacements to animal-derived leather and PVC (or "vegan leather"). After innumerable obstacles, this adventure became a company, an innovative business that transforms unwanted fruits into useful accessories. Allégorie's development is guided by humanist principles: the company is dedicated to reducing food waste, conserving resources, supporting its suppliers, and caring for the community. Every move ahead is taken with the utmost regard for people and the environment. According to the data uncovered by this business, the world's food waste generates 4,4 gigatonnes of carbon dioxide equivalence per year. This accounts for approximately 8% of the world's total GHG emissions, which is nearly equal to the pollutants from all automobiles. If food waste were a nation, it would rank as the third largest emitter following China and the USA. Every single bag at Allégorie serves to reduce food waste by repurposing discarded produce from supermarkets and juice factories. They go above and beyond to ensure that every bag they sell is genuinely eco-friendly and cruelty-free. In order to minimise their effect on the environment and animals, they also use numerous plant-based and recycled materials, such as non-edible crops as well as post-consumer recycled polymers. In contrast with the majority vegan leathers, the components are 100 percent PVC-free. Their manufacturing collaborators share their vision and adhere to stringent guidelines that minimise their environmental

impact, such as zero emissions of dangerous chemicals, the use of green energy, and net zero water consumption. This company's claim that their bags are produced from apples is not an attempt at greenwashing. For instance, every one of their Gala Backpacks repurposes approximately 550 fruits, with bio content comprising about 80% of the bag. Apples are one of the most popular fruits in the world, and they are revered in both faith as well as popular culture to be a fruit with numerous symbolic meanings. The apple is the most utilised fruit in the United States, with annual consumption of apple juice at the rate of 1.6 gallons per individual, freshly picked apples at 10.7 pounds per person, and preserved, dried out, and frozen apples at 3.3 pounds per person, according to a 2015 USDA study. China, the European Union, and the United States produce over 75 percent of the world's supply of raw apples. In contrast to exotic produce, apples are consumed predominantly locally. 25% of apples produced in the United States are exported, whereas only 5% of apples consumed within the United States are imported. Apples are not an exception to the global food waste crisis. Each year, an estimated 3,7 trillion fruit are discarded. That's nearly 50 fruits per individual. 30% of apples are thrown away by consumers, at home, after purchase, and 47% of apples are squandered annually in the United States. Apples are turned into an array of items, the most common of which is apple juice. It is projected that 13% of the raw apple crop is used to produce apple juice.

In large-scale apple juice production, approximately 75% of an apple is utilised for juice, while the balance, or 25%, is the by-product, apple pomace, and this is produced in millions of tonnes around the globe. Due to its high moisture content and organic compounds that are susceptible to enzyme breakdown and rapid oxidation, which apple pomace requires a high concentration of oxygen to decompose within a specific temperature range. If not disposed of appropriately, this byproduct contributes to high greenhouse gas (GHG) emissions and health risks. The good news is that apple pomace contains natural fibres that can be repurposed into valuable products. Due to the high concentrations of cellulose and lignin, numerous plant materials are extremely resilient. For instance, bamboo fibres contain nearly 50 percent cellulose, which explains why the plant is so resilient. Lignin-rich vegetation is more resistant to decomposition. Jute is an example of a material with extremely high MPa for its tensile strength. Apple peels along with other fruit scraps discarded by the beverage industry are an ideal source of natural fibres. In fact, apple shells comprise more than 50 percent of an apple's fibre content. By combining these discarded fibres with additional bio-contents along with water-based PU, an original, cruelty-free, and environmentally friendly substitute to leather is created (Allégorie, 2022).

What the authors of this paper have observed from this case is that this startup has identified a long-term issue they wish to address and recognised a novel and innovative idea that has enabled them to develop a business model around it. According to the previous section, it is clear that this business not only meets the criteria for sustainable business models, but also the criteria for innovation. One can observe the subsequent process (Figure No 2.) :



**Figure no. 2. Business model: Allégorie**

*Source: authors' contribution*

By employing their innovative concept, the company was able to create a sustainable business proposition. This company's primary objective is to generate a profit, but they also have a non-financial interest, as evidenced by their entire production process and the way they choose to conduct business. Their commitment to sustainability permeates their complete business strategy and value generation. Creating shared value is the practise of generating economic value in a manner that produces value for the community by meeting its needs and challenges, therefore one could argue that this startup has been doing so since its inception.

## 6. Conclusions

In conclusion, the purpose of this research paper was to highlight the important role of innovation within the context of a sustainable business model. In addition, it sought to explain how this type of business has been capable of adapting to changing market conditions and flourish, rather than merely endure. In this regard, this paper summarised and synthesised the published literature on the topic over the past decade. In the subsequent chapter, the methodology for conducting quantitative and qualitative research for the present research was set forth. In the fifth section, the study's findings, observations, are explored. The authors have concisely explained the study's central concerns and showed their responses at every turn. However, the aforementioned study has certain limitations. One such limitation is that it concentrates on the procedures of a single business, a start-up, a nearly perfect example of how such a model is utilised. It may be advantageous to conduct additional research to determine what other already established companies could achieve by implementing these strategies.

## References

1. Allégorie, 2022. *Our Story- Allegorie Design*. [online] Available at: <<https://allegoriadesign.com/pages/about-us>> [Accessed 5 May 2023].
2. Amit, R. and Zott, C., 2020. *Business model innovation strategy: Transformational concepts and tools for entrepreneurial leaders*. Hoboken, NJ: John Wiley & Sons.

3. Baldassarre, B., Calabretta, G., Bocken, N. M. P. and Jaskiewicz, T., 2017. Bridging sustainable business model innovation and user-driven innovation: A process for sustainable value proposition design. *Journal of Cleaner Production*, 147, pp.175–186.
4. Calic, G., Shevchenko, A., Ghasemaghaei, M., Bontis, N. and Ozmen Tokcan, Z., 2020. From sustainability constraints to innovation: Enhancing innovation by simultaneously attending to sustainability and commercial imperatives, *Sustainability Accounting, Management and Policy Journal*, 11(4,) pp.695-715.
5. Catană, Ș. and Toma, S.-G., 2021. Marketing mix and corporate social responsibility in automotive industry - Case study: Mazda Motor Corporation. *Annals of the „Constantin Brâncuși” University of Târgu Jiu, Economy Series*, 1, pp.205-209.
6. Cornescu, V., Curteanu, D., Marinescu, P. and Toma, S.-G., 2004. *Management from Theory to Practice*. Bucharest: University of Bucharest Publishing House.
7. Ferlito, R. and Faraci, R., 2022. Business model innovation for sustainability: a new framework. *Innovation & Management Review*, 19(3), pp.222–236.
8. Grădinaru, C., Toma, S.-G. and Papuc, R., 2017. Entrepreneurship in the world: The analysis of the Global Entrepreneurship Index in the period 2015-2017. *Ovidius University Annals: Economic Sciences Series*, XVII(2), pp.14-18.
9. Imbrișcă, C. and Toma, S.-G., 2020. Social responsibility, a key dimension in developing a sustainable higher education institution: The case of students' motivation. *Amfiteatru Economic*, 22(54), pp.447- 461.
10. Lantano, F., Petruzzelli, A. M. and Panniello, U., 2022. Business model innovation in video-game consoles to face the threats of mobile gaming: Evidence from the case of Sony PlayStation. *Technological Forecasting and Social Change*, 174(1), pp. 121210.
11. Marinescu, P. and Toma, S.-G., 2008. Implementing Lean Management in the Romanian Industry. In: T. Koch, ed., 2008. *Lean Business Systems and Beyond*. New York: Springer, New York, pp.269-276.
12. Richardson, J., 2008. The business model: An integrative framework for strategy execution. *Strategic Change*, 17(5-6), pp.133–144.
13. Roome, N., and Louche, C., 2016. Journeying toward business models for sustainability: A conceptual model found inside the black box of organisational transformation. *Organization & Environment*, 29(1), pp.11–35.
14. Stock, J. R., 1998. *Development and Implementation of Reverse Logistics Programs*. Lombard: Council of Logistics Management.
15. Svensson, G. and Wagner, B., 2012. Business sustainability and e-footprints on earth's life and ecosystems – generic models. *European Business Review*, 24(6), pp.543-552.
16. Teece, D. J., 2010. Business models, business strategy and innovation. *Long Range Planning*, 43(2-3), pp.172–194.
17. Tohănean, D. and Toma, S.-G., 2018. Innovation, a key element of business models in the Fourth Industrial Revolution. *Network Intelligence Studies*, VI(12), pp.121-130.
18. Tohănean, D., Toma, S.-G. and Dumitru, I., 2018. Organizational performance and digitalization in industry 4.0. *Journal of Emerging Trends in Marketing and Management*, 1(1), pp.282-293.
19. Toma, S.-G., 2005. Fordism, postfordism and globalization. *Amfiteatru Economic*, 7(17), pp.135-138.

20. Toma, S.-G., 2006. From quality to the corporate social responsibility. *Amfiteatru Economic*, 8(20), pp.145-149.
21. Toma, S.-G., 2008a. What is Six Sigma? *Manager*, 8, pp.152–155.
22. Toma, S.-G., 2008b. Social responsibility and corporate citizenship in 21st century. *Amfiteatru Economic*, 10(23), pp.80-85.
23. Toma, S.-G. and Naruo, S., 2009. Quality assurance in the Japanese universities. *Amfiteatru Economic*, 11(26), pp.574-584.
24. Toma, S.-G., Stanciu, C. and Irimia, E., 2011. *Landmarks in the evolution of social responsibility of organizations in the twentieth century*. Proceedings of the 5th International Scientific Session Challenges of the Knowledge Society. Bucharest: PRO Universitaria, pp.1352-1360.
25. Toma, S.-G., 2013. *Economia Întreprinderii*. București: Editura Universității din București.
26. Toma, S.-G. and Marinescu, P., 2015. Strategy and change. *Manager*, 21(1), pp.145-150.
27. Toma, S.-G. and Grădinaru, C., 2016. From military strategy to business strategy. *Strategii Manageriale*, 31(1), pp. 227-233.
28. Toma, S.-G., Marinescu, P. and Constantin, I., 2016a. *Approaches to strategic thinking in business organizations*. Proceedings of the 10th International Conference on Business Excellence, Academy of Economic Studies, Bucharest, Romania, pp.184-191. [online], Available at: <[https://accord.edu.so/course/material/energy-and-climate-change-289/pdf\\_content](https://accord.edu.so/course/material/energy-and-climate-change-289/pdf_content)> [Accessed 28 April 2023].
29. Toma, S.-G., Marinescu, P. and Grădinaru, C., 2016b. Strategic planning and strategic thinking. *Revista Economică*, 68(5), pp.168-175.
30. Toma, S.-G. and Tohănean, D., 2018. Internet of Things, digitalization and the future of business models. *Strategii Manageriale*, IV(42), pp.130-137.
31. Toma, S.-G. and Tohănean, D., 2019. Green business models: The case of a German automaker. *Quality-Access to Success*, 20(S2), pp.635-640.
32. Zainea, L. N., Toma, S.-G., Marinescu, P. and Chițimiea, A., 2020. Combating unemployment through social entrepreneurship in the European context. *Business Ethics and Leadership*, 4(4), pp.85-98.

## THE LINK BETWEEN ACCOUNTING ANALYSIS AND SUSTAINABLE DEVELOPMENT

**PhD., Ana-Maria ANDREI**

Valahia University of Targoviste, Romania

E-mail: annys13@yahoo.com

**PhD., Adriana HORAICU**

Valahia University of Targoviste, Romania

E-mail: adriana\_păduraru@yahoo.ro

**PhD. Marilena ZUCA**

Romano-Americana University, Bucharest, Romania

E-mail: marilena\_zuca@yahoo.com

**Abstract:** *Today, sustainable development also requires changes in accounting to meet the needs of users of financial and accounting information. Although the concept of sustainable development is becoming an increasingly widespread topic in the literature, accounting and management, the need to clarify what this concept means in the different contexts in which it is used has been highlighted. In particular, there is a concern among domain experts and researchers that sustainable development may remain a simple and interesting topic for actual accounting and finance research, rather than a distinct and coherent field of study. This concern comes as a result of the fact that, beyond the repeated presentation of the definition given in the Brundtland Report 1987 entitled "Our Common Future", many of the studies that have been carried out have neglected the complexity of the aspects of sustainable development that it entails. The field of sustainable development offers countless research possibilities that have not been sufficiently experienced so far, which requires the exploration of different disciplines at the academic level. The set of accounting methods and procedures used by experts in the field are found on the border of many of them, raising the issue of analyzing their role and impact. Therefore, our scientific approach aims to respond to this need to determine the extent to which the calculation of the impact of current change is characterized by a global collective effort to ensure financial sustainability and how it interferes in accounting in a real way.*

**Keywords:** *sustainable development, financial-accounting analysis, interference, financial-accounting information.*

**JEL Classification:** *M40; M41, Q56.*

### 1. Introduction

The role of accounting in promoting sustainable development has expanded over the three decades since the definition of the concept of sustainable development proposed in the important Brundtland Report developed by the United Nations - Commission on Environment and Development (Brundtland, 1987), as a guiding principle linking environmental concerns and human development (Bebbington and Larrington, 2014).

Sustainable development implies the need to make changes in accounting to meet the needs of users of financial-accounting information (Dumitrana et al, 2009). Although the concept of sustainable development is an increasingly common topic in accounting and management literature, the need to clarify what this concept refers to in the different contexts in which it is used is highlighted (Godemann et al, 2014).

In particular, there is a concern among experts in the field and researchers that sustainability may remain merely a topic of interest for empirical research in accounting and finance, rather than a distinct and coherent field of research study. This concern comes as a result of the fact that, beyond the repeated proposals given in the definition in the Brundtland Report 1987, much of the research undertaken neglects the complexity of the issues that sustainable development entails (Bebbington and Thomson, 2013). The 17 objectives for sustainable development proposed by the United Nations (Sustainable Development Goals-SDG) aim to stimulate activities and actions in areas of strategic importance for humanity and for the planet (United Nation, 2015; Bebbington and Unerman, 2018). The experts in the field are among the actors who enthusiastically embraced the sustainable development objectives,

seeing the role played by accounting professionals and accounting, as a science, in achieving these objectives. While in the academic environment, research based on sustainable development goals is starting to develop more and more at the level of different disciplines, especially in business and management, the interference of financial-accounting analysis and sustainable development, as well as the potential of the targets regarding Sustainable Development Goals-SDG, is at an early stage from the perspective of specialized literature in the field of accounting (Bebbington and Unerman, 2018).

The present study was carried out on the basis of a questionnaire applied between February and March 2023, after which answers were obtained from 83 economic entities listed on the Bucharest Stock Exchange and a number of 369 people involved, which indicates a high level of awareness of the SDG objectives in the business community (set of states, united by common economic, political and cultural interests) and highlights the opportunity to transform this awareness into actions taken towards achieving the objectives.

In the same study, we could observe that managers declare that the implementation of the SDG objectives represents a historic opportunity for economic entities to engage in the exercise of a strong positive impact on society. In addition, leading economic entities can generate significant momentum for achieving the SDGs through innovation, investment, a significant customer base and a global workforce. Instead, the SDGs can increase entities' chances of success by improving the business environment and providing incentives and guidance.

The field of sustainable development offers unlimited research opportunities that have not been sufficiently exploited so far, which requires the exploration of different academic disciplines. Accounting practices and accounting experts are found at the border of many of them, raising the question of an analysis of their role and impact (Bebbington et al, 2017).

At the same time, studies indicate that the specialized literature is limited in terms of results based on empirical research proving the existence of a direct causal link between accounting and economic development (Venter et al, 2018; Bebbington and Unerman, 2018). In addition, the International Federation of Accountants (IFAC) has established 17 goals proposed by the United Nations (quality in education, gender equality, working conditions and economic growth, industry, innovation, infrastructure, responsible consumption of resources, etc.), which I fully support economic development.

The present scientific approach aims to cover this need to determine to what extent accounting influences the current trend characterized by the concerted efforts made internationally to ensure economic sustainability. In this sense, the objective of the scientific study is to present the current context in terms of sustainable development on a national and international level, as well as the qualitative analysis of the efforts undertaken by the standardization bodies, experts in the field of accounting and researchers based on the public reports drawn up, as well as the analyzes carried out by them in the field of sustainable development.

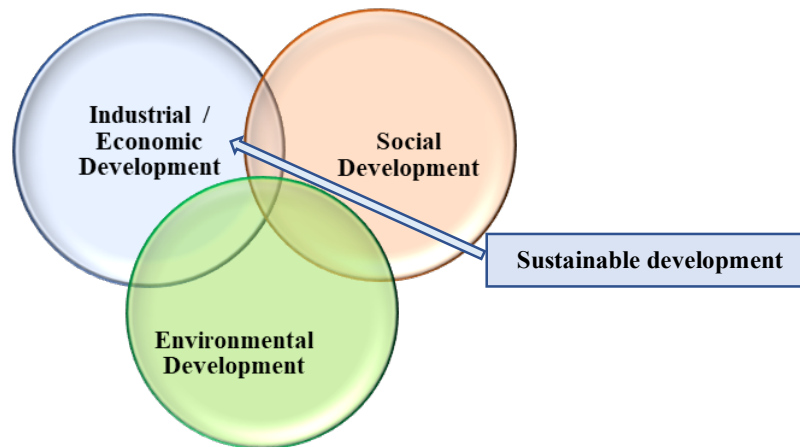
In the structure of the present scientific approach, the following are highlighted: 1) the current international context regarding sustainable development (definition of the concept, the main stages of development and the presentation of objectives for sustainable development, the evolution of the regulatory process of reporting in the field of sustainability and the role of capital markets in the field of sustainability); 2) qualitative analysis of the role of accounting and the interference of financial-accounting analysis and the development of sustainability by highlighting the influence exercised by regulatory bodies in the field of accounting on sustainability, as well as the role of accounting as a tool for assessing sustainability; and 3) research conclusions.

## 2. Defining the concept of sustainable development

Recently, more and more people are talking about the "Sustainable Development Goals", and about Sustainability. Like any complex concept, Sustainable Development does not have a universally accepted or sufficiently simple definition. Most often, however, the explanation presented in the Brundtland Report of the United Nations, in 1987, is adopted: "Sustainable development means development that seeks to meet the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987).

The optimal model implies achieving, at the same time, both the objectives of industrial or economic development, respectively the social ones, improving the living standards of the population, but also those of the environment, so that the resources are affected as little as possible, especially the hard ones to regenerate. Figure no. 1 illustrates both the concept of sustainable development and the interference of the three objectives of sustainable development.

**Figure no. 1. The concept of sustainable development / the interference between the three objectives of sustainable development**



*Source:* authors projection

"Sustainability means that when problems arise, solutions must be found that take into account all three elements: the economy, society and the environment, instead of applying quick and easy solutions to solve one area that causes problems for the other two" (Munteanu et al, 2022). In essence, sustainable development consists of a process of change through which the exploitation of resources, the direction of investments, the orientation of technological development and institutional changes are in harmony and lead to increasing the potential to meet present and future human needs and aspirations. In the current context of extending the responsibility from the economic sphere to the social and environmental aspects, it is necessary for the reporting model to extend beyond the traditional model of financial reporting (Ionescu et al, 2020). In this sense, the international economy plays an important role, major changes being necessary in international economic relations with the aim of ensuring sustainability. At the same time, the World Commission on Environment and Development (WCED) mentions two conditions that must be met so that international economic exchanges are considered beneficial for all parties involved. A first condition is represented by ensuring the sustainability of ecosystems on which the global economy depends, and the second condition is that of ensuring fair exchanges between economic partners.



In this context, the concept of environmental accounting is developed, a conceptual framework of environmental accounts, economic and social accounts being drawn up and proposed with the objective of being included in the national system for the economic-financial analysis in a reliable and faithful manner the influence of natural resources on sustainable incomes. Thus, the results must be interpreted with caution, since no method constitutes an absolute measurement of economic sustainability, but rather an interference of different indices that can lead to obtaining an exhaustive evaluation method of sustainable development.

### **3. Research methodology**

In the elaboration of this scientific approach, empirical research mechanisms were used, based on a questionnaire, which assessed the high level of awareness of the SDG objectives in the business community (set of states, united by common economic, political and cultural interests) and highlights the opportunity to transform this awareness into action taken towards achieving the objectives.

In order to determine the interference between the financial-accounting analysis carried out by the specialists in the field and the sustainable development regarding the achievement of the SDG objectives, a methodological approach was applied based on the qualitative analysis of the efforts undertaken by the standardization bodies, the representatives of the analyzed entities and accounting professionals, computer scientists - IT within these entities, having as a source the public reports drawn up, as well as the studies carried out by them in the field of sustainable development and last but not least the data published by the General Directorate of Economic and Financial Affairs of the European Union.

The research undertaken presents a combination of quantitative and qualitative research, which in a comprehensive manner provides uniqueness, originality and understanding to the study, due to the economic particularities of the performance debated from a theoretical and practical point of view, based on the accounting information and the analyzes carried out on their basis. The substantiation of the research was carried out by studying the specialized literature in the field, international legislation, normative acts in force, websites that address the studied issue, as well as discussions with practitioners in this complex field of sustainable development of international and national economies.

### **4. Essential stages of developing the Sustainable Development Goals (SDGs)**

The refinement of the Sustainable Development Goals builds on decades of engagement by both participating countries and the United Nations, including the Department of Economic and Social Affairs. Since the United Nations environmental conference held in Stockholm in 1972, the spread of the governance phenomenon of sustainable development has grown significantly at the local, national, regional and international levels.

The need to integrate economic development, natural resource management, security and social equity was first established in the 1987 Brundtland Report "Our Common Future" and was the main decision-making role of the United Nations Conference on Environment and Development (UNCED), organized in 1992 and also known as the Earth Summit or the Rio Summit.

On the occasion of this event, more than 178 countries approved Agenda 21, a detailed action plan to create international cooperation for sustainable development with the role of improving living conditions and protecting the environment.

In 1993, the United Nations General Assembly established the Committee on Sustainable Development-CSD, a high-level representative political body tasked with monitoring and promoting the implementation of the Rio outcomes, including Agenda 21.

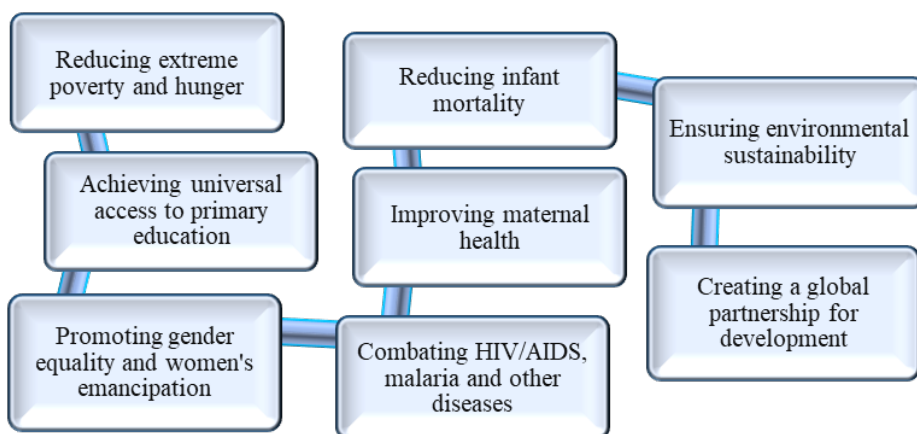
In 2002, during the World Summit on Sustainable Development, the three dimensions of sustainable development were presented for dissemination as part of development policies at all levels, adopting the Johannesburg Implementation Plan (JPOI). Thus, the international community's commitment to eradicating poverty and ensuring environmental protection was reaffirmed, this time emphasizing multilateral cooperation.

Following the Rio+20 Conference, held in 2012, the international community decided to establish a High-Level Political Forum on Sustainable Development (HLPF) with the role of replacing the Commission for Sustainable Development. At the same time, the member countries decided to start a process of developing a set of objectives for sustainable development (Sustainable Development Goals-SDG), following that they will be built on the basis of the development objectives of the millennium (Millennium Development Goals-MDG).

The sustainable development objectives - SDG, have replaced the MDG objectives contained in the text of the Millennium Declaration adopted in September 2000 at the UN. The member states of the United Nations, including Romania, gathered in 2000 around a commitment to reduce global poverty and save millions of lives.

The Millennium Declaration constituted during the period 2000-2015 the only global agenda in the field of development on which there was an agreement at the highest level and which included the following precise targets (Figure no. 2):

**Figure no. 2. Precise targets of sustainable development**



Source: 2030 Agenda for Sustainable Development,  
<http://www.undp.org/content/undp/en/home/mdgoverview/post-2015-development-agenda.html>

Thus, the MDG-Millennium Development Goals have played an important role in raising public awareness, increasing political will and mobilizing resources to fight poverty at the international level. The MDGs have helped to focus, reform policies by incorporating development goals and national strategy targets, and create institutions for the effective implementation of these plans.

The process of determining the post-2015 development plans was led by the Member States, with the participation of major interest groups as well as other civil society stakeholders. On 25.09.2015, the United Nations General Assembly officially approved the 2030 Agenda for Sustainable Development, together with 17 sustainable development goals and 169 related goals. Currently, the annual Policy Forum the High-Level Panel on Sustainable Development (HLPF) serves as the UN's central hub for tracking results and reviewing the 17 SDGs. Moreover, the Division for Sustainable Development Goals-DSDG

of the United Nations Department of Economic and Social Affairs (UNDESA) provides practical support for strengthening the capacities to reach of the SDG objectives. At the same time, DSDG plays an important role in evaluating the global implementation of the UN's 2030 Agenda. In this sense, the need for a firm commitment from all stakeholders to implement the global goals has been highlighted, and DSDG aims to facilitate this commitment.

In 2019, the European Commission presented its European Green Deal, a new strategy for EU growth, as a set of plans and policies that aims to transform Europe into the first climate and ecologically neutral continent by 2050. Officially, the Green Deal is defined as "the EU's road map for a sustainable economy".

Schematically, the stages of development and adoption of sustainable development objectives are presented in Table no.1:

**Table no. 1. Stages of development and adoption of sustainable development objectives**

1972	United Nations Conference on the Human Environment, Stockholm
1987	The Brundtland Report: Our Common Future
1992	United Nations Conference on Environment and Development: Agenda 21
1993	Establishment of the Commission on Sustainable Development - CSD
2000	The Millennium Summit held in New York: Elaboration of the 8 Millennium Development Goals (MDGs)
2002	World Summit on Sustainable Development - WSSD, RIO+10: Johannesburg Plan of Implementation – JPOI
2012	United Nations Conference on Sustainable Development, RIO+20: the Future We Want
2013	High-level Political Forum on Sustainable Development
2015	Agenda 2030 for sustainable development The Paris Agreement
2017	The Ocean Conference
2019	European Green Deal - the new EU growth strategy - published by the European Commission (COM), until 2050

Source: Authors processing, after SDG Knowledge Platform (2019)

Sustainability has gained greater importance in the last two decades and is a principle that can and should be applied to every aspect of our social, economic and environmental life (Stanescu et al., 2018).

### 5. Sustainable Development Goals

Romania, as a member state of the United Nations and the European Union, through the actions taken, has demonstrated that it adheres to the 17 Sustainable Development Goals regarding the 2030 Agenda for Sustainable Development approved by all member states of the United Nations in 2015, a document that contains a program of international action in the field of global development and which promotes the balance between the three dimensions of sustainable development: economic, social and environmental. The proposed actions target both developed and developing countries.

Through the Global Goals (Figure no. 3), an ambitious action agenda was established for the next 15 years in order to eradicate extreme poverty, combat inequalities and injustice and protect the planet by 2030.

**Figure no. 3. Sustainable Development Goals**

**Source:** 2030 Agenda for Sustainable Development,  
<http://www.undp.org/content/undp/en/home/mdgoverview/post-2015-development-agenda.html>

In essence, the 2030 Agenda contains the 17 Sustainable Development Goals that outline the course of action in the coming years to eradicate extreme poverty, combat inequality and justice and protect the planet by the year 2030. The Sustainable Development Goals can be that force able to set organizations/ entities to identify important risks and opportunities, build business models adapted to adverse conditions and implement effective strategies to achieve economic growth. All this will only happen if every part of the organization/entity contributes to the achievement of the objectives.

Currently, many important organizations/entities operating internationally, such as regulatory bodies, reference organizations and industry representatives, are collaborating to try to create certain consistent KPIs that organizations need to keep in mind and to assess performance in achieving the SDGs. Such performance indicators are an important step, especially if the indicators can be expressed in monetary terms, allowing comparison and a better understanding of the contribution of businesses to the achievement of the SDGs. Also, current international trends indicate an increase in the credibility of reporting by obtaining external guarantees provided by third parties.

### **6. Financial-accounting analysis and the development of sustainability in Romania**

The economic pillar of Romania's sustainable development, to which the social, environmental and cultural ones are added in a complementary and independent manner, has several objectives and priorities. The first fundamental macroeconomic objective is a permanent increase in GDP (Table no. 2.) based on the application of strategic and modern technological programs (for example, a desired average annual growth rate of at least 6.5% in the period 2010- 2025). This growth implies a sustained investment effort with increased efficiency, high dynamics of the total productivity of production factors, but above all a consumption of natural and human resources to achieve more with less, in other words meeting the eco-efficiency standard.

Romania's GDP at the EU level is a positive one in the case of the analyzed period due to the combined effect of post-isolation reopenings and firm policy measures taken during the pandemic to support economic growth. Specifically, it was the period when there was a post-pandemic reopening of contact-intensive services, the manifestation of a strong labor market that continued to improve, a lower accumulation of savings and the taking of fiscal measures to offset growth energy prices that supported private consumption.

**Table no. 2. Economic-financial analysis of Romania's GDP for the period 2020-2023**

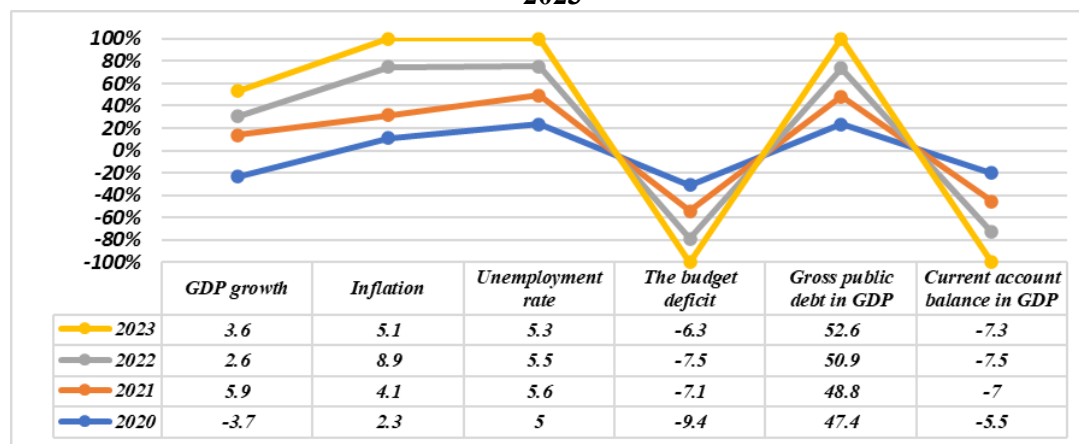
<i>Percentage analysis</i>	<i>2020 accomplished</i>	<i>2021 accomplished</i>	<i>2022 accomplished</i>	<i>2023 Estimate</i>
GDP growth	-3,7	5,9	2,6	3,6
Inflation	2,3	4,1	8,9	5,1
Unemployment rate	5	5,6	5,5	5,3
The budget deficit	-9,4	-7,1	-7,5	-6,3
Gross public debt in GDP	47,4	48,8	50,9	52,6
Current account balance in GDP	-5,5	-7,0	-7,5	-7,3

*Source:* processing authors according to the data published by the General Directorate of Economic and Financial Affairs of the European Union

The investments will benefit from the full deployment of the Recovery and Resilience Mechanism and the implementation of the related reform agenda that are part of a broader response and its purpose is to mitigate the economic and social impact of the pandemic and make European economies and societies more resilient. sustainable, more resilient and better prepared for the challenges and opportunities of the green and digital transition.

However, Romania's target to reach the desired performance in a sustainable and sustainable manner of the average standard of living in the European Union can only be achieved by applying an economic model based on the increase of investments and competitiveness, which would place the Romanian economy on a trajectory sustainable towards reducing the gaps and a real convergence with the living standards of the more developed EU member states.

**Figure no. 4. Graphical analysis of Romania's GDP for the period 2020-2023**



*Source:* processing authors

As can be seen in the graphic analysis in Figure 4, after strong growth in 2021, Romania's economy slows down to 2.6% in 2022, as high inflation has eroded disposable income, and Russia's war of aggression against Ukraine it affected economic sentiment, supply chains and ultimately investment. Growth is forecast to pick up slightly in 2023, with inflation falling. In 2022 unemployment remains at around 5.5%, while prices will reach a peak this year, which will gradually decline in 2023. The public deficit reaches 7.5% of GDP in 2022, falling to 6, 3% in 2023, so that the estimated share of debt in GDP will reach 52.6%

by the end of 2023. However, Romania was and is far below the European average in terms of the absorption rate of funds available to finance a sustainable functional economy and must be removed from the strong influence of an economy based on consumption, not production.

Economic conditions continue to have a high impact on the industry (Cosea, 2017), such as weather in agriculture. The reindustrialization or industrial modernization strategy is a useful document, as in the case of agriculture, to establish a vision and guidelines to follow in order to achieve sustainable development in Romania. Industry cannot be separated from its supporting structures, such as infrastructure. Improving road, rail or air transport infrastructure is of utmost importance for future economic development.

Romania must prepare for an increase in labor costs, an inevitable path that will affect the businesses and institutions that still depend on our country's profits, as has already begun to be seen. New competitive advantages must be "built" through clear measures that guarantee stability, and high-quality transport infrastructure, together with similar communications and telecommunications infrastructure, become tools that can open new directions of development. At the same time, in order to continue capitalizing on the opportunities offered by EU integration in this field, Romania needs a continuous effort to improve the legislative and institutional framework, the flexibility and adaptability of the business environment in order to increase the attractiveness of entrepreneurial activities among citizens and to stimulate, attracting foreign investors, developing a favorable environment for research-development-innovation.

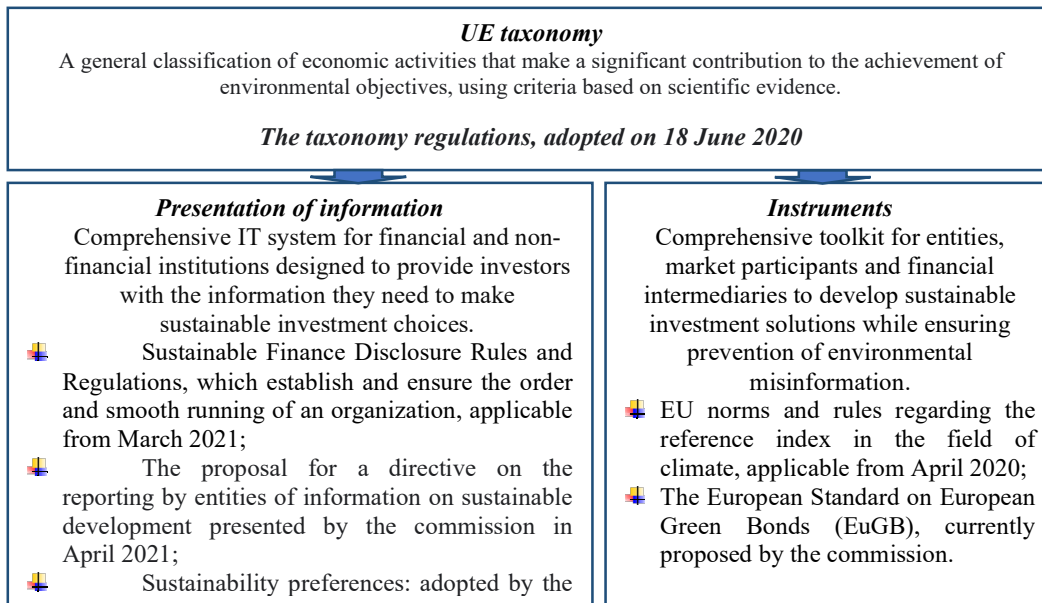
Considering that the volume of necessary investments is much higher than the capacity of the public sector, the main objective of the financial structure will have to be the direction of private financial activity towards relevant economic activities. Private sector interest in sustainable investment has grown significantly in recent years, but requires a clear, coherent and robust approach to sustainable finance. The European Union establishes this framework. The Sustainable Finance Framework and the Capital Markets Association support each other, which offers many opportunities for financial institutions and investors.

Well-integrated and efficient capital markets should act as a catalyst for the effective mobilization and allocation of capital towards sustainable investments. On the other hand, the impetus provided by the political agenda of sustainable finance increases the importance and increases the necessity and urgency of the effort to build a real and sustainable private capital market in the European Union. The Commission adopted its first action plan on financing sustainable growth in 2018. Based on this plan, the EU established the three fundamental elements of a sustainable financial framework<sup>1</sup>. These basic factors are: a classification system or 'taxonomy' of sustainable activities; an information framework applicable to financial and non-financial companies and investment instruments, including benchmarks, standards and labels.

This EU framework for a sustainable economy (Figure no. 5.) will play an important role in achieving these goals and in supporting a sustainable recovery, but it also involves rigorous research, funded and appropriate to each field in order to achieve the desired results.



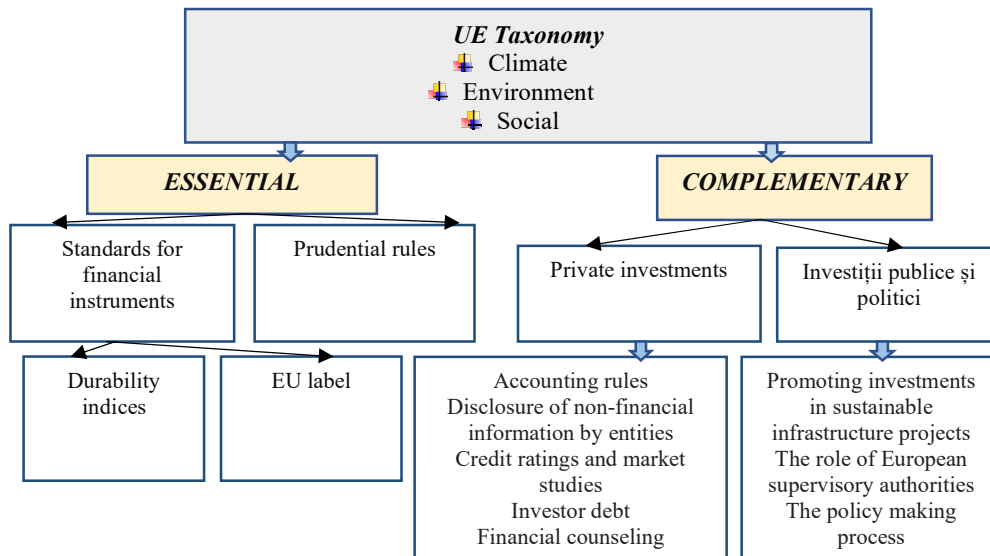
**Figure no. 5. The fundamental elements of the EU framework for sustainable finance**



**Source:** processing authors, adapted from the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Strategy for financing the transition to a sustainable economy. Strasbourg, 6.7.2021, COM (2021) 390.

The strategy set out in this action plan is an essential first step in the transition to sustainability. But to realize the full potential of this strategy, it needs to be complemented by measures in other areas, such as the environment (including natural capital), social dimensions, marine resources and agriculture, which requires concentrated efforts from all relevant actors. The role of the EU taxonomy within the action plan is presented, schematically, in Figure no. 6, as follows:

**Figure no.6. The role of the EU taxonomy in the action plan**

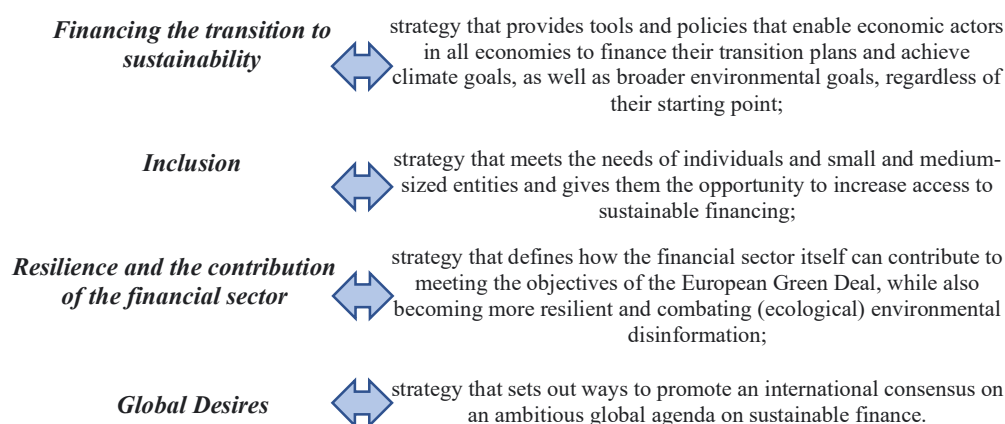


**Source:** authors' own processing, adapted from the Communication from the Commission to the European Parliament, the European Council, the Council, the European Central Bank, the European Economic and Social

Committee and the Committee of the Regions. Action Plan: Financing Sustainable Growth, Brussels, 8.3.2018, COM(2018) 97.

In the years since the implementation of this plan, major progress has been made in laying the foundations of the framework for sustainable finance. Thus, the Commission committed to complete the implementation of its ambitious action plan as early as 2018. However, so far there have been no changes compared to 2018, both in our understanding of what needs to be done to achieve sustainability goals, as well as in the global context. For these reasons, a new phase of the EU strategy on sustainable finance is needed. This strategy identifies four key areas of activity where additional actions are needed for a financial system to fully support the economy's transition to sustainability (Figure no. 7).

**Figure no.7. Areas that will lead to the implementation of strategies for setting objectives and planning the course of action to follow at both microeconomic and macroeconomic levels**



*Source:* processing authors, adapted from the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Strategy for financing the transition to a sustainable economy. Strasbourg, 6.7.2021, COM (2021) 390.

The transition to the EU's sustainability goals requires unprecedented efforts to mitigate and adapt to climate change, rebuild natural capital and strengthen resilience and wider social capital, all as part of a process of sustainable recovery from the crisis caused by the pandemic in the previous period. Although the transition trajectories of economic actors will vary considerably, with different starting points and business strategies, all these trajectories should ultimately be consistent with the EU's sustainability objectives.

## 7. Conclusions

The field of sustainable development is characterized by a great complexity of effects and aspects that must be addressed for a complete understanding of the phenomenon, all the more so as sustainability is targeted and stimulating interest regardless of the field of activity or industry. Therefore, capturing all the challenges and implications in the field of sustainable development, especially those that intersect with the field of accounting and the analysis of financial-accounting information, is a challenge for researchers, but also for all interested parties in general.

The analysis of the contribution that accounting brings to the achievement of the SDG objectives of the UN 2030 Agenda opens new horizons and directions for development-research-innovation. We emphasize the attention that must be directed to several topics



related to sustainability, some of which are ecological responsibility, social responsibility of university education, economic equity, etc., but also the re-examination of conceptual frameworks. The results of our scientific approach have indicated that taking steps to ensure sustainability for today's and future generations is a necessity and a concern of bodies and organizations/entities that exert influence at an international level, and accounting, through all actors involved: academia, researchers, accounting professionals, standardisers, can significantly support the achievement of this objective.

In this sense, the present scientific approach contributes to the specialized literature of accounting for sustainable development, signaling the important role of accounting and the interference between the economic-financial analyzes carried out on the basis of financial-accounting information, as well as to the initiatives started by the parties involved in these issues for the implementation of the 2030 Agenda and the European Ecological Agreement until 2050, for efficient and sustainable economic development, a healthy and indispensable environment for a sustainable economy and a better, fairer world.

As could be seen from the empirical analysis developed in the scientific study, the reindustrialization or industrial modernization strategy is a useful document, as in the case of agriculture, to establish a vision and guidelines to be followed for achieving sustainable development in Romania. Industry cannot be separated from its supporting structures such as infrastructure. Improving road, rail or air transport infrastructure is of utmost importance for future economic development.

The objectives of participating in the European projects for which Romania receives funding must be implemented in practice, not only to correct a series of tasks at a theoretical level, but for concrete actions such as: stimulating, in terms of production and research, alliances between universities, research institutes and the industrial or business environment, the development of industrial groups in order to increase production and export capacity, but also to attract foreign direct investment. It is not just any kind of investment, such as those that only benefit from the exploitation of natural resources and cheap labor, but investments that operate in the sectors of research-development-innovation, high technology and high export performance.

## References

1. Bebbington, J. & Larrinaga, C., 2014. Accounting and sustainable development: An exploration. *Accounting, Organizations and Society*, 39(6), pp. 395-413.
2. Bebbington, J. & Unerman, J., 2018. Achieving the United Nations Sustainable Development Goals: An enabling role for accounting research. *Accounting, Auditing & Accountability Journal*, 31(1), pp. 2-24.
3. Bebbington, J., Russell, S. & Thomson, I., 2017. Accounting and sustainable development: Reflections and propositions. *Critical Perspectives on Accounting*, 48, pp. 21-34.
4. Brundtland, G., 1987. *Our Common Future: The World Commission on Environment and Development*. Oxford: Oxford University Press.
5. Coșea, M., 2017. *Oportunitatea reindustrializării României*. [online] Available at: <[https://www.dcnews.ro/oportunitatea-reindustrializarii-romaniei\\_55525.html](https://www.dcnews.ro/oportunitatea-reindustrializarii-romaniei_55525.html)>.
6. Dumitrana, M., Jianu, I., Lapteș, R., Popa, A.F., 2009. Sustainable development and environmental accounting: concepts, trends and quality of accounting information. *Journal of Accounting and Management Information Systems*, 8(1), pp. 27-39.
7. Godemann, J., Bebbington, J., Herzig, C., Moon, J., 2014. Higher education and sustainable development. Exploring possibilities for organisational change, *Accounting, Auditing and Accountability Journal*, 27(2), pp. 218-233.

8. Ionescu, C.A., Coman, M.D., Paschia, L., Gudanescu Nicolau, N.L. & Stanescu, S.G., 2020. Sustainable Economic Intelligence: A New Dimension of Information Provided by Non-Financial Indicators. *Improving Business Performance Through Innovation in the Digital Economy*, pp. 117-143.
9. Munteanu, V., Zuca, M. & Horaicu, A., 2022. The need to develop a sustainable economy in Romania. *Annals of 'Constantin Brancusi' University of Targu-Jiu. Economy Series*, 4, pp. 93-103.
10. Stănescu, S.G., Horaicu, A., Andrei, A.M., The role of the accounting profession in achieving the objectives of sustainable development. *Annals of the „Constantin Brâncuși” University of Târgu Jiu, Economy Series*, 3, pp. 117-122.
11. Thomson, I.H. & Bebbington, J., 2013. Sustainable development, management and accounting: Boundary crossing. *Management Accounting Research*, 24, pp. 277-283.
12. Unerman, J., Bebbington, J. & O’dwyer, B., 2018. Corporate reporting and accounting for externalities. *Accounting and business research*, 48(5), pp. 497-522.
13. United Nations, 2015. *Transforming our world: the 2030 Agenda for Sustainable Development*. [online] Available at: <<https://sustainabledevelopment>>.
14. Venter, E.R., Gordon, E.A. & Street, D.L., 2018. The role of accounting and the accountancy profession in economic development: a research agenda. *Journal of International Financial Management & Accounting*, 29(2), pp. 195-218.

## INNOVATION AND EDUCATIONAL MANAGEMENT

**Ph.D. Associate Professor, Mădălina ALBU**

Petroleum-Gas University of Ploiești, Faculty of Economic Sciences, Romania

E-mail: malbu@upg-ploiesti.ro

**Abstract:** *The identification of the motivation to stimulate creativity in the university environment, as well as the main objectives and characteristics of these activities, represents the starting point in the development of a strategy for the implementation of innovation in educational management. All the changes that have appeared in the external environment in recent years have generated the need to adapt the methods of teaching, evaluation and control, so as to provide a new, innovative environment for the development of study programs. In order to be able to integrate the concepts of innovation and development in the strategy of the educational environment, it is necessary to analyze and interpret the current state of the environment in which we operate, so that all those positive aspects can be maximized in the future strategy. Also, following the analysis, the critical factors must be reduced, even eliminated in order not to generate risks in the future. The process of adapting the university educational environment to the needs of new generations must be a continuous one based on the use of the stimulating factors of innovation. The actual innovation begins with the identification of innovation opportunities and the impact they can have on the interested parties. Starting from the presentation of the current stage of the integration of innovative strategies in university management, this paper aims to identify and detail a series of proposals and recommendations that can constitute alternatives in carrying out activities specific to university education.*

**Key words:** *innovation, development, management, education.*

**Classification JEL:** *O32, M10, I2.*

### 1. Introduction

At the international level and implicitly also at the level of our country, all institutions with a role in the educational process must go through a process of evolution and adaptation to the new requirements. In this context, universities, more than ever, must be an integral part of the innovation process in the educational environment.

The promotion of teaching methods based on creativity have the role of encouraging students and young researchers to become entrepreneurs, to acquire the ability to identify innovative solutions to the problems in the environment in which they carry out their activity.

The process of adapting the university educational environment to the needs of new generations must be a continuous one based on the use of the stimulating factors of innovation. The actual innovation begins with the identification of innovation opportunities and the impact they can have on the interested parties.

At the European level, the creation of the European Education Area is a commendable initiative. Its main role is to create an interaction between the member states of the European Union in order to identify modern, creative methods, based on novelty, which can result in the development of modern education systems with a permanent capacity to adapt to the needs of society.

Identifying the motivation to stimulate creativity in the university environment, as well as the main objectives and characteristics of these activities, represents the starting point in developing a strategy for implementing innovation in educational management.

All the changes that have appeared in the external environment in recent years have generated the need to adapt the methods of teaching, evaluation and control, so as to provide a new, innovative environment for the development of study programs.

The identification of innovative solutions to increase the quality of the educational process must become a priority for all parties involved in the act of education.

All education systems, and implicitly the one in Romania, must be able to find solutions to deal with both the weak points in the system and the threats that can influence it

from the outside, as well as to make the most of all internal strengths and the opportunities generated by the external environment.

Approaching creativity as an integral part of the educational process, the permanent accumulation of new knowledge regarding digital education, new teaching methods existing internationally, must become a major concern of universities, in order to implement, develop and improve quality in education.

## **2. Innovation in education**

The development of the entire educational process and especially of modern teaching methods must represent a major objective at the level of all educational institutions, especially at the level of universities.

Starting from the identification of the current stage in the practice of the educational process, it can be stated that there is a special need to identify, implement and use a series of modern methods to help develop the methods used.

The introduction of new, modern methods that lead to the increase of the quality of the educational act, the creation of premises for the integration of the new in the current activity, must represent strategic objectives for the university management.

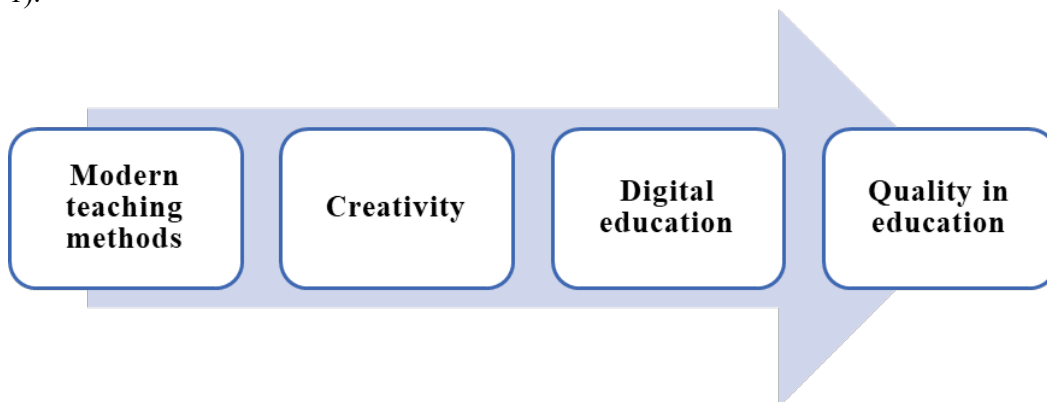
The innovative approach to education must be implemented both at the level of teaching staff and at the managerial level. All the factors involved must be aware of the need for a creative approach and contribute to the definition of innovative activity in the space of the university environment.

In general, innovation has always accompanied the educational process. At any level, various approaches can be identified with a role in identifying solutions, methods that lead to the development of the field.

The role of a quality education is to prepare students for the labor market, by providing the necessary information and knowledge, well structured and easy to accumulate.

In order to stimulate interest in learning, to succeed in motivating students in order to accumulate new knowledge, it is necessary to achieve a synergy between human, material and financial resources.

The accumulation of new knowledge, the approach to teaching methods based on digitization must become a strategic, major objective of university management. In these conditions, the continuous improvement of the quality in education can take place (figure no 1).



**Figure no. 1.** Strategic objectives in education

In order to respond to the new requirements in the field, teachers and education in general must approach new, modern, creative methods. At the organizational level,

institutions, universities, must demonstrate an educational management that creates opportunities in the modern approach to the educational process.

The implementation of a digital education, the use of creative techniques and methods, the use of new teaching methods, are arguments in favor of a modern education that stimulates and captures the attention of students.

Achieving a synergy between innovation and education must become a common practice of all factors involved in the educational process. An important role belongs to teaching staff who must constantly improve their level of information and training in modern teaching methods.

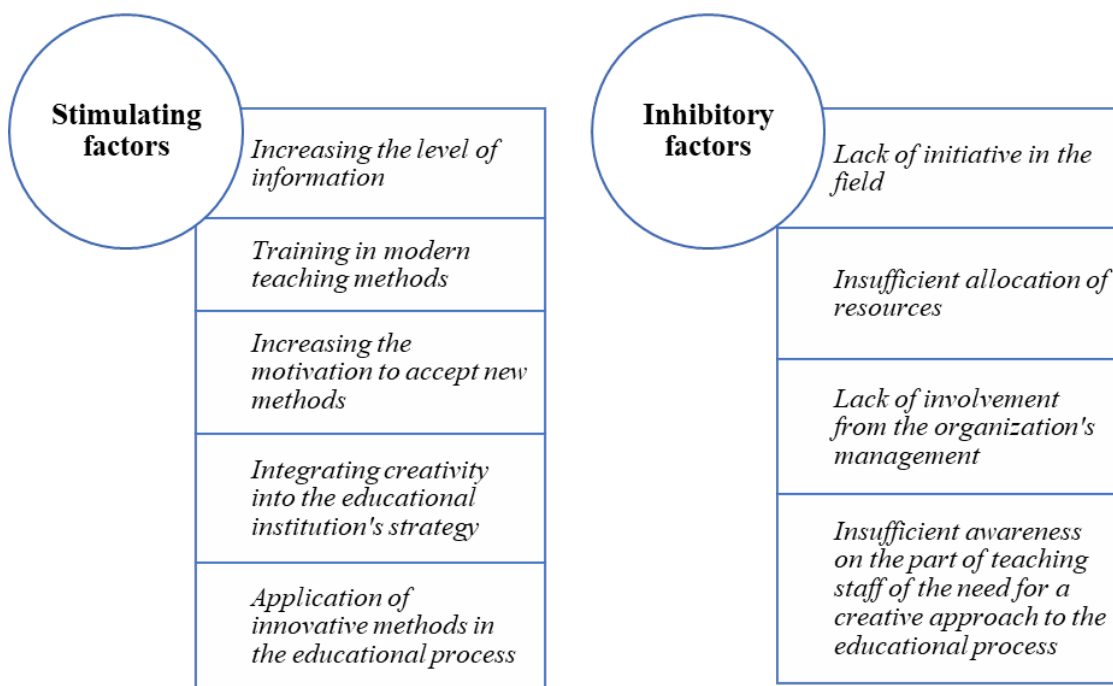
The process of adapting the university educational environment to the needs of new generations must be a continuous one based on the use of the stimulating factors of innovation. The actual innovation begins with the identification of innovation opportunities and the impact they can have on the interested parties.

### 3. Determinants of innovation in education

In order to identify the set of factors with a role in the triggering, manifestation and evolution of the creative attitude in the educational environment, especially in the university environment, but also to determine which factors can inhibit the innovation process, it is necessary to analyze the context in which the process takes place educational.

These factors cannot be analyzed and interpreted on their own, but they must be seen in full connection with the ability of teachers and educational institutions to adapt to the requirements of the field.

The analysis and interpretation of certain fields related to the educational process can lead to the identification of stimulating and inhibiting factors of innovation in education (figure no 2).



**Figure no. 2.** Stimulating and inhibiting factors of innovation in education

The areas where these factors can be identified refer to the teacher-student relationship, the work climate at the level of teaching staff and the existing organizational culture at the university level.

The integration of deeply innovative teaching methods can be achieved based on the proactive attitude of teachers and university management towards creativity. Regardless of the methods used, human capital is the one that must make the connection between methodology and practice. From here, from the attitude towards modern, creative methods, factors can appear that have the role of stimulating the creative attitude, but also factors that slow down or even inhibit this initiative.

### **3.1. Stimulating factors of innovation**

At the level of the educational process, there are a multitude of factors that can generate the stimulation of creativity. Understanding, increasing the capacity to interpret and integrate them determines the innovative level of education.

Among the main factors that can determine the stimulation of creative activity in the educational process can be listed:

*a. Increasing the level of information and training in modern teaching methods*

The development of personal creativity and knowledge in the field is an effective way of assigning modern teaching methods. This fact can lead to the stimulation of the creativity of the entire collective of teachers.

Information about creative, innovative methods in education is both the qualities and capacities of each individual, but also the offer on the educational market.

To inform and then train yourself in the field of creativity and novelties in the field must be a permanent education requirement.

*b. Increasing the motivation to accept new methods*

Making discussions, conferences, manifestations that promote the importance of integrating into their own activity of creative teaching methods, represent factors that can cause these news to assimilate.

The acceptance of each teacher of ideas according to which by assimilating news in the field is growing and improving the image of the university internally and externally, it can also be an effective way to develop creativity.

*c. Integration of the concept of creativity stimulation in the strategy of the educational institution*

The adoption of the methods of stimulating creativity in the educational process is a complex phenomenon that must be in a multitude of approaches. In itself, innovation in education must be viewed not as an objective to be achieved but as a condition of modern educational process, permanently adapted to the global requirements of society. In order to integrate the concept of creativity stimulation in the strategy of educational institutions, it is necessary to develop integrative strategies, with a role in promoting innovative methods in teaching, managing and transmitting information.

At the institutional level, the implementation of creativity in education must manifest and rely on the ability of organizations, universities in allocating the resources necessary to address the educative process through the prism of modern methods.

The implementation of strategies for developing creativity in the general strategy of universities has the role of creating a creative environment throughout the institution.

*d. The ability to identify and apply innovative methods in the educational process*

In general, progress in teaching methods is based both on the ability of teachers to be receptive to the news in the field and to the institutional ability to ensure the necessary tools.

Most of the creative methods are based on technical news. These must be supported by new programs, courses, teaching techniques as well as new methods of approaching the interpersonal relationships.

The use of interactive teaching methods, the use of interactive boards, the implementation of digital educational methods, are only some of the methods that, by their implementation, can become stimulating factors of innovation in education.

### **3.2. Inhibitors of innovation**

At the opposite end of the factors that generate creativity, those determining factors of stagnation, inhibition of development and creativity can be identified.

Among them can be listed:

*a. Lack of initiative in the field*

The way in which the teachers as well as the management of the universities approach the innovative activity is closely related to the way they have an initiative in the field. An innovative approach to teaching methods cannot take place without a change in the way of thinking and attitude towards innovation. The reluctant reactions to the new have directly related to the personality traits of the teachers but also to the way in which the university management addresses the innovative process.

*b. Insufficient allocation of resources*

The development of a modern educational process, based on modern teaching techniques and methods, must be supported by a constant and well managed allocation of resources. When this work does not manifest itself, regresses, decreases of the progress made initially and a reluctant approach from the teachers can occur. Insufficient allocation of the necessary resources can lead to a defensive attitude from all involved parties, both teachers and students.

*c. The lack of an organizational culture that favors the occurrence of innovation in education*

The management of the educational institution plays an important role in the development of an organizational culture that promotes innovation. Often the lack of involvement from the management of the organization leads to a stagnation of development, a defensive approach from the teachers and implicitly of the students. The formation of an organizational culture favorable to the development of teaching methods based on innovation is based on the professional motivation of teachers. When the degree of professional satisfaction is low and the level of interest to the new, innovative approach in teaching activity can be decreased.

### **4. Conclusions**

At the level of the education system, innovation can be viewed from two perspectives. A first aspect refers to the identification of solutions, opportunities, strategies, by which the objective of the educational process is achieved. A second perspective refers to the approach of innovative teaching methods meant to develop students in a modern way as efficient.

Innovation refers to both the educational process itself, to the development of new teaching methods based on new digital technologies, as well as to how interested parties, teachers, students, relate to news in the field.

In order to be able to have access to the news in the field and to integrate them into their own activity, it is necessary to create and develop the necessary conditions for maximizing the contribution of stimulating factors.

By identifying the opportunities offered by the integration of innovative methods in education and in the university managerial practice, the road to an integrated approach is opened, meant to stimulate all the factors involved.

The implementation of creative methods, in the educational process, is not every time a simple activity. Therefore, between all the interested parties there must be a relationship of collaboration, exchange of ideas and knowledge, in order to obtain the expected results.

The development of partnerships, the realization of exchanges of experience between various universities within conferences, symposiums, are methods by which innovation can be known and developed in education.

The appreciation of the individual results of the teachers, but also of the study groups of which they can be part, represent managerial methods by which the implementation of innovations in the educational field can be achieved with maximum results.

The allocation of resources necessary and sufficient for the application of modern teaching methods is an important factor, a stimulator of promoting innovation in the educational system. It should be mentioned that all this cannot be done without a continuous training of teachers in the field of innovative modern methods of teaching and approaching the educational process.

### References

1. Albu, M., 2014. *Managementul cercetării-dezvoltării*. Ploiești: Editura Universității din Ploiești.
2. Băltărețu, C.C., 2019. Inovație în activitatea didactică. *Revista „Inovație în educație”*, 1, pp. 78-81.
3. Șova, T., Rusov, V., Cotos, L., 2018. *Factorii transferului de inovații în educație: Studiu analitic*. Bălți: Facultatea de Științe ale Educației, Psihologie și Arte, Catedra de Științe ale Educației.



## INNOVATIVE METHODS FOR MOTIVATING EMPLOYEES

**Ph.D. Student, Diana-Andreea DUMITRACHE**

”Valahia” University of Târgoviste, Romania

Email: diandreea.rotaru@gmail.com

**Professor PhD, Delia Mioara POPESCU**

”Valahia” University of Târgoviste, Romania

Email: depopescu@yahoo.com

**Ph.D. Student, Cristina Roxana IONESCU**

”Valahia” University of Târgoviste, Romania

Email: ionescu\_cristina\_roxana@yahoo.com

**Ph.D. Student, Andrei MATICIUC**

”Valahia” University of Târgoviste, Romania

Email: maticiuc.andrei@gmail.com

**Abstract:** *As a premise of all companies, the most important resource is the human resource, which is practically the creator of value, the source of creativity and initiatives for progress. Employees are the key to every organization, the factor of evolution and promoter of competitive success, which is why their motivation is a well-defined concern of every company. In the context of the current economy, employee motivation knows new horizons, managers and human resources divisions trying to identify the most varied and innovative methods to motivate employees. In order to make the employee motivation process more efficient, employers try to come up with various motivation methods, as specific as possible to each person. In this way, the more an employee feels that he is appreciated and motivated on an individual level and not as a resource that only covers a position in the organizational chart, the more his involvement will increase and lead to favorable results for the company.*

**Key-words:** *Motivation, innovation, employees.*

**JEL Classification:** *J33, M12, M52.*

### 1. Introduction

Over time, the importance and appreciation of human capital has experienced impressive development, demonstrating its effectiveness and contribution in any field of activity. In the modern approach, from the perspective of human resources management, people are not only hired to fill certain vacant positions in the organization and be remunerated for the work performed, but also for their role and contribution that they can have within the institution, being perceived as an essential part of the organization.

In this context, staff motivation is the basic factor that determines and orients employees towards obtaining performance results, which are the basis of organizational development and ensuring a competitive position in the competitive environment.

From a conceptual point of view, motivation represents a sum of internal and external forces, energies that initiate and direct human behavior towards a certain goal, which, once achieved, will determine the concern for the satisfaction of another need, being at the same time an important lever in the process of self-regulation of the individual. Likewise, researchers define motivation as a process of initiating human behavior to achieve organizational goals in exchange for satisfying personal needs.

Employee motivation is a major component of company management. A first argument on which this statement is based is the role of motivation to support employee training. In fact, the quality of employee motivation conditions, to a decisive extent, the realization of management functions: foresight, organization and coordination, as well as the effectiveness of the evaluation that follows training and, through them, the very effectiveness of the entire enterprise.

The modern motivational system is a model consisting of a set of elements that contribute to the motivation of the company's employees. The components of the motivational system are numerous, they vary in origin, way of satisfaction and functions, so that they are as personalized as possible for each individual, to respond as best as possible to the needs of each and to stimulate the involvement of employees by offering individualized benefits according to each person's personality.

### **Literature review**

Staff motivation is the management function where emotional intelligence is most strongly involved, so staff motivation policies must take into account the needs of individuals both at the group level and at the individual level. Staff motivation has been an attractive topic for many researchers, so that numerous motivation models can be identified in the specialized literature, the most representative being Maslow's and Herzberg's. Both analyze people's needs and represent a good foundation for defining the methods of motivation that can be identified at the organizational level.

The most representative model of needs is that of Maslow, who in 1954 proposed a primary model for the theory of the hierarchy of needs. Thus, Maslow's pyramid reflected a classification of people's needs, including the following categories: physiological, safety and security, belonging, esteem and self-realization. According to this theory, people have a tendency to validate needs starting from the base of the pyramid, tending to climb towards the top of the pyramid. The first level of the pyramid refers to the physiological needs that each individual has, respectively resources such as air, water, food, shelter, rest, clothes and shoes and reproduction. The second level includes elements related to personal security, employment, resources, health and property, while the third level includes friendships, the need for privacy, starting a family and sense of connection. At the fourth level we find the respect, self-esteem, status, recognition, power and freedom that an individual perceives, while the desire for self-transcendence is located on the last level of the pyramid.

Another approach to motivation is that of Herzberg, who exposes in his theory two main categories of motivating factors, respectively: motivation factors and hygiene factors. The motivation factors presented in the two-factor theory include the need for achievement, recognition, growth, responsibility, advancement, work itself, while the agency factors include elements such as security, safety, salary, supervision, work policies and environment For work.

At our times, there were initiatives that took into account the research of the needs underlying motivation, so that the study carried out by Nicolescu and Verboncu reflects types of motivation that can be classified into four pairs, as follows: positive - negative, intrinsic - extrinsic motivation, cognitive - affective and economic - moral.

## **2. Motivating employees**

The methods of motivating employees have recently experienced a significant evolution, which has determined the increase in the diversity of methods by which employees are rewarded, appreciated and supported for carrying out their professional activity. Classic motivational techniques no longer have the impact they had a few years ago, which is why managers try to innovate and adapt the ways in which they motivate their staff in order to meet their needs as best as possible. In the following, we will present the techniques and methods of motivating employees that have become more and more popular among companies.

### **2.1. Communication of future plans**

Ensuring transparency at the organizational level provides security to employees and motivates them in their professional activity. Effective communication between management and employees about organizational goals facilitates informing employees, reducing errors, and improving company performance. The transmission to employees of the future plans, the company's objectives, as well as the transmission of individual objectives, enhances the level of awareness among the employees and thus increases the chances of achieving them.

Showing the big picture promotes understanding of the purpose behind the work so employees can see how it fits into the big picture. Managers can help increase workplace motivation by making sure teams understand how each of their efforts affects the organization, customers, and community. Also, managers must ensure that employees know the purpose of their work and are aware of the importance of their work. Setting measurable goals provides a change for better employee motivation each time a goal is achieved and keeps the team on track.

### **2.2. Ensuring a positive and healthy work environment**

Carrying out the activity in a safe workplace, where they can express themselves freely and have a balance between personal and professional life, increases both the productivity of employees and their motivation. A work environment in which employees have a sense of belonging and feel that they contribute to the company's success indirectly contributes to the company's performance.

The empathy shown by managers and the awareness at the managerial level of the fact that employees are not machines or resources that contribute to the achievement of tasks and have unique personalities, with varied needs, contribute to the motivation of the staff. Thus, positivity at work favors the motivation that employees have every day to come to work.

The awareness of the human side of each individual can also be emphasized by offering competitive medical packages, which include both components frequently found in companies, as well as innovative elements such as consultations with a psychologist, therapeutic or relaxation massage, career counseling, in organization, in financial education and other areas that have become topics of interest nowadays.

The involvement of employees in discussions in which top management participates is also a way of motivating employees, which aims both for top management to get to know high-performing employees, as well as to reduce the gap between organizational levels, thus creating the necessary environment for debating some topics, initiating some ideas or simply the appreciation of the merits of the people who were effectively involved in the success of the projects started at the organizational level.

### **2.3. Investment in professional and personal development**

Employees who have the opportunity to learn continuously and are challenged in the workplace by their managers to become better are motivated by a sense of achievement and personal development. This challenge may be accepting a different role, managing a new or more valuable project, or representing the company and speaking in front of the public, even though the colleague has not done this before.

Employees whose work allows them to contribute to a greater cause they believe in are driven by a greater sense of achievement and purpose, which also helps boost staff confidence in their own abilities. Another example of how they can develop at work is to take over management activities. Thus, managers who allow employees to express themselves and get involved in the ongoing discussions offer trust and recognition among subordinates. Also,

in this way, not only can they share their opinions and be heard in this way, but they are motivated to put their words and ideas into practice afterwards.

Staff development from a professional and personal point of view can also be achieved through the financial and moral support of employees in the completion of specialization courses, professional training or participation in conferences, because through education, their confidence and motivation will be at another level. Also, access to information and to a library with valuable volumes in the field, updated periodically, is a way of motivation suitable for people who have reading as a passion.

#### **2.4. Promoting flexibility in the workplace**

Nowadays, flexibility at work is a very important factor, followed by salary. An approach that allows flexibility about where, when and how employees work will enable them to be highly motivated. A flexible company is a company that allows you to make up a lost hour, one that allows you to work from home, or if you have to go to the office, you can go. Flexibility can also be in working hours. It doesn't matter if you start very early or later, each of us has certain hours when we are productive. And a flexible manager understands and accepts this, as long as the job gets done on time.

Also, working from home is a highly appreciated advantage among young people who want to travel or relocate to another part of the country or to another country. Thus, they can continue working in the same company and capitalize on their personal plans. Another tool that has become popular is the adaptation of the program so as to offer flexibility for the activities carried out on the weekend, programs such as late Monday and early Friday coming for this purpose.

An innovative approach that recently appeared in multinational companies is the mobility programs that offer employees the possibility to work abroad in the short or long term, taking into account the needs of the employees. Mobility programs are opportunities that contribute both to the development of employees and to the formation of a cosmopolitan mentality of future leaders.

#### **2.5. Celebrating victories and recognizing merits**

Acknowledging successes and appreciating them is the easiest way to motivate employees. Appreciation of merits and involvement should not be underestimated because it is the best way in which managers can confirm to employees the recognition they deserve, assure them that they have done a very good job and make them realize how important is their involvement at the company level. Appreciation of merits can take very varied forms, which can be adapted according to each individual or situation. Among the forms of merit recognition are thank you emails, offering free days or a bonus to compensate for the effort put in, organizing outings in town for meals or team activities, recognizing merits in front of colleagues, offering valuable cards.

Also, the use of social media platforms has become increasingly used in both personal and professional life. Public recognition is a great way to celebrate an employee's achievements (having wider business impact) as it brings greater visibility and extends the employee's praise. At the same time, it represents an educational moment for informing the employees of the corporation about the importance of the work done. Appreciating an employee's success on social media platforms will make them feel rewarded not only by their own team, but also by the users who follow the account.

#### **2.6. Providing opportunities for promotion and offering bonuses**

Offering promotion opportunities represents for employees a confirmation of the fact that their involvement and the results obtained are appreciated, being considered employees who have a significant contribution at the company level. The degree of motivation of the employees who are promoted increases simultaneously with the new responsibilities, being thus aware of the skills that helped him climb the hierarchical ladder. Offering bonuses or financial benefits for various events no longer represent innovative ways of motivation, but combining classic elements with the new needs that have arisen among employees, new ideas can be outlined such as bonuses for special events, vacation bonuses, or material benefits such as a chair office for people who prefer working from home.

The permanent challenges also represent a way of validating the self-improvement needs manifested among the employees. The desire to learn new things from employees can be easily satisfied by involving employees in new challenges that will take them out of their comfort zone, help them assert themselves and reduce the risk of ceiling.

### **2.7. Adequate management between managers and employees**

The relations between the direct manager and the employees often influence the activity and performance of the employees. Being the person who coordinates the employees' activity, the manager must ensure the existence of collaborative relationships and the existence of optimal working conditions, marked by freedom of expression and trust. At the same time, managers must be aware that when employees know that their voice is heard and that it matters, they feel motivated and confident about their position within the company. Also, avoiding control and micromanagement is primarily a proof of trust given to employees, as well as a way of motivating them by encouraging autonomy, expression and effective involvement in organizational development. Also, supporting new ideas and encouraging employees to express themselves can lead to the emergence of very good ideas.

At the level of many companies, one-to-one meetings have become more and more popular, being an opportunity to find out more information about employees both on a personal and professional level, thus being able to adapt future methods of motivation. At the same time, the fact that the manager allows time for an individual discussion with the employee is a way to confirm to the employees the importance they have at the organizational level, the appreciation they deserve and at the same time to appreciate the efforts and analyze the failures from the perspective of improvement opportunities.

### **2.8. The use of the latest generation applications and technologies**

The use of the latest technologies and applications is an indirect way of motivating employees. In addition to the advantages they bring at the organizational level, many employees greatly appreciate the possibility of being able to work with the newest versions of applications, the newest technologies, thus allowing them to be in step with technological evolution and to have access to powerful tools, which at the same time make their activity more efficient. The use of outdated systems and hardware tools is most often associated with cumbersome processes, long response times, which determines both a long time for completing tasks and frustration among employees.

## **3. Conclusions**

Motivation plays a very important factor in a person's life. Whether it's improving ourselves or our organization's performance. Motivated employees do not need to be told how to do things, they take initiative, are willing to take on additional responsibilities, are innovative and good entrepreneurs, which can translate into success, performance and organizational development. At the same time, motivation plays a very important factor and

ensures that employees remain active and contribute the best things to their organization, so that at the organizational level, the definition of strategies, means and methods of motivation is an activity that must be considered the organization's values and mission globally, as well as the individual as a piece of a complex puzzle, without which the picture would not be complete.

To successfully include efforts aimed at motivating employees, managers must have a real picture at both the macro and micro levels of the company. The macro level supports a motivational initiative through logic and context, and the micro level gives it consistency in action. As long as the employee sees his relationship with the company as an important one, the activity he performs brings with it personal fulfilment. In this way, the result of the motivation approach will have a decisive impact on personal motivation. After all, the need for self-actualization represents the inclination towards capitalizing on one's own potential.

### References

1. Băieșu, M., 2003. *Human resources management*. Chișinău: ASEM.
2. Bîrcă, A., Băieșu, M., Abramihin, C., 2013. *Human resources management. Applied approach. Case studies. Integrame. Probleme. Tests*. Chișinău: ASEM.
3. Gîțu, A., Professional development - An instrument to motivate employees in the public service. *Teoria și practica administrării publice - Materiale ale Conferinței științifice internaționale*, pp. 544-547. [online] Available at: <[http://dspace.aap.gov.md/bitstream/handle/123456789/1801/Gitu\\_A.pdf?sequence=1&isAllowed=y](http://dspace.aap.gov.md/bitstream/handle/123456789/1801/Gitu_A.pdf?sequence=1&isAllowed=y)> [Accessed 08.04.2023].
4. Herzberg, F., 1966. *Work and the Nature of Man*. Cleveland, OH: World Publishing.
5. Maslow, A.H., 1954. *Motivation and Personality*. New York: Harper & Row.
6. Nicolescu, O., Verboncu, I., 2008. *Management of Human Resources*, 291, pp. 239–246.
7. Vlad, G., 2023. *23 ways to motivate employees through non-financial methods*. [online] Available at: <<https://gratielavlad.ro/motivarea-angajatilor-prin-metode-nonfinanciare/>> [Accessed 08.04.2023].
8. Vo, T.T.D., Tulliao, K.V., Chen, C.-W., 2022. Work Motivation: The Roles of Individual Needs and Social Conditions. *Behavioral Sciences*, 12(2), pp.49-67.

## MEASURING REGIONAL COMPETITIVENESS AT THE LEVEL OF THE EUROPEAN UNION

**Ph.D. Student, Corneliu-George IACOB**

University of Economic Studies, Bucharest, Romania

Email: iacobcorneliu2022@gmail.com

**Lecturer, Ph.D., Emilia IORDACHE**

"Constantin Brâncoveanu" University of Pitești, Romania

Email: emi66vl@yahoo.fr

***Abstract:** Competitiveness is a concept with multiple meanings, which led to the appearance of an important number of definitions: we encounter the concept of competitiveness at the national level, but also at the company level. Competitiveness considers all the elements that explain the success of a nation, from a global perspective. Competitiveness looks at how both nations and firms use the totality of their skills to achieve prosperity and profit. Competitiveness is relative and not absolute because it compares the performances of nations or companies with each other. The competitiveness of a country is one of the main aspects that ensure the country's evolution at the regional and even global level. The sources of competitiveness may differ for a country depending on its economic, political, cultural position, but also on the group of countries to which it refers. Since 2010, the European Union Regional Competitiveness Index measures the main competitiveness factors for all NUTS-2 level regions in the European Union. The index measures, with the help of a set of indicators, the ability of a region to offer an attractive environment for companies and residents. Starting in 2022, this index is based on an updated RCI 2.0 methodology.*

***Keywords:** competitiveness, European Union, updated RCI 2.0 methodology, performance.*

***JEL Classification:** F15, F10.*

### 1. Introduction

In the history of economic thought, the concept of competitiveness has evolved from the classical mercantilist theory to the theory of competitive advantages and to the neoclassical criticisms of the international competitiveness of countries. (Voinescu, Moisoiu, 2015) shows that more recent theories have developed the concept of regional competitiveness, bringing classical theories closer to the applied economy of regions. The European Commission has adopted the objectives of the regional competitiveness policy as the main tool for inducing economic growth, export capacity and performance on the global market. Other studies on the international competitiveness of regions have brought the discussion of competitiveness to the dimension of relations between regions. The theoretical origins of the concept of competitiveness can be traced to the economics of foreign trade and its role in national and international economic well-being.

### 2. Measuring regional competitiveness at the level of the European Union

According to (Dijkstra et al., 2023), regional competitiveness is defined as the ability of a region to provide an attractive and sustainable environment for firms and residents to live and work. The authors point out that their definition of regional competitiveness is slightly different because it integrates the perspective of both businesses and residents. This definition balances the goals of business success with those of societal well-being and answers, at least in part, the "beyond GDP" discussion. In the definition provided, the concept of sustainability refers to the ability of the region to provide an attractive environment in both the short and long term. For example, by including numerous indicators on human capital and the quality of institutions, the RCI is meant to measure a region's long-term potential.

Since 2010, the EU Regional Competitiveness Index (RCI) measures the main competitiveness factors for all NUTS-2 level regions in the European Union. This index measures, with a considerable set of indicators, the ability of a region to provide an attractive environment for companies and residents to live and work. The 2022 edition of the index is

based on an updated methodology called RCI 2.0. RCI has become a widely used index since its first edition, RCI 2010 (Dijkstra et al., 2011). If in the first editions the focus was on highlighting the differences in competitiveness between regions at a given time, in the following editions an attempt was made to record the significant changes that occurred over time. This change in optics encountered several difficulties: the list of indicators changed over time; some indicators are no longer collected or relevant and new indicators have been added to capture new issues. In addition, changes in the Nomenclature of Territorial Units of Statistics (NUTS) 2 regions in Croatia, Ireland, Lithuania and Poland created breaks in the statistical time series. In addition, there have also been changes regarding the member states of the European Union. To avoid the pandemic influencing the underlying drivers of competitiveness, 2019 data was used for certain indicators instead of 2020 or 2021.

Until 2018, the RCI followed the approach used by the World Economic Forum (WEF) to construct the Global Competitiveness Index (GCI), after which the index has been substantially modified. Building on the WEF's Global Competitiveness Index (GCI) framework, RCI has adapted this framework and extended it to the EU regional context, with the aim of capturing the underlying factors that underpin a region's long-term economic development. This index does not aim to capture the impact of short-term shocks (eg the COVID-19 pandemic or the invasion of Ukraine).

Figure no. 1. RCI 2.0 structure



Source: Dijkstra et al., 2023, p.8

The RCI 2.0 Regional Competitiveness Index is composed of three sub-indices: "core", "efficiency" and "innovation" and 11 pillars describing the different aspects of competitiveness. The structure has remained unchanged since the first edition in 2010.

The "core" sub-index refers to the main underlying drivers of all types of savings. It identifies the main issues that are necessary for the development of regional competitiveness and includes five pillars: (1) 'Institutions', (2) 'Macroeconomic Stability', (3) 'Infrastructures', (4) 'Health' and (5) 'Education Basic'.

The "Institutions" pillar captures the quality and efficiency of institutions, the perceived level of corruption and the overall regulatory framework within countries. It shows whether the institutional climate supports entrepreneurship and whether it is easy to start a new business. It captures the extent to which people trust their national legislative and regulatory



systems and whether managers believe that various aspects of the business environment are effective and trustworthy.

"Macroeconomic stability" measures the quality of the overall economic climate. Economic stability is essential to guarantee confidence in markets, both for consumers and for producers of goods and services. Stable macroeconomic conditions lead to a higher rate of long-term investment and are essential ingredients for maintaining competitiveness.

The "Infrastructure" pillar describes dimensions of infrastructure quality such as connectivity and accessibility. The quality of infrastructure is essential for the efficient functioning of an economy. High-quality infrastructure guarantees easy access to other regions and countries, contributes to better integration of peripheral and lagging regions, and facilitates the transport of goods, people and services. This has a strong impact on competitiveness as it increases the efficiency of regional economies.

The "Health" pillar describes human capital in terms of health and well-being, with a particular focus on the workforce. Good population health leads to greater labor market participation, longer working lives, higher productivity, and lower health and social costs.

The "Basic Education" pillar focuses on compulsory education results as an indication of the effectiveness and quality of the educational system in the EU member states. High levels of basic skills and competences increase the ability of individuals to subsequently perform well in their work and continue into tertiary education.

The 'Efficiency' sub-index includes three pillars: (6) 'Higher education, training and lifelong learning', (7) 'Labour market efficiency' and (8) 'Market size'. As a regional economy develops, these aspects are linked to a more skilled workforce and a more efficient labor market.

The pillar "Higher education and lifelong learning" captures the contribution of education to productivity and economic growth. Knowledge-based, innovation-driven economies require well-educated, adaptable human capital and education systems that successfully impart key skills and competencies. "Labor market efficiency" provides an important indication of economic development of a region. Efficient and flexible labor markets contribute to the efficient allocation of resources.

"Market size" aims to describe the size of the market available to firms, which directly influences their competitiveness. In fact, larger markets allow firms to grow and benefit from economies of scale and could stimulate entrepreneurship and innovation.

Finally, the sub-index "Innovation" includes the three pillars that are engines of improvement at the most advanced stage of economic development: (9) "Technological Readiness", (10) "Business Refinement" and (11) "Innovation" .

"Technological readiness" measures the extent to which households and businesses use and adopt existing technologies.

The adoption and diffusion of new technologies is widely regarded as fundamental to driving growth and competitiveness.

The next pillar is "Business Sophistication". The level of business sophistication within an economy shows its potential for specialization and diversification, which can help regions respond to competition. Specialization in sectors with high added value also contributes to competitiveness.

The last pillar is "Innovation". Developed economies need to be at the forefront of new technologies, producing state-of-the-art products and processes to maintain their competitive advantage. The level of innovative capacity of a region influences the ways in which technology is diffused in the region.

Given the nature and availability of the indicators, two of the pillars - "Macroeconomic Stability" and "Basic Education" - are measured at the national level, while the "Institutions"

and "Technological Training" pillars include two sub-pillars, one at the national level and one at the regional level.

Unlike previous editions, the EU regions are divided into three development stages according to the average gross domestic product (GDP) per capita 2018–2020 in purchasing power standards (PPS), expressed as an index with the EU-27 average set as reference level 100. In the three previous editions of the RCI – 2013, 2016 and 2019, EU regions were divided into five stages of development, in the same way as the Global Competitiveness Index (WEF-GCI) did until its edition 2017/2018. Since then, WEF-GCI no longer uses development stages. Consequently, RCI 2.0 returned to the original approach used in the 2010 edition of using three stages, adapting them to the thresholds used in cohesion policy today. These development stages are recalculated for each edition and do not fully correspond to the category of regions used by cohesion policy programmes.

**Figure no. 2. Weighting of RCI sub-indices according to development stage**

Stage of development	Sub-index weights	
	Basic	Efficiency
Stage 1: GDP index (*) < 75	30 %	50 %
Stage 2: GDP index (*) [75-100]	25 %	50 %
Stage 3: GDP index (*) > 100	20 %	50 %

Source: Dijkstra et al., 2023, p.8

The calculation methodology of RCI 2.0 2022 is based on 68 indicators, of which 48 are at the regional level. Of the 68 indicators, 51 were used in the two previous editions, 9 were used in one of the two previous editions and 8 are new. These were primarily indicators at the national level in the pillars "Institutions" and "Technological Preparation". In general, the index follows the methodology adopted in the first edition in 2010, but some adjustments and updates have been made.

**The main steps used to build the RCI:**

1. Check for missing data
2. Outlier detection
3. Normalization
4. Weighting
5. Aggregation
6. Conversion to an EU index.

Regarding this conversion, (Dijkstra et al., 2023) states that finally, to facilitate the interpretation of the RCI and to make it more accessible to a less technical audience, we transformed the final scores of the overall RCI, sub-indices and pillars into an EU index, by expressing each value as a percentage of the EU average. This is done using the following formula:

$$x_{new} = 100 + \left( \frac{x - EU-27}{EU-27} \times 100 \right)$$

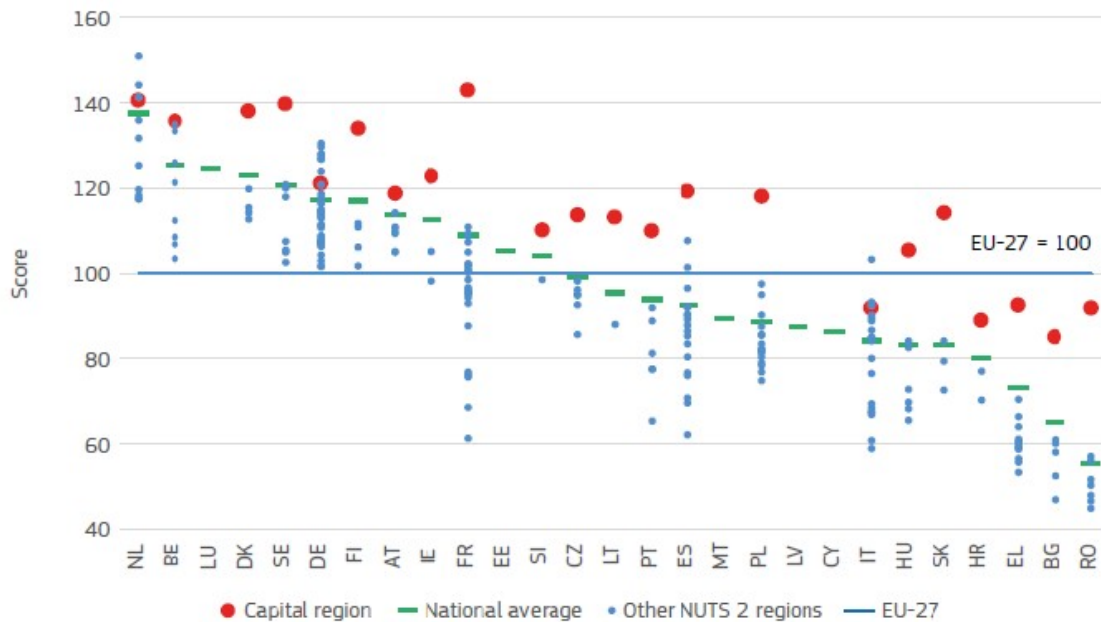
Thus, 100 represents the EU-27 average for the index, sub-indices and each pillar. A region value of 90% means that region scores 90% of the EU average, while a value of 120 means the region scores 20% above the EU average.

### 3. RCI 2022: main findings at European Union level

RCI reveals a remarkable spatial pattern across EU regions. Regional competitiveness is above the EU average in all regions of Austria, Benelux, Germany and the Nordic Member States. In contrast, all eastern regions, except most capital regions, score below the EU average. Southern regions of EU member states tend to score below the EU average, with only five exceptions: Cataluña, Madrid and País Vasco in Spain, Lombardy in Italy and Área Metropolitana de Lisboa in Portugal. Ireland and especially France have a mix of regions above and below the EU average.

In line with previous editions, RCI 2022 shows a polycentric pattern, with a strong performance of regions hosting large urban areas in the EU benefiting from economies of agglomeration, better connectivity and higher levels of human capital.

Figura nr. 3. Regional variation by Member State



Source: Dijkstra et al., 2023, p.12

Within Member States, capital regions tend to be the most competitive. The gap between the capital region and the remaining regions is particularly large in France, Spain and Portugal and in many of the EU's eastern Member States. This can be a cause for concern as it puts pressure on the capital region, leaving resources in other regions underutilized.

In three countries, capital regions are not the most competitive: Germany, Italy and the Netherlands. In the Netherlands, the best performing region remains Utrecht (at 151 of the EU average), followed by Zuid-Holland which includes Rotterdam and The Hague (at 144). In Italy, Lombardy, which includes Milan (at 103), continues to be the best performing Italian region. In Germany, the best-performing region remains Oberbayern, which includes Munich (at 130).

The best performing RCI 2022 is the Utrecht region (Netherlands), followed by Zuid-Holland (Netherlands) and the Île-de-France region. All have at least 40 points above the EU

average (EU-27 = 100). Overall, among the 10 best performing regions we find five Dutch regions (including the capital region Amsterdam and its commuting area), two Belgian regions (including the capital region Brussels and its commuting area) and the three capital regions of Denmark, France and Sweden.

**Figure no. 4. Top 10 best performing regions**

TOP 10				
Member State	Region code	Region name	RCI 2.0 - 2022 (EU-27 = 100)	Rank
Netherlands	NL31	Utrecht	150.9	1
Netherlands	NL33	Zuid-Holland	144.1	2
France	FR10	Île-de-France	142.8	3
Netherlands	NL41	Noord-Brabant	141.4	4
Netherlands	NL_C	Amsterdam and its commuting zone	140.5	5
Sweden	SE11	Stockholm	139.7	6
Denmark	DK01	Hovedstaden	138.1	7
Netherlands	NL22	Gelderland	136.0	8
Belgium	BE_C	Brussels and its commuting zone	135.7	9
Belgium	BE23	Oost-Vlaanderen	134.8	10

Source: Dijkstra et al., 2023, p.14

At the other end of the scale, with 50 or more points behind the EU average, we find six Romanian regions, two Greek regions and two Bulgarian regions. The last 10 regions do not include any capital region.

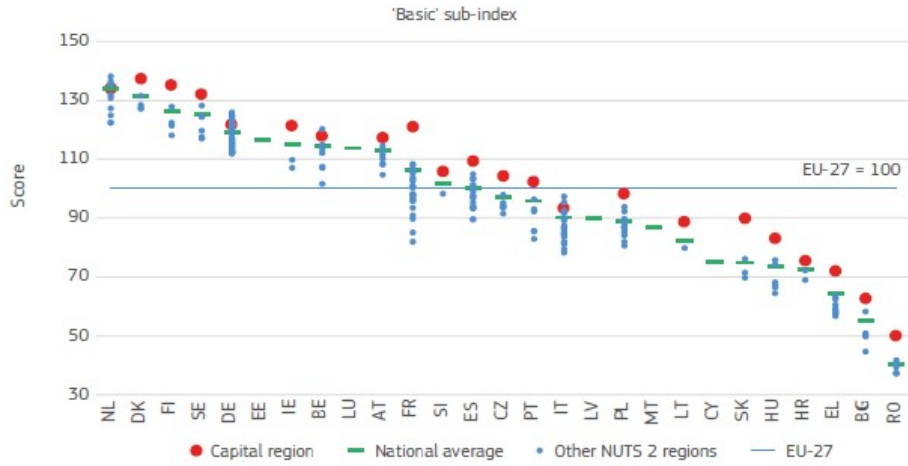
**Figure no. 5. The last 10 lowest performing regions**

BOTTOM 10				
Member State	Region code	Region name	RCI 2.0 - 2022 (EU-27 = 100)	Rank
Romania	RO11	Nord-Vest	56.1	225
Greece	EL51	Anatoliki Makedonia, Thraki	55.8	226
Greece	EL64	Sterea Elláda	53.4	227
Bulgaria	BG34	Yugozhahari	52.6	228
Romania	RO31	Sud-Muntenia	51.6	229
Romania	RO12	Centru	50.4	230
Romania	RO41	Sud-Vest Oltenia	47.9	231
Bulgaria	BG31	Severozapaden	46.9	232
Romania	RO21	Nord-Est	46.6	233
Romania	RO22	Sud-Est	44.9	234

Source: Dijkstra et al., 2023, p.14

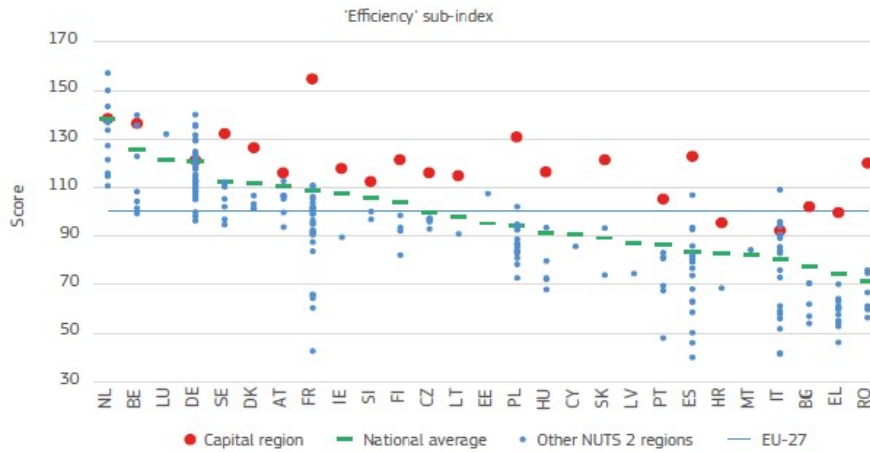
Regarding the spatial distribution of the "core", "efficiency" and "innovation" sub-indices, the "core" sub-index shows the least within-country variability, while the "efficiency" and especially the "innovation" sub-indices it varies more.

**Figure no. 6. Spatial distribution of the "base" subindex**



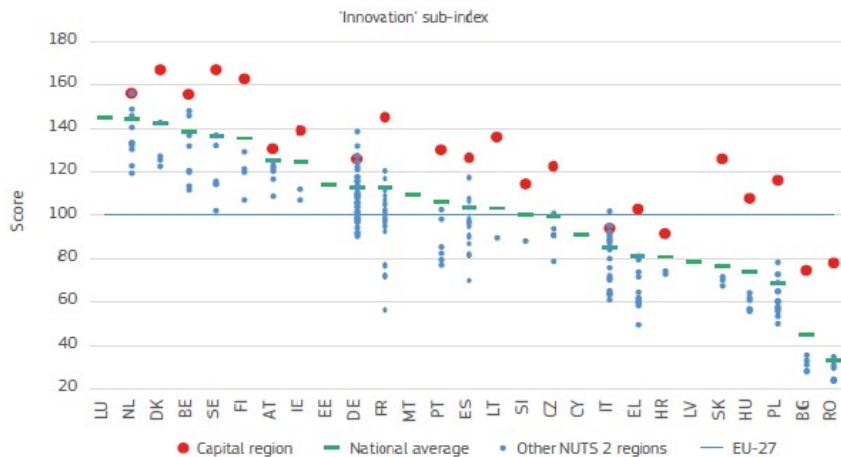
Source: Dijkstra et al., 2023, p.16

**Figure no. 7. Spatial distribution of the "efficiency" sub-index**



Source: Dijkstra et al., 2023, p.16

**Figure no. 8. Spatial distribution of the "innovation" sub-index**



Source: Dijkstra et al., 2023, p.16

The variation in scores increases from the "core" to "innovation" sub-index between countries and even more so within countries. The within-country variation and the gap between the capital region and the rest of the regions in a country are larger in the more advanced components of competitiveness – that is, in the 'Efficiency' and 'Innovation' sub-indices.

The use of the classification of regions according to the stage of development highlights the link between development and competitiveness. On average, more developed regions (with a GDP per capita above 100% of the EU average) perform better than those in transition (between 75% and 100%) and less developed regions (with a GDP per capita less than 75 %) in total RCI components.

The gap between more and less developed regions is largest for the sub-index "Innovation" and its pillars. Some of the core pillars, such as 'institutions' and 'infrastructure' (measured mainly in the RCI by accessibility), also reveal a large gap between less developed and more developed regions.

#### 4. Conclusions

In a globalized and interdependent economy, economies face various risks and opportunities related to competitiveness. At the national level, policymakers pay increasing attention to various international competitiveness rankings and aim to improve their country's relevant policies in search of competitiveness gains. At the global level, international economic organizations consider increasing the competitiveness of nations as a prerequisite for the stability and growth of the global economy and for the deeper integration of developing economies into international economic flows.

There are large differences in regional competitiveness in the EU. The lowest values are concentrated in the eastern regions of the EU Member States, followed by those in the southern EU Member States. All regions in Austria, Benelux, Germany and the three Nordic Member States score above average. The capital region tends to be the most competitive in the country, with only a few exceptions (Germany, Italy and the Netherlands). The gap between the capital region and the rest, however, varies, with particularly large gaps seen in France, Romania and Slovakia. Between 2016 and 2022, regional competitiveness improved in less developed regions, while the performance of transition regions was more varied. More developed regions continued to have the highest scores, but converged towards the EU average.

As an aggregate measure of different factors of competitiveness, higher levels of RCI can only be achieved by achieving higher scores in all 11 pillars. High performance can only be achieved thanks to a set of factors acting simultaneously.

#### References

1. Dijkstra, L., Papadimitriou, E., Martinez, B.C., Dominicis, L., Kovacic, M., 2023. *EU Regional Competitiveness Index 2.0, 2022 edition*. Luxembourg: Publications Office of the European Union. [online] Available at: <[https://ec.europa.eu/regional\\_policy/sources/work/rci\\_2022/eu-rci2\\_0-2022\\_en.pdf](https://ec.europa.eu/regional_policy/sources/work/rci_2022/eu-rci2_0-2022_en.pdf)> [Accessed 1 March 2023].
2. International Institute for Management Development, 2022. *IMD World competitiveness booklet 2022*. Lausanne: Switzerland. [online] Available at: <<https://imd.cld.bz/IMD-World-Competitiveness-Booklet-2022>> [Accessed 1 March 2023].

3. Voinescu, R., Moisoiu, C., 2015. Competitiveness, Theoretical and Policy Approaches. Towards a More Competitive EU. *Procedia Economics and Finance*, Volume 22, 2015, pp. 512-521, [online] Available at: <<https://www.sciencedirect.com/science/article/pii/S2212567115002488>> [Accessed 1 March 2023].
4. World Economic Forum, 2018. *The Global Competitiveness Report 2018*. [online] Available at: <[https://www3.weforum.org/docs/WEF\\_TheGlobalCompetitivenessReport2018.pdf](https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2018.pdf)> [Accessed 1 March 2023].

## THE PARAMETRIC INSURANCE. CLIMATE CHANGES AND THEIR IMPACT ON THE INSURANCE INDUSTRY

**Ph.D. Professor, Elena ENACHE**

"Constantin Brâncoveanu" University of Pitești,  
Faculty of of Management-Marketing in the Economic Affairs Brăila, Romania

E-mail: e\_enache2005@yahoo.com

**Ph.D. Professor, Sorin ENACHE**

"Danubius" University from Galați,  
Faculty of Economic Sciences and Business Administration, Romania

**Ph.D. Associate Professor, Cristian MOROZAN**

"Constantin Brâncoveanu" University of Pitești,  
Faculty of of Management-Marketing in the Economic Affairs Brăila, Romania

**Abstract:** *The insurance industry is an innovative one, constantly moving, because the economic and social environment is also constantly changing. The eight billion inhabitants demand a lot from our planet, which makes efforts to be able to support them; they put enormous pressure on life and living conditions. Nature has changed its behavior. When a series of natural events reach certain parameters, they lead to climate changes and trigger damages (even catastrophes). Thus the insurance industry is seriously activated. Between climate and weather there are both semantic and structural differences. Climate is defined as the totality of prevailing weather conditions, and weather is what we feel daily, in the short term, days or even hours.*

**Keywords:** *insurance, parameter, risk, protection, nature, damage.*

**JEL Classification:** *G22, G52.*

### 1. Introduction

Over time the climate has changed many times, alternating from warm periods to ice ages. Scientists have found explanations in the change of the Earth's position in relation to the Sun, in the intensity of solar activity, and in the last centuries everything is added up with the destructive activity of man on nature. The values of greenhouse gas emissions have increased substantially: CO<sub>2</sub> (carbon dioxide), CH<sub>4</sub> (methane), hydrofluorocarbons, HF<sub>3</sub> (nitrogen trifluoride), which, above normal limits, cause climate changes. In the last 150 years, the global temperature has increased by 1.30C. Sources producing greenhouse gases are:

- the burning of fossil fuels which are necessary for the production of electricity, transport, industry, heating/cooling of households;
- agricultural and related activities: animal digestion, manure;
- storage on the ground and waste incineration;
- deforestation and change of land destination;
- handling of waste water.

As a result of global warming, extreme natural phenomena frequently occur: storms, hurricanes, floods, landslides, heat wave or extreme cold, drought, wildfires. The effects of these natural phenomena are: sea level rise, salinization, changes in the precipitation regime, thawing, the movement of the ice cap and mountain glaciers.

The scale of the disasters can be seen from a few examples:

a) In June 2021, ***Elsa, a category 1 hurricane***, hit the US and the Caribbean area, causing more than 350 million US dollars in damages, which insurers discounted. As a result of the wind blasts, damages of more than 50 million US dollars occurred in the Caribbean area, and more than 250 million dollars in the USA, where vehicles were affected, residential buildings and agricultural areas as well. Although reinsurance contracts were concluded, the losses were borne by the local market ([www.mediafax.ro](http://www.mediafax.ro)).



b) In July 2021, **floods** in Central and Western Europe generated economic losses of approximately 10 billion US dollars. The most affected countries were Germany (where half of the total damage was recorded) and Belgium, but other countries were also affected: Switzerland, France, Luxembourg, Austria, the Netherlands, Italy, Poland, Slovakia, the Czech Republic and Hungary. More than 200 people died and more than 70,000 buildings were damaged. It is worth noting that a good part of these damages were uninsured (<https://romania.europalibera.org>).

c) In July and August 2021, violent fires occurred in Europe as a result of high temperatures, **drought and strong winds**.

The affected countries were Greece (temperatures of 46,10C and over 100 fires in two days), Turkey (approx. 130 fires), Italy, Albania, North Macedonia, Bulgaria. The worst fires in recent decades were in Turkey and Greece.

Fires also occurred in Russia (in Siberia, the smoke was felt as far as the North Pole), Brazil, USA, Canada, with temperatures of 49,50C. These fires and the emanating smoke caused respiratory problems to the population, aggravated with the COVID 19 pandemic ([www.digi24.ro](http://www.digi24.ro)).

A report by the UN Intergovernmental Group ([www.agerpres.ro](http://www.agerpres.ro)) shows that heatwaves, droughts, torrential rains, etc. will become frequent and extreme as the planet warms. Ten major threats are identified, if urgent measures regarding greenhouse gases are not implemented: heat wave, drought, floods, fires, food, the extinction of some species of animals and plants, the disappearance of vast forest areas, the rise of water levels, ice melting, global economic problems.

Under these conditions, the payment sums for damages are no longer sufficient, the policy rates should increase a lot, and people and organizations will not be able to pay them. States contribute to cover the damage, but it is still not enough.

Insurers:

- are forced to fundamentally change their business models, which are resilient to climate change;
- include harsh conditions in the contracts (for example, a minimum limit of wind speed or the amount of precipitation falling on a surface in a period of time), thus tightening the payment conditions;
- access new data sources: from satellite, distance sensors, meteorological stations.
- implement pricing models based on Machine Learning.
- allocate funds for risk prevention.

All these actions have the effect of offering innovative products, also based on customer experience, but also on empowering the younger generation.

## **2. Parametric insurance - an innovative product**

It is also called insurance based on indices or based on concrete indicators. It is a recent product, implemented most often in developing economies and especially in agriculture, to ensure crops.

It is defined as follows ([www.lasig.ro](http://www.lasig.ro)): „*a non-traditional insurance product that offers predetermined payments based on a trigger event, i.e. predetermined risk parameters. The main advantage is that they offer faster payments than traditional insurances, they reduce costs and increase customer satisfaction*”.

This fills the gaps where traditional insurance is deficient, this can also provide alternatives to the payment of claims that are not possible with traditional insurance products that compensate for a real loss, using blockchain and artificial intelligence, smart contracts and digital payments”.

The innovation consists in the fact that the insured is protected against climatic and catastrophic risks. Parameters that correlate with the damage caused to the customer are used, in order to cover the damage. The customer is entitled to compensation if the parametric conditions established from the very beginning are fulfilled. Although the outright loss is not compensated, the parts agree to make a payment upon the occurrence of a triggering event.

Examples of current parametric products (<https://wikicro.icu>) include the Caribbean Catastrophe Risk Insurance Facility (CCRIF), the African Risk Capacity (ARC) and coral reef protection in the state of Quintana Roo in Mexico. In the US, there are proposals to implement parametric policies more often, particularly for flood insurance through the National Flood Insurance Program.

The functioning of this type of insurance allows the client to choose the parameters specific to his needs and shortens the payment of claims to a few days.

Table no. 1

**Areas where parametric assurance is useful**

Area/Domain	Risks	Natural phenomena causing damage
Energy	Damage to infrastructure/loss of revenue	Mild winter, lack of wind, lack of precipitation, storm, snow
Agriculture	Loss of income and low yield	Drought, frost, excess rain, production decline, hail
Industry	Damage and Business Interruption	Earthquake, fires, river levels, storms, hail, floods
Constructions	Project delay (using the mobile phone)	Strong wind, excessive rain, extreme temperatures, wave height
Travel (transportation)	Means of transport with delayed arrivals (airplane, ship)	Weather conditions

Source: the authors

To put it simpler and understandable to everyone:

**In the energy field** we can find ourselves in one of the following situations:

*The occurrence of moderate winter risk* – the effect is lower consumption. The parametric insurance is concluded by the energy and gas suppliers, for their own protection. Its utility is even greater because this risk is excluded through traditional business interruption policies, considering that it does not represent material damage.

The index is tracked during the insured period, namely November 1 - March 31 - HDD and is calculated as the difference between the daily average and 18<sup>0</sup>C. The admissible threshold is 1,190 HDD. The minimum exit/threshold is 910 HDD. Within this gap, daily temperatures are calculated and accumulated. These are multiplied by 17,000 euros per HDD and the compensation is determined. The maximum compensation limit is 6 million euros.

*The risk of low or high winds* – the effect is to protect wind farms against wind speed fluctuations. This risk is excluded by classic business interruption insurance.

*The risk of lack of precipitation* – the effect is the financial insurance of electricity production from hydropower plants, using cumulative precipitation as an index. There is a solution to manage the reduction in energy production due to the lack of rain, as follows: the level of the reservoir behind the dam, accumulated over a year, is calculated; The allowed threshold is 800 mm; The exit is 200 mm; Compensation = 1,000 euros x mm below the threshold; The maximum compensation limit is 1 million euros.

*In the agricultural field*, it is an alternative to the classic insurance through which agriculture and viticulture farmers, as well as specific traders, can be insured against the following:

*Risk of frost*

The temperature is monitored daily from April 15 to May 31, and the difference is between 0<sup>0</sup>C and -3<sup>0</sup>C. The maximum compensation limit is 1 million euros.

*The risk of drought*

The cumulative precipitation index is followed for three months, respectively June 1 - August 31, measured at the most suitable weather station; The maximum threshold is 150 mm, and the exit at 50 mm; The compensation is calculated by multiplying 30,000 euros to the number of mm below the threshold.

*The risk of floods* - mirroring the drought risk, compensates for excess water in the soil.

*The risk of yield loss*

Based on the statistical data, the regional yield is considered to be a reference index. The threshold is set at 10% below the index. The exit is 6 tons/h.

We find that the main parameters (triggers) for agriculture are the amount of precipitations, soil moisture, air and soil temperature, the number of days with drought or frost.

*In the business field* - new risks constantly appear, the triggers being diverse, Lloyd's (www.lasig.ro) identifying some of them: periods of non-functioning of IT equipment, interruptions of activity for various reasons (including Covid 19).

The stages and procedure for concluding a parametric insurance do not differ from traditional insurance. The steps which are followed: **the preliminary stage** (with information about the insured risk, the insurance period, the territory, the insured amount, the history of damages and the yield of crops), then **the stage of risk analysis** for issuing the offer (it takes into account the established index, the minimum and maximum limits of compensation, its structure, the evolution of the culture during the vegetation periods) and **the stage of concluding the insurance policy** (with the actual issuance of the offer, its analysis, the final choice of parameters and the issuance of the insurance policy).

### 3. Conclusions

There is a new form of insurance available to everyone, which is quickly proving its effectiveness.

This is not intended to replace traditional insurances and supplement them and speed up the damage recovery.

The two categories can work well together, the parametric insurance becomes useful if there are slowdowns or dysfunctions in the classic markets. For example, in the case of a river shipping company if the direct physical effects of decreasing water levels may be non-existent because vessels are stopped, then the costs of business interruption and associated revenue losses are significant. In this case, a parametric coverage based on water level can be a lifesaver to protect against lost revenue.

**The advantages** are important: there are no more on-site assessments (the compensation formula is already known to the parties), payment is made much faster and discussions or misunderstandings are avoided.

**European states**, including Romania (<https://portal.afir.info>), are directly interested in promoting these types of policies and stimulating the farmers, even subsidizing insurance bonuses. Sub-measure 17.1 is published on the website of the most important institution that supports the financing of agriculture through European funds in Romania (Agency for Financing the Rural Investments - AFIR), which farmers can access by submitting the

relevant documentation. A non-refundable support is granted and it consists of 70% of the amount of the eligible insurance bonus actually paid by the farmer.

The outlook is in favor of parametric insurance. Access to parameters is no longer an obstacle, data innovation is continuous. Insurers show their willingness to underwrite parametric offers. They are more economical, and the companies' desire to insure themselves is increasing. They all want to increase their climate resilience, to strengthen their businesses and to quickly recover from damage in case of a disaster.

## References

1. AFIR, 2022. *Informații generale PNDR. Investiții prin PNDR*. [online] Available at: <[https://portal.afir.info/informatii\\_generale\\_pndr\\_investitii\\_prin\\_pndr\\_sm17\\_1\\_prim\\_e\\_de\\_asigurare\\_a\\_culturilor\\_a\\_animalelor\\_si\\_a\\_plantelor](https://portal.afir.info/informatii_generale_pndr_investitii_prin_pndr_sm17_1_prim_e_de_asigurare_a_culturilor_a_animalelor_si_a_plantelor)> [Accessed 20 February 2023].
2. Agerpres, 2022. *Țările vor fi afectate în mod diferit de schimbările climatice*. [online] Available at: <<https://www.agerpres.ro/planeta/2022/03/01/tarile-vor-fi-afectate-in-mod-diferit-de-schimbarile-climatice--875013>> [Accessed 20 February 2023].
3. Digi24, 2022. *Temperaturi de 47grade Celsius in Portugalia. Mii de oameni au fost evacuați din calea incendiilor de vegetație în Franța, Spania și Grecia*. [online] Available at: <<https://www.digi24.ro/stiri/externe/ue/mii-de-oameni-au-fost-evacuati-din-calea-incendiilor-de-vegetatie-in-franta-spania-si-grecia-temperaturi-de-47-c-in-portugalia-2013989>> [Accessed 20 February 2023].
4. Encyclopedia, 2023. *Asigurare parametrică*. [online] Available at: <[https://wikicro.icu/wiki/Parametric\\_insurance#Examples](https://wikicro.icu/wiki/Parametric_insurance#Examples)> [Accessed 20 February 2023].
5. Europa Libera, 2021. *Inundații în Europa*. [online] Available at: <<https://romania.europalibera.org/a/europa-inunda%C8%9Bii/31364496.html>> [Accessed 20 February 2023].
6. Mediafax, 2021. *Uraganul Elsa, primul care a lovit Barbados în ultimii 60 de ani. Incotro se îndreaptă furtuna*. [online] Available at: <<https://www.mediafax.ro/externe/uraganul-elsa-primul-care-a-lovit-barbados-in-ultimii-60-de-ani-incotro-se-indreapta-furtuna-20170420>> [Accessed 20 February 2023].
7. Radu, A., 2021. *Daniela Badaluță: Paramedic insurance, viitorul asigurărilor*. [online] Available at: <<https://www.lasig.ro/Daniela-BADALUTA-Parametric-insurance-viitorul-asigurarilor-articol-3,100-66299.htm>> [Accessed 20 February 2023].
8. Suca, A., 2020. *Lloyd's a lansat o asigurare parametrică pentru riscul de întrerupere a afacerii*. [online] Available at: <<https://www.lasig.ro/Lloyd-s-a-lansat-o-asigurare-parametrica-pentru-riscul-de-intrerupere-a-afacerii-articol-3,117-64523.htm>> [Accessed 20 February 2023].

## SOCIO-DEMOGRAPHIC FACTORS OF TRANSITION FROM LABOUR ACTIVITY TO PENSION IN THE REPUBLIC OF MOLDOVA

**Associate Professor Researcher, Ph.D., Galina SAVELIEVA**

Center for Demographic Research,  
National Institute for Economic Research, Republic of Moldova  
E-mail: savelievagalina@rambler.ru, gts6@mail.ru

**Scientific Researcher, Ph.D., Svetlana ZAHAROV**

Center for Demographic Research,  
National Institute for Economic Research, Republic of Moldova  
E-mail: zaharov.svetlana@gmail.com

**Abstract:** *The purpose of research is to analyse the impact of socio-demographic factors on the transition from labour activity to pension in the Republic of Moldova. Demographic factors, including migration, population decline and ageing, have led to the deformation of age structure of population in the direction of elder age groups. The growth in the number of pensioners with a reduction in employed population have conditioned to financial instability of the Social Insurance Budget and disruption of terms payment of pensions and benefits. The analysis of the importance of social factors of stopping of labour activities at retirement the comparative assessment of wages reflects as the basis for pension accrual, average monthly disposable income and amount age pension, as well as indicators of living standards of elderly population (poverty rate). The analysis of the factors takes into account the forced stopping a work and retirement when reaching the established age limit due to the existence of age discrimination in the labour legislation. Taking into account the relevance of the problem, proposals for increasing the effectiveness of state policies to regulate the transition from labour market to pension, including the possibilities of continuing labour activity, were elaborated. The article was elaborated within the framework the Scientific Project “Migration, Demographic Changes and Policies of Stabilization the Situation”, registered in the State Register of projects in the field of science and innovation of the Republic of Moldova with the code 20.80009.0807.21 of the State Program (2020-2023).*

**Key words:** *demographic ageing of population, wages, age pensioners, pension, transition from work to retirement, labour market.*

**JEL Classification:** *J 14, J 26, J 38.*

### 1. Introduction

Increasing life expectancy, migration processes of working age population and demographic ageing, growth in number of pensioners and also reduction in number of workers are the factors the increase of burden on the pension system. Many countries faced these problems in the second half of the 20th century, and the Republic of Moldova (RM) is no exception in given situation. Moreover, it should be noted that a characteristic feature of the above-mentioned processes is the decrease in the average age of exist from labour market, including due to ongoing structural reforms, changes in regional social and economic infrastructure and, as a result, an imbalance both labour force markets on the national and local levels and the pension system, as the number of payers of insurance contributions from wages tends to decrease. The Labour Market Forecast 2023, elaborated by the National Employment Agency<sup>2</sup> (based on a survey of 2859 employers from different sectors, including 74% of private sector, 19% of public sector, the share of micro- and small employers being 87%), showed, that the Republic of Moldova has a constantly formed tendency of decrease in labour force, which will continue in 2023. At the same time, there is a high turnover of human personnel, including due to labour migration, which leads to a lack of labour force and a reduction in labour supply on labour market. Thus, in 2022, labour deficit were registered in private sector (65%). The absence of workers was declared by 18% of respondents-employers

<sup>2</sup> National Employment Agency (NEA), [www.anofm.md](http://www.anofm.md).

(16% in 2021). According to the study, the lack of labour force was observed in all regions of the country, including Chisinau (58%), the Northern area (17%), the Central area (15%), the Southern area (7%), and ATU Gagauzia (3%). Moreover, there were about 10.0 thousand vacancies registered during 2022 due to absence of workers, which were not filled during the year. The deficit of labour force will remain in health, education, social assistance, information and communication, and public administration, as well as in HoReCa area<sup>3</sup> (cooks, waiters, pastry cooks, etc.), blue-collar workers (seamstresses, car drivers, operators, etc.) according to Labour Market Forecast 2023 (NEA). And 37% of employers reported about a shortage of qualified and experienced workers, 30% - an insufficient number of job seekers, and a lack of opportunities to offer adequate wages.

Informal employment and existence the factor of wage in envelopes also let to decline in the number of contributors. So, according to the studies almost every fourth employed informally, about one third of economic agents pay wages in envelopes (on average it is about 30% of wages, that are not declared), including one of the reasons for this type of employment is the desire of employees to get higher income, possibility of employment independently by age. As a consequence of this fact, the budget loses 7% of GDP, or 15 billion MDL annually. It should be noted that the tax losses from shadow economy have increased from 2015 to 2020 from 8.9 billion MDL to 15 billion MDL annually, or by 6.1 billion lei, including in relation to GDP - from 6.1% in 2015 to 7.3% in 2020, or by 1.2 p.p. (Lupușor, 2021; Madan 2023).

Consequently, demographic factors, imbalances of labour force in labour market, informal employment, the process of emergence of financial instability of the pension system as a consequence of its increased burden in recent years, all this have been the cause for stimulation the stopping labour activity and retirement at a later age. Taking into account the relevance and importance of this problem, necessary to determine the motives and factors that are fundamental to the decision to stopping labour activity and retirement, both for females and males. At the same time, “retirement” in the context of given article means the established by law the pension age for females and males, as well as the employee’s decision to exit from labour market.

## **2. Purpose of the research, data and methods applied**

The principal purpose is to analyse the demographic changes, such as population decline and ageing, increase in life expectancy, increase in the number of population in pension age and some indicators of their standard of living. As a consequence of the above-mentioned factors, there is a deformation of the age structure of labour force, the number of employees paying social insurance contributions is decreasing, the problem of ensuring the replenishment of the Social Insurance Budget and its financial stability, including the timely provision of payments to social insurance beneficiaries (pensions, benefits, etc.) is growing. In relation to the above circumstances and on the basis of the analysis, the motives and main factors contributing to the decision to stopping of labour activity and exit from labour market in the gender aspect were determined, as well as proposals for promoting social security policies in the conditions of demographic changes and for increasing the financial stability of the Social Insurance Budget.

The purpose was achieved by performance the following objectives:

Analysis of tendencies in main demographic changes (number of population, including population structure in elder age groups, ageing, average life expectancy at birth and remaining life expectancy at elder ages, demographic burden). Evaluation of tendencies

<sup>3</sup> HoReCa – Hotel, Restaurant, Café.

the change in the population at pension age, including the dynamics of the number of pensioners by type of pension.

Analysis of wages as the basis of insured income for pension accrual, including by main type of economic activity. The assessment of the amount of pensions by age in relation to wages, by gender, by sector (agricultural and non-agricultural), and also the comparative analysis of average monthly disposable income and poverty rate (absolute and extreme) depending on the age of the household head.

Determination of the main social factors that influence the decision to transition from economic activity and exit from labour market to pension.

Elaboration of proposals for improving social security policies in conditions of demographic change and increasing the financial stability of the Social Insurance Budget.

The complex and systemic approach, scientific methods were used for the purpose of this research, including quantitative and qualitative analysis, graphical analysis, authors' calculations, etc.

Official statistical data from the National Bureau of Statistics of the Republic of Moldova, National Social Insurance House were used in the analysis and the authors calculated some indicators necessary for the study. When calculating the indicators, the population with usual residence, defined as the place where a person resided predominantly during the last 12 months, independently of temporary absences (for leisure, vocations, visits to relatives and friends, business, medical treatment, religious pilgrimages, etc.) was used.

### 3. Theoretical Background

The problem of deciding on the choice of retirement age is not a new one and scientists, researchers and practitioners from different countries research a long time, using a variety of analytical methods and models. Experience shows that the decision to stopping labour activity and retirement age is influenced by many factors, which may or may not be interrelated and have different purposes. On this basis, scientists in dependence on the purpose of the study highlight the main factor, ignoring the other factors. As a rule, a person or a family (household) was used as an object of study, the choice of the object of study and factors was determined depending on the purpose of study and the availability of data for its implementation. In this article, we will focus on single-period models, which do not take into account the influence of factors over time, and on life-cycle models of varying degrees of complexity.

*Gustman-Steinmeier model.* The interpretation of the model in the early works is based on the hypothesis: a person maximizes utility over the life cycle, but under a budget limitation, i.e. it takes into account both starting and earned assets, it should not be less than his consumption (Gustman, Steinmeier, 1986). However, in later works, the object of study in the model is not the separate person, but the couple, and in this case their behavior to collective saving, well-being, consumption and demand for labour in a given period are taken into account (Gustman, Steinmeier, 2013).

*Stock-Wise model* (Stock, Wise, 1990). This type of choice model between work and exit from labour market is close to the one-period model. The main purpose is to determine the optimal age of exit from labour market, taking into account the maximization of future earnings, including from labour income (wages) before exist on pension and the accrued pension in subsequent period of the life cycle. Consequently, in this model, the main factor in the decision to exit from labour market is financial.

*Berkovec-Stern model* (Berkovec, Stern, 1991). Given model is stochastic dynamic model, the object of study is a person who himself chooses three possible states of employment: full-time, part-time or absence of employment at all, i.e. exit from labour

market on pension. However, this model takes into account the possibility that a person may return to labour market after exit on pension.

Thus, the main factor that determines a person's decision about exist on pension, including the choice of exist age, is the change in their current financial situation and possible future budgetary limitations. However, research shows that factors that influence the decision to employ an elderly population in labour market include age, health, gender, and level of education. For example, gender affiliation is manifested in legislation based on the age limit for (old) age pension for males and females. For female, the important factors are, for example, the presence or absence of children, family status, necessity to care for a family member and others.

#### 4. Research Background

*Health* is an equally important factor influencing the choice of retirement age. The notion of health in economy is linked to knowledge, experience and skill, i.e. everything that helps him with needs. Г. Becker also believes that health is an integral part of human capital (Currie, Madrian, 1999). However, the model developed in 1972 by M. Grossman showed the uncertain nature of health, as its deterioration, on the one hand, leads to increased value of free time, leisure time, and on the other hand, it causes an increase in consumption, including high-cost medicines, expenditures of visits to specialists and other expenditures, ultimately leads to an increase in the level of employment in labour market (Grossman, 1972) or even it can be conclude that deteriorating health increases the probability of being employed.

*Level of education* influences the decision to exit the labour market or to continue of labour activity. So, with a high level of education, in most cases, the job is associated with intellectual activity, and financial literacy can also be assumed for this occupation. Another factor that should be mentioned is the absence of heavy physical burden. Thus, a person with a higher level of education will be interested in a later exit from labour market, both for reason of higher incomes and for moral reasons - professional interest and love for creative activity, that is, for work (Nazarov, Dormidontova, Lyashok, 2014).

In addition to the factors mentioned above, family circumstances, the presence of a husband, children, grandchildren in need of care, can also be influenced on the decision to stop labour activity and transition to pension, and also the couple's decision to stop their labour activity when they have the income needed to cover their living needs. In this case, there is also the presence and cohabitation of the children, including their combined income and the need to care for the grandchildren. It is also the case that a intellectual worker is forced to interrupt their labour activity due to care for a sick family member, but in this case the situation is reflected in a decrease in disposable income.

Factors and motives that influence, to a greater or lesser extent, the decision to stopping of labour activity and retirement include both geographical place of residence (urban, rural), and the legislative framework (retirement age established in the country), the specifics of the profession activity (aviation, security, unhealthy working conditions, artistic activity - ballet, circus, emergency services and other areas of activity connected with danger of working conditions and human life).

#### 5. Result and Discussions

*Pensions in the Republic of Moldova.* In the Republic of Moldova, to retire to pension is regulated by the Law on the State Pension System no. 156 of 14.10.1998, with subsequent amendments and additions (Official Monitor of the RM, 1998), which notes that the State Pension System is based on the principles provided for in the Law on State Social Insurance System no. 489 of 08.07.1999, with subsequent amendments and additions



(Official Monitor of the RM, 2000). Thus, the following types of pensions are provided in the country (Article 9): by age, disability, survivor, special pension (in accordance with the provisions of other laws, Article 10) and early age pension for prolonged work, which was introduced from 01.01.2018 [(Article 15, amended by Law of the RM: no. 208 of 06.12.21, Official Monitor of the RM, 2021, no. 308, art. 460]. Given Law (Article 41) establishes the standard retirement age of 63 years starting from 01.07.2019 for males and from 01.07.2028 for females by increasing the standard retirement age every year from July 1 by half a year for females (as 01.07.2022 - 60 years, as 01.07.2023 - 60 years and 6 months) and by 4 months for males (in 2017-2018, from 01.07.2019 - 63 years). Moreover, the Law provides that for persons who have insurance period including not less 10 full years of work experience with special working conditions, the standard pension age shall be reduced, as well as the list of jobs with special working conditions, based on which the age pension shall be granted on preferential conditions, shall be established. The amount of pension is determined by summing up the insurance period (before and after 01.01.1999). The insurance period also includes such types of labour activities as: work as member of collective economy (unions), independently of its character and duration; creative activity of the members of art unions, confirmed by the secretariats of the boards of unions; activity as ministers and cult workers from 01.04.1992; caring for disabled persons of group I, for a disabled child under 16 years old or of elderly persons who have reached 75 years old; full-time studies at a higher education institutions.

The Labour legislation in the Republic of Moldova impacts to the process of stopping labour activity and retirement. Under conditions of structural reforms, transformation of social-economic structure, development of private property, the retirement of employees is often carried out in accordance with the provisions of the Labour Code of the Republic of Moldova no. 154 of 28.03.2003 (Official Monitor of the RM, 2003). Given Law, in accordance with Article 8, prohibits discrimination on the basis of age, however, Article 55. *Urgent labour contract*, item f) provides that with persons who have age pension or length of work (or have acquired the right to such type of pension) the contract may not be concluded unlimitedly, but for a period of up to two years and continue, Article 86. *Dismissal*, in y<sup>1</sup>) provides for the dissolution of an individual labour contract at the initiative of the employer, if the hiring worker has the status of pensioner by age [Art. 86, part (1), item y<sup>1</sup>) introduced by Law of the RM, no.188 of 21.09.17, Official Monitor of the RM, 2017, no. 364-370, art. 622].

Based on the above, it should be noted that along with the factors that depend directly on the worker about retirement, there are external factors that are determined by the existing legislation and the socio-economic situation in the country at the moment of the decision about interruption the labour activity and transition to a pension. Taking into account the importance of given issue for the Republic of Moldova, the analysis has been carried out in accordance factors of demographic and social nature that directly or indirectly influence the pension's process.

In this context, it should be noted that despite significant improvements in economic indicators for the past two decades, Moldova remains one of the poorest countries in Europe. The fact that the ongoing model of economic growth, which is based on consumption and attraction remittances from labour migrants, has ensured economic growth and poverty reduction. However, the country's economy remains less sustainable, given situation was long before the COVID-19 pandemic crisis. Moreover, the pandemic and energy crises, together with the influx of refugees (the number of refugees who have crossed the border with the beginning the war amounted to 15% of country's population), the proximity to the war zone, the vulnerability of the country with its isolated economy dependent on connections to

Ukraine and Russia and their break, have highlighted even more vulnerabilities in the economic growth model. Despite more than 75% of refugees have left for the European Union, the remaining refugees in the country require additional financial expenditure, which has led to in reduced funds for realization of long-term priorities for the socio-economic development in the country. Continued processes of decreasing remittances, demographic factors, including declining and ageing population, have led to slowdown of productivity growth and increased in number of low-income population, resulting in increased dependency of certain categories of population from pensions and social assistance (The World Bank in Moldova).

Population decline and ageing cause a number of socio-economic problems, including growth of burden on working age part of population, on the economy both of the country as a whole and its territorial units, it is the obstacle of economic growth and, consequently, and, as a consequence of adequate reaction in the Moldovan society. Table no. 1 shows the main indicators characterizing the dynamics of age structure the population of the Republic of Moldova.

**Table no. 1. Principal characteristics of population structure of the Republic of Moldova, usual residence**

	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>Population</b> (as of January 1) - total, thousand persons	2869.3	2846.3	2825.6	2780.7	2729.6	2684.8	2643.7	2626.6	2603.8
compared to previous year, %	-	99.2	99.3	98.4	98.2	98.4	98.5	99.4	99.1
<b>Population</b> (as of January 1) - total, %	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Including by: Age groups, %									
55-59	7.21	7.37	7.56	7.66	7.65	7.55	7.3	6.94	6.7
60-64	6.63	6.58	6.53	6.58	6.78	7.07	7.31	7.54	7.64
65-69	3.23	3.97	4.78	5.41	5.97	6.17	6.19	6.15	6.17
70-74	3.14	2.98	2.71	2.5	2.45	2.83	3.54	4.24	4.73
75+	4.54	4.54	4.52	4.7	4.79	4.77	4.68	4.42	4.25
Population structure by basic main age groups, %									
<b>RM, %</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
under working age, 0-15 years old	19.1	19.1	19.2	19.5	19.7	19.7	19.6	19.4	19.3
working age, 16-56/61	62.2	61.7	61.1	60.1	59.1	59.7	59.1	59.5	59.2
over working age, 57-62+	18.7	19.2	19.7	20.4	21.2	20.6	21.3	21.1	21.5
Average age of population, years									
<b>RM</b>	37.4	37.7	37.9	38.2	38.5	38.9	39.3	39.6	39.8
Northern zone	36.5	39.5	39.6	39.8	40.0	40.4	40.8	41.1	41.4
Central zone	36.6	36.8	37.0	37.3	37.7	38.2	38.7	39.1	39.4
Southern zone	37.2	37.5	37.8	38.2	38.6	39.1	39.7	40.1	40.4
A.T.U. Gagauzia	37.5	37.8	38.1	38.3	38.5	38.7	38.9	39.2	39.4
Ageing coefficient (ageing rate), as of January 1, %									
<b>RM</b>	17.5	18.1	18.5	19.2	20.0	20.8	21.7	22.4	22.8
Males	14.5	15.0	15.4	16.0	16.7	17.5	18.3	18.8	19.1
Females	20.3	20.9	21.5	22.2	23.0	23.9	24.9	25.6	26.2
Urban	16.7	17.3	17.9	18.5	19.2	20.0	20.6	21.0	21.1
Rural	18.1	18.6	19.0	19.6	20.5	21.5	22.5	23.3	24.0
Life expectancy at birth, years									
<b>RM</b>	69.3	69.4	69.8	70.8	70.6	70.9	69.8	69.1	
Males	65.2	65.2	65.7	66.7	66.3	66.8	65.9	65.2	
Females	73.6	73.7	74.2	74.9	75.0	75.1	73.9	73.1	
Urban	71.2	71.0	71.7	72.4	72.5	72.8	71.0	69.8	
Rural	68.4	68.4	68.8	69.7	69.4	69.7	69.1	68.5	
Index of demographic dependence (demographic dependency ratio) per 100 working age population, as of January 1, %									
Population <i>over working age</i> (57/62+)	30.0	31.0	32.0	34.0	36.0	34.5	36.3	35.4	36.2

Population <i>over age</i> at 65 years (65+), %	15.3	16.3	17.2	18.3	19.4	20.4	21.5	22.2	22.7
---	------	------	------	------	------	------	------	------	------

Note: The retirement age has increased from 01.01.2019 for males - 63 years, for females - 58 years.

The retirement age for women has increased to 59 years from 01.01.2021.

2022 – preliminary data.

Source: NBS, [www.statistica.md](http://www.statistica.md) and authors' calculations

As follows from the analysis, for the period 2014-2022, the population of the Republic of Moldova had an annual decrease tendency: as of 01.01.2022, the population of the country declined by 265 thousand persons or by 9.3% compared to 01.01.2014. The average age in the Republic of Moldova increased during given period of time by 2.4 years, with more adult population concentrated in the Northern zone (41.4 years or the increase by 4.9 years, exceeding the national average by 1.6 years). Next comes the South Zone (40.4 years or the increase by 3.2 years and 0.6 years above the national average). The population is younger in the Central zone (39.4 years) and ATU Gagauzia (39.4 years), or 0.4 years less than in the country.

In the Republic of Moldova, the share of population aged 60 years and over was 22.8% at the beginning of 2022, and aged 65 years and over increased to 10% (6% in 1990). According to the United Nations Report<sup>4</sup> (United Nations, 2022), the proportion in this age group rose to 16%. The coefficient of population ageing during the analyzed period increased by 5.3 p.p., including for females is 7.1 p.p. higher than that for males; in rural the coefficient is 2.9 p.p. higher than in urban.

*The process of population ageing, which is irreversible, is one of the main factors that make the problem of transition from labour market to retirement one of the most important and actual at present in the Republic of Moldova.*

At the same time, life expectancy is an important qualitative characteristic of the population. Average life expectancy in 2021 was 69.1 years, or 0.7 years less than in 2020, including 73.1 years for females and 65.2 years for males, or 7.9 years less. Moreover, the average life expectancy at birth in the EU27 in 2020 was 80.4 years, what by 11.3 years less than this indicator in the Republic of Moldova. The decrease of this indicator is mainly due to an increase in both the total death rate and the infant mortality rate (NBS, 2022a). Table no. 2 shows the total life expectancy both at birth and in elder age groups, as well as the total death rate in elder age groups.

<sup>4</sup> United Nations, Department of Economic and Social Affairs.

**Table no. 2. Dynamics of life expectancy of remaining life and mortality, 2014-2021\***

	2014	2015	2016	2017	2018	2019	2020	2021
Life expectancy at birth, RM, years	69.3	69.4	69.8	70.8	70.6	70.9	69.8	69.1
Remaining life expectancy of at age, years left								
50 years	23.9	23.8	24.2	24.8	24.7	25.0	23.9	23.0
55 years	20.2	20.1	20.4	21.0	20.9	21.2	20.1	19.1
60 years	16.7	16.7	17.0	17.4	17.3	17.6	16.6	15.6
65 years	13.6	13.6	13.8	14.1	14.1	14.3	13.4	12.4
70 years	10.6	10.7	10.9	11.0	11.1	11.3	10.5	9.6
75 years	8.1	8.1	8.4	8.3	8.3	8.4	7.9	7.1
80 years	6.0	5.9	6.2	6.0	6.0	6.1	5.7	5.2
85 years	4.4	4.3	4.3	4.1	4.0	4.1	3.7	3.2
Death rate, ‰								
RM, ‰	13.8	14.0	13.7	13.3	13.8	13.7	15.5	17.4
including in elder age groups:								
50 – 54 years	11.8	12.1	11.3	9.9	10.0	10.3	10.9	11.1
55 – 59 years	16.9	17.2	16.6	14.7	14.7	15.0	16.1	16.8
60 -64 years	24.2	24.8	23.9	22.0	22.8	21.2	23.7	26.1
65 – 69 лет	33.7	33.8	33.3	30.7	32.4	31.5	35.4	40.4
70 – 74 years	54.2	52.8	52.5	47.5	45.1	41.8	52.1	59.8
75 – 79 years	83.2	80.4	78.0	76.6	77.6	75.4	84.4	100.5
80 – 84 years	133.6	136.1	123.8	126.1	124.2	121.7	134.1	152.9
85 years and over	230.4	236.5	234.0	247.2	248.1	245.2	271.7	311.9

\*Statistical data for 2022 is absent.

Source: NBS, [www.statistica.md](http://www.statistica.md) and authors' calculations

Life expectancy during the period 2014-2019 increased not only in the Republic of Moldova as a whole, but also in elder ages.

*The increase in life expectancy at birth, including remaining life expectancy (years left) at elder ages, has caused and led to the necessity to revise and to raise the standard retirement age.*

*Given the increased life expectancy, together with the growing number of population of pre- and retirement age and, as a consequence, increasing burden on the pension system, the task of stimulation later retirement has become particularly relevant for the Republic of Moldova.*

However, the Covid-19 pandemic (from March 2020), as well as its consequences in the form of an exacerbation of chronic diseases in subsequent years, which often lead to death, affected on the change of this indicator in direction of its decrease (table no. 2). The male mortality among the elderly population is higher than the female mortality. According to the official statistics, the main causes of mortality for people aged 60 years and over were circulatory system diseases (59.8%), tumours (11.6%), including malignant tumours, which were characteristic in the 65-69 age groups, digestive diseases (4.5%). Active tuberculosis was one of the causes of mortality in the 55-64 age group. With the beginning of the Covid-19 pandemic (March 2020 to 28.09.2022), the population aged 60 years and over accounted for 23.9% of total number of infected and 83.5% of total number of deaths, including female - the proportion of infected women in the population 60 years and older was 62.5% and 53.3% of the number of those who died from the virus (NBS, 2022b).

The above-mentioned situation was one of the reasons for the decrease in number of pensioners in 2020-2021, including by 0.4% at the beginning of 2021 and 2022 in comparison to 2020 and 2021, the total number of pensioners of all categories decreased by 1.6% at the beginning of 2022 in comparison to the previous year. The changes for all categories of pensioners are presented in table no. 3.

**Table no. 3. Dynamics of the number of pensioners by type of pension, as of January 1**

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Pensioners - total, thousand persons*	659.6	669.9	679.9	691.2	716	703.9	696.0	686.2	674.9
Pensioners by age – total, thousand persons	495.9	507.5	518.9	531.8	533.0	526.7	524.5	522.8	520.9
% of total pensioners	75.2	75.8	76.3	76.9	74.4	74.8	75.4	76.2	77.2
Age structure of pensioners by main age groups:									
50 years <, thousand persons	0.03	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01
50-54 years, thousand persons	0.4	0.4	0.4	0.3	0.3	0.05	0.05	0.04	0.03
54 years ≤ %	0.1	0.1	0.1	0.1	0.1	0.01	0.01	0.01	0.01
55-59 years, thousand persons	60.5	61.8	63.8	66.3	59.2	47.4	34.7	21.2	10.8
%	12.2	12.2	12.3	12.5	11.1	9.0	6.6	4.1	2.1
60-64 years, thousand persons	140.3	138.1	136.8	135.9	135.0	133.6	132.0	133.9	135.6
%	28.3	27.2	26.3	25.6	25.3	25.4	25.2	25.6	26.0
65 years and over, thousand persons	294.7	307.2	317.9	329.3	338.5	345.6	357.7	367.7	374.5
%	59.4	60.5	61.3	61.8	63.5	65.6	68.2	70.3	71.9
Pensioners by age in case of early retirement, thousand persons**	...	...	...	...	8.4	7.6	5.4	2.1	1.3
Disability pensioners, thousand persons	136.4	136.7	136.3	135.4	131.9	128.4	126.2	122.2	113.9
Survivor pensions, thousand persons	18.4	16.6	15.4	14.4	14.7	13.6	12.7	12.4	12.9
Other categories of pensioners, thousand persons	8.9	9.1	9.4	9.6	28.0	27.6	27.2	26.7	25.9
Pensioners by age in labour market, thousand persons	147 996	154 654	160 658	164 477	170 028	174 757	175 656	172 516	169 529
%	21.8	22.5	23.0	23.3	23.3	23.0	23.4	23.7	24.0
Pensioners by age – total, %, Including:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Agricultural sector, thousand persons	201.8	199.0	195.9	193.9	190.0	182.8	176.0	170.0	163.9
%	40.7	39.2	37.8	36.5	35.6	34.7	33.6	32.5	31.5
Non-agricultural sector, thousand persons	294.1	308.4	322.9	337.9	343.0	343.8	348.5	352.8	356.9
%	59.3	60.8	62.2	63.5	64.4	65.3	66.4	67.5	68.5

\*As of 1 January 2017, the National Social Insurance House took over the function of establishing and accruing pensions for law enforcement agencies.

From 1 January 2018, the figures include law enforcement agencies.

\*\*From 1 January 2018 early retirement pension is granted.

Source: NBS, [www.statistica.md](http://www.statistica.md) and authors' calculations

At the beginning of 2022, the share of age pensioners was 77.2% of total, including 97.9% of population aged 60 and over, of whom 68.5% were female. The highest share of total number of age pensioners was 65 years and over (71.9%, compared to 59.4% as of 01.01.2014 and 65.6% as of 01.01.2019). The share of pensioners aged 55-59 years has also decreased significantly (2.1% as at 01.01.2022 as against 9.0% as at 01.01.2019, or by 6.9 p.p.), and less than 1.0% of the structure analyzed are aged up to 54 years. It can also be noted that there is the tendency to reduce the survivor pensions, disability and other categories, as well as age pensioners who were employed in agricultural sector (from 40.7% as of 01.01.2014 to 31.5% as of 01.01.2022, or by 9.2 p.p.). Despite the fact that, from 01.01.2018 law established the right to an early retirement pension, this category of pensioners has the stable downward tendency, including from 8.400 as of 01.01.2018 to 1.300 as of 01.01.2022, or by 15.5%.

*The increase in the number of pensioners of all types of pensions with a reduction in the number of employed working age population in labour market highlights the problem of ensuring the financial stability of the pension system as a priority.*

Analyzing the factors that influence the decision to stop the labour activity and retirement, one of the main factors is financial ensuring, i.e. that the income received pensioner makes it possible to provide the vital necessities. The main source of the pensioner's income is a pension, the amount of which depends on the insured income or, ultimately, on the wage and transferred insure contributions. The characteristics of changes in wages by sectors and by main type of economic activity are presented in table no. 4.

**Table no. 4. Dynamics of average monthly wages and some basic social indicators**

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Average monthly wage of an employee in economy (gross), lei (MDL)	4172.0	4610.9	5084.0	5697.1	6446.4	7356.1	8107.5	9115.9	10529.1
compared to previous year, %	110.8	110.5	110.3	112.1	113.2	114.1	110.2	112.4	115.5
Gender Pay Gap, %	12.4	13.2	14.5	13.5	14.4	14.1	13.6	13.6	....
Budgetary/real sector, %	83.9	85.7	80.9	82.5	84.1	87.0	87.0	81.2	79.5
Budgetary sector, lei	3673.9	4125.3	4359.7	4950.1	5675.1	6636.2	7313.8	7786.6	8844.6
compared to previous year, %	110.8	112.3	105.7	113.5	114.6	116.9	110.2	106.5	113.6
Real sector of economy, lei	4378.6	4814.6	5390.1	6000.1	6748.2	7627.1	8402.7	9595.0	11126.6
compared to previous year, %	110.9	110.0	112.0	111.3	112.5	113.0	110.2	114.2	116.0
Wages in main sectors (MDL), including:									
Agriculture, forestry and fisheries	2773.9	3072.3	3321.4	379.08	4318.4	4834.4	5167.3	5790.9	7000.7
Industry	4469.4	4962.8	5353.7	5902.7	6544.7	7184.3	7673.6	8333.6	9647.4
Constructions	43573	4559.0	5064.5	5649.8	6456.2	7301.5	7728.1	8106.2	9316.3
Wholesale and retail trade; maintenance and repair of motor vehicles and motorcycles	3547.7	3903.2	4558.0	5120.1	6009.7	6729.4	7346.4	8163.5	9443.2
Transport and storage	4076.4	4411.3	4746.3	5389.6	6077	6979.3	6647.3	7376.8	8936.8
Public administration and defense, obligatory social insurance	5260.4	5749.2	6144.2	7361.4	8397.8	8916.9	9769.4	10395.7	11901.7
Education	3357.4	3813.6	4017.7	4459.0	5147.4	6338.7	7023.3	7 440.5	8417.1
Health and social assistance	4046.5	4430.2	5010.0	5634.6	6228.0	7160.1	8718.9	11299.5	11651.1

\*The population with usual place residence was used as the basis for assessing the indicators. Usual residence is defined as the place, where a person has lived mainly during the past 12 months, independently of temporary absences (for leisure, vocations, visits to relatives and friends, business, medical treatment, religious pilgrimage, etc.).

Source: NBS, [www.statistica.md](http://www.statistica.md), <https://statistica.gov.md/category.php?l=ro&idc=445>

Analysis of wages as the main source of income shows, that against the background of an increase in its absolute value, there is difference by gender (females earn on average 14% less than males), by sector (wages in budgetary sector are by 13-20% lower than in real sector of economy) and by type of economic activity (for example, the lowest wages are in agriculture, forestry and fisheries – by 33.5% lower than the national average in 2022; in education, respectively, by 20.1%; in transport and storage – by 15.1%).

	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>RM, total</b>	<b>1735.2</b>	<b>1951.8</b>	<b>2051.8</b>	<b>2208.5</b>	<b>2357.1</b>	<b>2880.6</b>	<b>3096.6</b>	<b>3510.1</b>	<b>4252.6</b>
Urban	2093.9	2368.6	2490.1	2695.4	2875.9	3521.9	3695.2	4309	5355.3
Rural	1477.2	1652.4	1736.3	1868.1	1995.9	2457.2	2702.3	2985	3528.4
Including by economic status									
Hiring workers (employees)	-	-	-	-	-	3478.1	3712.4	4188.7	4950.9
Self-employed workers in agriculture (farmers)	-	-	-	-	-	1828.2	2276.3	2408.0	2866.2
Farmers	1069.0	1160.3	1173.3	1265.6	1400.5	-	-	-	-
Workers of agricultural sector	1313.3	1483.7	1521.1	1689.5	1897.7	-	-	-	-
Self-employed workers in non-agricultural activities	-	-	-	-	-	2837.4	2824.1	3379.6	4283.9
Workers of non-agricultural sector	2061.7	2344.5	2546.5	2722.6	2962.3				-
Entrepreneurs	2753.1	2401.7	3032.1	3635.4	3121.4	-	-	-	-
Pensioners	1454.1	1697.1	1781.3	1918.0	2065.5	2443.6	2640.3	2943.9	3688.0
Other activities	1894.8	2084.6	2121.6	2245.4	2182.4	2399.3	2386.4	2810.6	3384.0
Disposable income depending on the source of income of the household head, MDL									
30 years <	-	-	-	-	-	3511.8	4129.2	4108.3	5153.1
30-39 years	-	-	-	-	-	2816.4	2971.5	3318.0	4390.6
40-49 years	-	-	-	-	-	2739.5	2839.4	3472.1	3956.9
50-59 years	-	-	-	-	-	3098	3409.5	3839.5	4440.9
60-64 years	-	-	-	-	-	2864.7	3132.7	3627.9	4417.5
65 years and over	-	-	-	-	-	2602.6	2794.8	3047.8	3891.3
I quintile/V quintile, times	<b>5.6636</b>	<b>5.4758</b>	<b>5.7733</b>	<b>5.3455</b>	<b>5.0761</b>	<b>5.0905</b>	<b>5.3030</b>	<b>5.5736</b>	<b>5.3116</b>
Urban, times	4.8818	4.6111	4.8321	4.4699	4.4254	4.8774	5.3732	5.4401	5.3237
Rural, times	5.5375	5.3972	5.6864	5.1399	4.7633	4.6213	4.8390	5.0789	4.4909

**Table no. 5. Dynamics of average monthly disposable income\*, MDL**

\* Since 2019 the data are not comparable with the previous period, as the methodology of the household survey was modified.

Source: NBS, [www.statistica.md, https://statistica.md/category.php?l=ro&idc=445](https://statistica.md/category.php?l=ro&idc=445)

The Republic of Moldova is characterized by a low level of labour income, namely wages as the main source of income of working-age population (e.g. in EU countries the average monthly (gross) wage is much higher, than in Republic of Moldova, e.g. in 2021 the wage in Bulgaria is 944.00 EUR €, in Hungary - 1,344.00 EUR, in Germany – 4,640.00 EUR, in Italy – 3,360.00 EUR, in Portugal – 2,032.00 EUR, in Romania – 672.00 EUR, in Greece – 2,176.00 EUR, in Spain – 2,720.00 EUR, in France – 4,112.00 EUR. ), high level of social inequality (5.6 times the national average), risk of remaining without a job. Social inequality can be observed by comparing the income ratios of the population in quintiles I and V, which are 5.3 times in urban and 4.5 times in rural. According to the official statistics of the NBS, the lowest average monthly disposable income is among workers in agricultural sector, including farmers, the amount of which does not even cover the subsistence level of working age person.

*Low wages lead to small pensions, which do not provide pensioners with a decent standard of living with an insufficient level of social protection.*

Differences in wages, in disposable income, constant changes in the socio-economic structure and rising prices and tariffs for food, goods and services, were affected the decline standard of living of working population and especially of pensioners. The characteristics of absolute and extreme poverty by age group and depending to source of income of the head of household are shown in table no. 6.



**Table no. 6. Levels of extreme poverty and absolute poverty**

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Extreme poverty, MDL	1257.0	1378.9	1467.2	1564.0	1611.7	1689.7	1753.4	1843.0	2372.7
Extreme poverty rate, %	12.8	10.5	10.4	11.0	8.7	10.7	10.8	9.5	13.5
Absolute poverty, MDL	1558.6	1709.8	1819.2	1939.3	1998.4	2095.1	2174.1	2285.2	2942.7
Absolute poverty rate, %	29.5	25.4	26.4	27.7	23.0	25.2	26.8	24.5	31.1
Including by main age groups, %									
30 years <	18.1	14.6	16.1	20.8	13.1	12.9	16.7	15.4	22.2
30-39 years	25.4	22.2	20.1	22.8	20.5	19.2	22.3	18.6	21.3
40-49 years	28.9	24.8	28.6	29.1	22.7	24.5	23.3	23.3	28.5
50-59 years	30.2	27.7	25.0	26.4	23.6	22.0	26.2	21.1	30.4
60-64 years	33.8	24.7	31.9	30.6	22.9	28.8	28.5	26.6	34.2
65 years and over	37.7	31.4	34.3	34.8	29.4	40.8	41.1	39.7	48.1
Absolute poverty rate by gender of household head, %									
Males	28.8	26	26.6	28.4	22.6	24.6	25.6	23.6	30.4
Females	30.8	24.1	26.1	26.1	23.6	26.6	29.3	26.3	32.6
Absolute poverty rate by source of income of household head, %									
Wages in agricultural sector	51.5	50.1	51.9	42.7	39.9	43.2	37.9	35.1	39.2
Wages in non-agricultural sector	19.5	14.9	14.6	14.9	12	11.9	14.5	12.9	19.1
Individual agricultural activity	46.5	44.1	46.1	54	42.2	38.4	35.4	36.5	42.5
Individual non-agricultural activity	22	19.1	19.2	21	17.9	22	25.1	17.1	30.4
Pension	37.7	29.8	32.7	34.6	28.9	38.3	39.5	38.2	45.8
Remittances from abroad (labour migrants)	21.7	21.2	18.9	21.9	19.7	16.1	25.3	18.2	20.8
Other sources of income	46.0	40.0	43.6	48.4	51.8	46.2	48.8	46.3	58.5
Subsistence level (living wages)									
Working age population, RM, MDL	1726.8	1842.2	1914.7	1984.5	2016.1	2194	2247.6	2310.5	2818.3
Age pensioners, RM, MDL	1343.7	1437.4	1494.8	1547.5	1574.2	1707.4	1759.8	1811.7	2193.3

\* Since 2019 the data are not comparable with the previous period, as the methodology of the household survey was modified.

Source: NBS, [www.statistica.md](http://www.statistica.md), <https://statistica.gov.md/category.php?l=ro&idc=445>

The households of pensioners are the highest absolute poverty rate – 45.8%, and also those, in which the head of the household is employed in the agricultural sector (39.2%) and in individual agricultural activity (42.5%), and by age groups - 65 and over (48.1%) and 60-64 years (34.2%). Thus, despite the annual indexation, compensations and a number of other benefits provided to the category of pensioners (not including other categories of households), pensioners are the most vulnerable category of population. The dynamics of pensions for 2014 and 2022 reflects in table no. 7.

**Table no. 7. Characteristic of average monthly amount of pension by age, as at 01 January**

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Average amount of pension by age, as of January 1, MDL	1049.9	1114.7	1191.8	1301.1	1456.9	1643.7	1843.0	2067.5	2595.3
compared to previous year, %	106.4	106.2	106.9	109.2	112.0	112.8	112.1	112.2	125.5
Average amount of age pension in case of early retirement, MDL	-	-	-	-	2793.7	2972.4	3076.9	2855.1	2959.6
Agricultural sector, MDL	899.18	949.28	1007.27	1093.7	1208.78	1289.06	1447.39	1522.18	1984.8
Non-agricultural sector, MDL	1153.34	1221.51	1303.82	1420.15	1594.23	1832.36	2042.73	2330.39	2875.8
Agricultural/non-agricultural sector, %	78.0	77.7	77.3	77.0	75.8	70.3	70.9	65.3	69.0
Males, MDL	1190.43	1268.13	1362.52	1491.1	1682.35	1940.06	2157.78	2409.25	2960.65
Females, MDL	991.4	1050.4	1120.3	1221.4	1362.78	1520.21	1711.56	1919.94	2432.16
Females/Males, %	83.3	82.8	82.2	81.9	81.0	78.4	79.3	79.7	82.1
Replacement rate (brut), %** (pension/wage)	26.7	25.8	25.6	25.6	25.5	25.1	25.5	28.5	30.1
Indexation of state social insurance pensions for the corresponding year, %	6.45	7.95	10.1	6.8	6.6	5.3	4.83 as of 01.04.2020 1.07 as of 01.10.2020	3.89 as of 01.04.2021 3.86 as of 01.10.2021***	9900.0< 13.94% plus fixed sum 171.71 MDL
Consumer Price Index (CPI, annual average), %	105.1	109.7	106.4	106.57	103.05	104.84	103.77	105.11	128.74
CPI for foodstuffs, %	106.5	109.8	107.4	107.93	105.39	107.61	107.35	106.96	131.89
CPI for non-food goods, %	105.5	111.8	106.3	104.53	102.67	104.19	100.89	105.95	120.31
CPI for services, %	102.5	106.2	104.9	107.06	99.78	101.47	102.38	101.28	136.96
Pensioners by age in labour market, pers.	147996	154654	160658	164477	170028	174757	175656	172516	169529
Share of pensioners by age in labour market, %	21.8	22.5	23.0	23.3	23.3	23.0	23.4	23.7	24.0

\*Since 2019 the methodology of wage assessment was changed, there are no data on wages for 2021.

\*\*Data from Ministry of Labour, Social Protection and Family for 2014-2018, for 2019-2022 calculated by authors.

\*\*\*Law no. 127 of 30.09.2021 amending the Law no. 156/1998 on the public pension system. Official Monitor of the RM, 2021, no 238, 01.10.2021, article 279: item 2. Paragraph (3) article 12 according to which from 01.10.2023 payment of solidarity allowance is provided “if the amount of pension calculated according to the law is less than the amount of

the minimum pension for the respective category, the difference between these amounts in the form of solidarity allowance shall be covered from the state budget funds”.

Decision of the Government of the Republic of Moldova on indexation of social insurance benefits and some state social payments: no. 162 of 08.09.2021. Official Monitor of the RM, 2021, no. 212-218, art. 367.

Source: NBS, [www.statistica.md](http://www.statistica.md)

The analysis shows that despite the annual growth of the average amount pension by age, there is a 31% differentiation in the amount of pensions between agricultural and non-agricultural sectors, and a 17.9% difference between the pensions of females and males. Indexation and recalculation of pensions did not ensure a significant increase of living standards of agricultural pensioners and in 2021, their average amount of pension by age (MDL 1984.8) was 13.1% lower than the absolute poverty line (MDL 2285.2). Moreover, if take into account the annual growth of the Consumer Prices Index (CPI), for example, in 2021 the real change of the average amount of age pension in the country will not be 125.5% compared to the previous year, but 97.5% or on the contrary, will decrease by 2.5%.

Analysis of the structure of social insurance expenditures in 2021 showed that social insurance pensions constitute 82.9% of expenditures, including actual expenditures for age pension compared to 2020 increased by 113.7%, and for early age pension constituted only 31.9% of expenditures compared to 2020. The share of expenditure on age pensions constituted 83.2% of the total actual expenditure on social insurance pensions. The transfers from the State Budget to cover social insurance expenditures amounted to 39.4% or 9.8% compared to 2020 (income from compulsory contributions and other revenues amounted to 60.6%). The increase of expenditure is related to the indexation by 3.89% as of 01.04.2021 and 3.86% as of 01.10.2021 - 3.86%, as well as for revised age pensions for persons who were in labour market after realization the right to a pension and accumulated more than 7 years of insurance period. Except the abovementioned, from 01.10.2021 the amount of minimum age pension was increased to MDL 2000, which also raised the amount of average pension (the difference between the minimum pension and the calculated pension is covered by the State Budget). However, as shown in table no. 7, the amount of pensions in the country is not enough to ensure a normal adequate standard of living for pensioners (CNAS, 2022).

Taking into account the fact that the Republic of Moldova is characterized by a low level of income from labour activity, namely the wages as the main source of income of working-age population (e.g. in 2021 the amount of average monthly (gross) wage in EU countries was registered much higher, including Bulgaria - EUR 944.00, Hungary - EUR 1,344.00, Germany - EUR 4,640.00, Italy - EUR 3,360.00, Portugal - EUR 2,032.00, Romania - EUR 672.00, Greece - EUR 2,176.00, Spain - EUR 2,720.00, France - EUR 4,112.00), the level of social inequality in the country remains high, as a consequence, low pensions (in the presence of low income). The coefficient of replacement of wages by pensions (income from the labour activity of worker, who loses it from the moment of its stopping and retirement) is 30%), which does not provide pensioners with not only a decent standard of living but also with an insufficient level of social protection. The low wage replacement rate of established pension indicates the distrust of population towards the existing state pension system and is the reason for deviation from paying social insurance contributions. The Strategy for the Reform of the Pension System of the Republic of Moldova (Decision of the RM Parliament, 1998) was foreseen that the value of given coefficient should reach the level of 42% (in the ILO Convention no. 102 on Minimum Standards of Social Security, 1952, which was not ratified by the Republic of Moldova, the

replacement rate was established at 40%, and later in Recommendation 167 [ILO, no. 167. The Maintenance of Social Security Rights Recommendation, 1983], the amount of the coefficient for developed countries was established at 45% and is now at 50%). In a number of countries, for example, in Ukraine the replacement rate has reached the level of 50% and even up to 80% for scientific researchers, in the public administration - up to 75%, in Russia - 40%, in France - 70-80%, in Croatia - 80-90%.

*Consequently, the difference between the previously received income from work activity and the amount of established pension in the Republic of Moldova remains quite significant, which is one of the main reasons for the continued economic activity of persons of pension age.*

However, the share of age pensioners in labour market in the last two years (2021-2022) was only 24%. According to the Labour Code of the Republic of Moldova (Official Monitor of the RM, 2003, no 159-162, art. 648), art. 55, item (1), y1) both in the hiring and conclusion of the labour contract and in its interruption in relation to workers of pension age, there are infringements of equal constitutional rights of worker to labour according to the criterion depending on age, in the process of ongoing reforms, structural changes and internal optimization, economic agents primarily dismiss workers of pre- and retirement age, which is the cause of the increase in informal employment in both the formal and informal sectors. In addition to the above, this situation leads to the deterioration of the emotional and psychological state and fear of the unknown future, both in the pre-retirement period and during the immediate retirement period due to worsening of material well-being, risk of poverty and reduction of living standards.

Analyzing demographic and social factors, as well as motives about the deciding on the transition from labour activity to pension, it can be noted that given process, on the one hand, can be implemented by stimulating and creating the necessary conditions for voluntary continuation of labour activity, and, on the other hand, using destimulation the exit of age working in pension age from labour market, including through tools of psychological and normative character (the person's own assessment of their possibilities and the physical capacity to work). While financial factors will play an important role as an stimulus. Thus, a combination of non-financial and financial factors, as well as the removal of legal and normative limitations on continued labour activity will allow for retaining workers of pension age in labour market, independently of the standard pension age established in the country.

### **Conclusions**

Analysis of the demographic situation in the Republic of Moldova during 2014-2021 led to conclusions about a decrease in the number of working-age population aged 16-56/61 years (by 3.0 p.p.), the increase in the number of population of pension age 57/62 years and over (by 2.8 p.p.), which led to the increased burden on the pension system (index of demographic burden of population over 57/62 years has increased by 6.2 p.p., and population aged 65 and over by 7.4 p.p.). As a result of the ageing process, as of January 01 in period 2014-2022, the share of population aged 65-69 years increased by 2.94 p.p. and 70-74 years by 1.6 p.p., including 12.4 years of length of remaining life at 65 years. The reduction of employed population, from which insurance contributions are deducted, has led to financial instability of the Social Insurance Budget and, consequently, to late payment of pensions and other social benefits (the ratio of employed population to pensioners dropped from 1.93 to 1.62). At the same time, average life expectancy in 2021 is 69.1 years, including 73.1 years for female and 65.2 years for male, or 7.9 years less (in the Republic of Moldova this indicator is 11.3 years less than the average indicator in the EU-27 countries in 2020 - 80.4 years). Also in the Republic of Moldova, the ageing process has become irreversible: in 2022

ageing coefficient is 22.8%, or increased by 5.3 p.p. compared to 2014, including by female 26.2%, in rural areas 24%.

Thus, it can be concluded, that demographic factors are the principal reason for the formation of the transition from labour activity to pension, and the analysis of the demographic burden of population at elder ages and the population's life expectancy at elder ages are prerequisites for establishing and revising the pension age limit.

Ageing is a cycle or last period of life, that manifests itself differently in different people and is a specific period of human development. Modern society has different relations to elderly people and at present the category of pensioners is a social problem, as the end of their professional life turns them into unneeded people, a used resource and they live with a sense of their needlessness and marginalization. Retirement has opposite consequences for the population of pre- and pension age: there is a part of elderly who have successfully coped with old age, have certain resources for their material ensuring, including through the accumulation savings, and there is another part of the elderly whose financial situation was precarious, there was a financial deficit, in this case, when they retire and become even poorer. The Republic of Moldova is characterized by low wages and money earnings of population, including females wages, on average, 14% lower than males, wages in budget sector 13-20% lower than in real sector of economy, the lowest wages being registered in agriculture, forestry and fisheries or by 33.5% lower than the average in 2022, respectively in education by 20.1%, in transport and storage by 15.1%. The ratio of population incomes in quintiles I and V constitute 5.4 times in urban and 5.1 times in rural.

This situation led to a small pension, the wage replacement rate for pension in analyzed period was only at the level of 26-30% (45% or more in advanced countries). I.e. pensions as the principal source of income for most pensioners is not a basis for decent living standard. For example, the ratio of average amount of age pension between agricultural and non-agricultural sectors is up to 30%, for males and females - 18%. In the context of rising prices of food, medicines, goods and tariffs for services, the small amount of pensions as a source of existence reflected on the standard of living of both the population as a whole and, especially, of pensioners (the absolute poverty rate for households of pensioners was 38.2%, including 65 and over - 39.7%). The main source of livelihood (средств к существованию) for households consisting only of elderly people is social benefits (66.6%), but if they are engaged in labour activity, they have income from other sources, including hiring activity (14.4%) and individual agricultural activities (8.3%).

Thus, the problem of transition from labour activity to pension has become particularly actual as a result of the increase in life expectancy and the growing population at pension age. The transition to the "third age" and retirement supposes some social, psychological and biological changes and, as a consequence, has a certain stress for a person, who must adapt to the changes taking place in his life and accept them as the inevitability of a certain stage of the life cycle. At the same time one of the consequences of retirement is a decrease in income and the emergence of financial difficulties due to the loss of social position (status), deterioration of emotional and psychological state and, consequently, of the state of health. Considering the above-mentioned, especially the process of demographic ageing of population, the problems of elderly become an important actual objective for modern social policies. Modern policies should be directed to adapt to new living conditions, ensuring the various necessity of elderly population, observance for human rights, effective social protection, as well as taking into account the possibility of reorienting the elderly to activities that will give them emotional and financial satisfaction, using their professional and creative skills and physical possibilities. All of the above led to a search for the most effective ways to solve the issues of an ageing population.

Consequently, two main categories of factors can be distinguished from the study that not only influence to the process the transition from labour market to pension, but also necessitate the regulation of this process by the state:

- *Demographic situation*, which is a causal factor for the transition from labour activity to pension as a result of the population ageing process and the change in the age structure towards an increase in population in elder age groups. In the Republic of Moldova for 2014-2022, with a 13.6% decrease in working age population and a 5.0% increase in the number of age pensioners, when there are less than 2 employed persons per pensioner, the pension system based on the principle of solidarity between generations threatens its future viability and financial stability due to the decrease of social insurance contribution payers. Due to the ageing of labour force the share of 55-64 age group in employed population is 19.0%, but with discriminatory provisions in the labour legislation, age limits can change the stability of employment for this category of workers, and their labour activity may be stopped at any moment and they may be forced to retire. Given fact will reduce in the number of labour force, which, with the limited reproduction possibilities of labour force, will also deepen the deficit and competitiveness of national labour market, and given fact that needs to be taken into account in the national development programs of the country;

- *Social factors*, which are more related to the motivation of the decision in the transition from labour activity to pension. In the Republic of Moldova as of 1 July 2019 for males and as of 1 July 2028 for females the standard pension age is established 63 years of age, which will be achieved by an annual increase of six months for females (pension age for males is 63 years as of 01.01.2019, through increases in 2017-2018) and for female as of 01.07.2022, the pension age is 60 years and will be increased according to the law. Age pensions are established from the date of emergence of the right to a pension and in the calculation of its amount, the insurance period established by law is taken into account. (Article 41 and Article 42 of Law on state pension system: no. 156 of 14.10.1998. Official Monitor of the RM, 1998, no.111-113, art. 683 with subsequent amendments and additions. Republished under Parliament Decision: no. 1546-XIII of 25.02.1998, Official Monitor of the RM, 1998, no. 26-27, article 176). In the group of social factors, the main one is the amount of the future pension, which depends on the number of years of insurance and the transferred social insurance contributions from wage, which is small amount, considering its different forms of differentiation, and that is the reason of low pensions, which hardly cover 30% of the previously received labour income. Moreover, given the insufficient effective social protection of pensioners, the loss of employment not only does not guarantee a decent standard of living, but also presents a real risk of being in the category of the most vulnerable strata on the brink of survival.

Consequently, based on the existing demographic situation, the level of socio-economic development of the country, financial possibilities and national traditions, it is necessary to carry out the following:

**First**, to determine the *purpose of regulation* the process of transition from labour market to pension, including whether the labour force at an elder age is needed as a resource for reproduction of labour deficit and in given case the policies will be stimulate the continuation of economic activity by the population that has reached the established pension age in the country;

**Secondly**, upon reaching the established pension age, this age group exist from labour market, and at the same time, it is possible to revise the established pension age standard, revise the principles of pension system formation, develop alternative pension systems;

**Thirdly**, to determine the economic effect for the socio-economic stable development of the country from the implementation of the first and second scenarios;

**Fourthly**, to elaborate the state policies and measures to ensure the realization of the selected effective scenario for Republic of Moldova's development.

In order to adopt the most effective and scientifically-based scenario, the following measures should be carried out:

- To elaborate the population forecast by age, including gender and urban-rural aspect, for the medium- and long term;
- To elaborate the forecast of principal macro-economic indicators in the medium- and long term, including by regional aspect;
- To elaborate the forecast the market of labour force in the medium- and long term, including by regional and gender aspects;
- To calculate the years left of healthy life expectancy of the population in elder age groups;
- To carry out the evaluation of the effectiveness of the existing system of pension security, based on the principle of generations' solidarity, its legal basis and the perspectives for the development of alternative systems (professional pension funds, non-State pension funds, changes in the principle of functioning the pension system, taking into account the experience of developed countries);
- To perform the sociological studies of the state of health and living standards of the population aged 55 and over with purpose of increasing the effectiveness of social policies on the basis of the data obtained;
- To revise the criteria, standards applied in social protection and support for elderly population, including the maximum approximation of their quantitative value (amount) to the standards of international conventions, as well as those used in developed EU countries.

*Acknowledgements: The article was elaborated within the framework the Scientific Project "Migration, Demographic Changes and Policies of Stabilization the Situation", registered in the State Register of projects in the field of science and innovation of the Republic of Moldova with the code 20.80009.0807.21 of the State Program (2020-2023).*

#### References:

1. Berkovec, J., Stern, S., 1991. Job Exit Behavior of Older Men. *Econometrica*, 59(1) (Jan., 1991), pp. 189-210.
2. CNAS, 2022. Reports. *Annual report on the execution of the State Social Insurance Budget for 2021*. [online] Available at: <<https://cnas.gov.md/lib.php?l=ro&idc=439&t=/Rapoarte/Rapoarte-privind-executarea-BASS/Rapoarte-anuale-privind-executarea-bugetului-asigurarilor-sociale-de-stat/>> [Accessed 2 February 2023].
3. Currie, J., Madrian, B.C., 1999. Health, Insurance and the Labor market. In: Ashenfelter, O.C., Card, D. (eds.). *Handbook of Labor Economics*, Elsevier Science B.V., Vol. 3, Ch. 50, pp. 3309-3415. [pdf] Available at: <<http://www.econ.ucla.edu/people/papers/Currie/hole.pdf>> [Accessed 2 February 2023].
4. Decision of the Parliament of the Republic of Moldova, 1998. Strategy for the reform of the pension insurance system in the Republic of Moldova: no. 141-XIV of 23.09.1998. *Official Monitor of the Republic of Moldova*, 1998, no. 108, art. 502.
5. Grossman, M., 1972. On the Concept of Health Capital and the Demand for Health. *The Journal of Political Economy*, 80(2), pp. 223-255.
6. Gustman, A.L., Steinmeier, T., 1986. A Structural Retirement Model. *Econometrica*, 54(3), pp. 554-584.
7. Gustman, A.L., Steinmeier, T.L., 2013. Effects of Social Security Policies on Benefit Claiming, Retirement and Saving. *NBER Working Paper* 19071. [pdf] Available at:

- <[https://www.nber.org/system/files/working\\_papers/w19071/w19071.pdf](https://www.nber.org/system/files/working_papers/w19071/w19071.pdf)> [Accessed 2 February 2023].
8. Labour Code of the Republic of Moldova: no. 154 of 28.03.2003. *Official Monitor of the Republic of Moldova*, 2003, no. 159-162, art. 648.
9. Law of the Republic of Moldova on the State Pension System: no. 156 of 14.10.1998, with subsequent amendments and additions. *Official Monitor of the Republic of Moldova*, 1998, no. 111-113, art. 683.
10. Law of the Republic of Moldova on State Social Insurance System: no. 489 of 08.07.1999, with subsequent amendments and additions. *Official Monitor of the Republic of Moldova*, 2000, no. 1-4, art. 2.
11. Lupușor, A., 2021. *The phenomenon of informal economy and employment in the context of Covid-19 pandemic*. Report of Expert Group, UNDP Moldova. [online] Available at: <<https://www.undp.org/ro/moldova/publications/fenomenul-economiei-%C8%99i-ocup%C4%83rii-informale-%C3%AEn-contextul-pandemiei-covid-19>> [Accessed 2 February 2023].
12. Madan, S., 2023. *How can the reform of the State Labour Inspectorate help combat undeclared work?* Expert Group, Soros Foundation Moldova, Institute for Strategic Initiatives. [online] Available at: <[https://www.expert-grup.org/media/k2/attachments/Reforma\\_ISM\\_analiza\\_SM\\_final\\_eng.pdf](https://www.expert-grup.org/media/k2/attachments/Reforma_ISM_analiza_SM_final_eng.pdf)> [Accessed 2 February 2023].
13. Nazarov, V.S., Dormidontova, Y.A., Lyashok, V.Y., 2014. Analysis of Factors that Influence Workers' Decision to Retire. *Journal of the New Economic Association*, no. 4(24), pp. 66-86. (in Russian).
14. NBS, 2022a. Average life expectancy in 2021. [online] Available at: <[https://statistica.gov.md/ro/durata-medie-a-vietii-in-anul-2021-9578\\_59580.html](https://statistica.gov.md/ro/durata-medie-a-vietii-in-anul-2021-9578_59580.html)> [Accessed 2 February 2023].
15. NBS, 2022b. Elderly in the Republic of Moldova in 2021. [online] Available at: <[https://statistica.gov.md/ro/varstnicii-in-republica-moldova-in-anul-2021-9578\\_59794.html](https://statistica.gov.md/ro/varstnicii-in-republica-moldova-in-anul-2021-9578_59794.html)> [Accessed 2 February 2023].
16. Stock, J.H., Wise, D.A., 1990. Pensions, the Option value of Work and Retirement. *Econometrica*, Vol. 58, no. 5, pp.1151-1180. <https://doi.org/10.2307/2938304>.
17. The World Bank in Moldova. Overview. [online] Available at: <<https://www.worldbank.org/ro/country/moldova/overview>> [Accessed 2 February 2023].
18. United Nations, 2022. *World Population Prospects 2022. Summary of Results*. United Nations, Department of Economic and Social Affairs, Population Division. UN DESA/POP/2021/TR/NO. 3. United Nations Publication, New York. ISBN: 978-92-1-148373-4, eISBN: 9789210014380. [pdf] Available at: <[https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/wpp\\_2022\\_summary\\_of\\_results.pdf](https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/wpp_2022_summary_of_results.pdf)> [Accessed 2 February 2023].



## SUSTAINABILITY IN APPLE JUICE EXTRACTION TECHNOLOGY

**Ph.D. Student, Denisa MARICA (SOPÎRLĂ)**

"Lucian Blaga" University from Sibiu, Romania

E-mail: denisa\_marica85@yahoo.com

**Ph.D. Prof. Eng., Ovidiu TIȚA**

Faculty of Agriculture Science, Food Industry and Environmental Protection,

"Lucian Blaga" University of Sibiu, Sibiu, Romania

E-mail: ovidiu.tita@ulbsibiu.ro

**Abstract:** Sustainability has become a priority for all food producers, the aim is to constantly improve quality in accordance with market requirements that are constantly changing. Consumers want safe food products, that's why a lot of standards and norms have appeared in this regard. Consumer preferences regarding the concept of quality may differ from one consumer to another, being influenced by economic or social aspects, by the environment in which they lived, what they were taught to consume or how each perceives the quality of products. Some choose the products according to the price, others according to the way of presentation or follow the brand/mother, others according to the organoleptic qualities. It is desired to apply sustainability in the technological process of obtaining apple juice. Access to a safe and nutritious natural juice that ensures the health of the population. This can be achieved by: developing a technological process oriented towards the efficient use of natural resources and preserving biodiversity, enriching the human diet by developing a wide variety of aromas, tastes, textures, enriching juice with biologically active substances, healthy working conditions, packaging in safe conditions, without additional generation of waste, reuse of waste resulting from processing (borhot - jams/sweets, rotten apples - compost), efficient supply of food along the food chain and to the consumer, healthy working conditions.

**Key words:** apple juice, sustainability, quality.

**JEL Classification:** L66, I15.

### 1. Introduction

This paper proposes the importance of ensuring sustainability in the production of apple juice by making producers responsible and providing correct and complete information to consumers. The importance of producing quality products has increased significantly lately. Quality together with permanent improvement in correspondence with the constantly changing consumer demands is a priority in ensuring sustainability. It tries to meet the demands of consumers without affecting the ability to satisfy future generations. We seek a sustainable development in harmony with the environment through the proper management of the resources it offers us (Pamfilie et al., 2016).

The objectives pursued regarding sustainability are of major importance for producers but also for the other parties that come into contact with them. The technology of obtaining the products must be thought of in the long term so as to satisfy the requirements of the parties involved, ensuring the same importance to both human resources, the balance of the society in which my business develops but also the environment (Ganescu, 2012).

Consumer requirements are oriented towards the nutritional value of food and how it affects health and normal functioning of the body. The choice of apples, the recipe for obtaining juice is made according to consumer preferences.

Apples have a high energy value that sometimes exceeds 85 calories/100g. In the fresh state they contain a significant amount of sugars (7-17%), especially simple sugars that are easily assimilated. Apples contain organic acids, especially malic acid (0.16-1.30%), pectic substances (0.5-0.6%), vitamin C (20-40 mg%), vitamin A (0.17- 0.45 mg%), vitamins B1, B2, biotin, B6, pantothenic acid. A number of 45 mineral salts have been identified in apples. The content of apples in nutrients and aromatic substances means that, in addition to their nutritional value, apples also have therapeutic value, which is why they are present in the diet of healthy people and in dietary regimes. Consumed for breakfast, apples have an

important role in preventing colon cancer because they help to clean the colon. They also have a great absorbing power of toxins. Apples help to eliminate uric acid, being recommended for people with arthrosis, obese people and rheumatics, they are recommended for treating infantile diarrhea, they are means of fighting against hypertension. To enjoy these properties of apples, we must consume them fresh. This is possible because we have apple varieties to satisfy all tastes, the ripening is periodic (summer, autumn and late autumn varieties) and they can be kept for a long time if their storage is done in a warehouse, in the cold or in a controlled atmosphere (Chirla, 2008).

There are some apple varieties that become good for winter consumption. Unlike other fruits, apples have the advantage of being better transported and stored better than the fruits of other species (stones). These fruits can be processed in the form of jam, marmalade, jam, cider, compote, juice, etc. They are also the basis for other types of marmalade, juices, etc., due to their high pectin content.

The apple adapts very well to the temperate climate, withstands the winters characteristic of the temperate climate better than any other tree species and adapts well to a wide range of soils. Apple plantations in the vicinity of cities, but especially around houses, exert a favorable influence on the climate, which is felt in terms of temperature, humidity and air purity. Apple orchards are also of particular importance through the contribution they bring to increasing the national income and the farmer if they respect the planting conditions, irrigation, anti-hail nets, etc. From an intensive apple orchard, an equivalent value of about 5 ha cultivated with cereals is obtained (Chirla, 2008).

The choice of apples is made according to the sensory properties, those that give consumers pleasant sensations are grown and kept for consumption. Before choosing the right variety for planting, the apples are analyzed according to size, appearance, color, shape, consistency, juiciness, aroma and taste (Banu, 2007). After the sensory analysis, the fruits are analyzed from the point of view of nutritional and energy value. The authenticity of the variety is followed to identify the variety if it corresponds to the requirement. Regarding the color, consumers prefer intensely and brightly colored apples, with yellow, red or green skin and the skin must be glossy, without cracks, wrinkles, marks from insect attacks, marks due to hail or stains from non-compliance with the scheme treatment. The apple pulp must be crispy, juicy and the taste according to consumer preferences. Some prefer sour taste, others sweet - sour, sour - sweet - aromatic, sour - aromatic or sweet - aromatic. That's why we need to know well the varieties of apples and their properties before we plant them. (Maleca & Chihai, 2013).

Ripe apples are used for consumption and when obtaining juices, when the sensory value reaches the maximum value. Apples that have not reached maturity cannot be used for consumption or to obtain apple juice, they are directed either to obtain acidifier or are left on the ground as fertilizer (Crucirescu, 2019).

In our country, the apple tree is planted at the beginning of autumn or in the first months of spring. But autumn planting has the advantage that the tree starts growing earlier in the spring. But if the autumn is dry and the area is one with big frosts during the winter then it is recommended to plant in the spring. Pits are dug or made with the help of the special drill when we want to start planting because the plant needs to benefit from soil moisture. The size of the pits is made according to the roots of the plant. After the holes have been made, fertilization takes place when planting, this fertilization can also be applied when we prepare the land for planting. Fertilization is done with very well fermented manure, super phosphate and potassium salt, the amount of these products is chosen according to the results of the soil analysis. The roots should not be placed directly on the fertilizers, so it is recommended to put a little soil. After planting the tree, a hole is made around it like a "basin" to keep the

water and it is watered (Chira & Pașca, 2008). Regarding the soil, the apple tree is not a very demanding species that requires certain hard-to-find soils, they prefer loamy or loamy soils mixed with sand or clay, chernozems, forest soils. It is good that there has not been an orchard on the soil chosen for the establishment of a culture. The long culture produces the loss of the physico-chemical properties of the soil and the decrease of nutrients. After the orchard, it is good to cultivate cereals for a few years because they lead to the improvement of the nutritional qualities and the increase of the resistance of the soil against pests and diseases (Dabu, 2007).

The temperatures required for apple development are between 10 and 30 degrees Celsius. It also withstands lower temperatures (freezing), but not when it enters the vegetation.

After planting, the tree trunk is covered with a special net that protects the root against rodents and wild animals (deer). In the spring after vegetation, dig around the trees to remove weeds and destroy the crust so that water can penetrate more easily. Care must be taken that the excavation is not too deep so as to destroy the roots. The shoots that grow on the tree stem are removed. Disease and pest control is carried out to have a healthy tree, healthy foliage. The apple naturally forms its own crown. Through the work of forming the crown, we manage to have skeleton branches and fruit branches so that we have maximum productivity (Chira & Pașca, 2008). After we carry out the work of cutting the trees, their volume is reduced and thus the penetration of the sun's rays is improved, which is an important factor for the development of their fruiting (Balan, 2015).

After planting, fruit trees do not consume a large amount of nutrients from the soil, but during growth, their lack reduces productivity. After analyzing the soil, the need for fertilizers is established so that the plant benefits from everything it needs to develop normally (Grițcan et. al, 2016). The basic fertilization is done with manure, phosphorus and potassium, and during the vegetation period, in addition to phosphorus and potassium, apple trees also need nitrogen.

As part of the plantation maintenance works, its cutting is also included. The apples are cut according to the variety and the chosen culture system. During the period of vegetative rest, cuttings are made for plantation formation, maintenance, and fortification. The first time are cut the weak branches, which grow close together, which do not bear fruit, the branches which grow slowly and hang down (Balan, 2020). Once the trees start to produce, the thinning of the fruits must also be done, this can be done chemically when the trees show a lot of flowers and the conditions during flowering are favorable for fruit setting and thus quantitative and qualitative fruits can be obtained year after year.

Another important thing is the irrigation of the plantation, this is done according to the year, if it is dry or not. The most used irrigation method is drip irrigation (Figure no. 1).

Hail can destroy both trees and fruit, so anti-hail nets are recommended. They protect very well from hail but also from burns in very hot periods. Late frosts can destroy that year's apple production, so we use fumigation (Cimpoies, 2014).



Figure no. 1. Drip irrigation system

Apples can be stored for a long period of time without quantitative loss or qualitative deterioration. We find them for sale, for consumption, all year round. For this, the apple must be harvested when it has reached maturity, it must not be hit during handling during picking, packaging, transport, storage and in its route the hygiene conditions must be respected. If we have a large production and do not have time to turn the apples into juice, the most efficient method, but at the same time more expensive from a financial point of view, is to store the apples in cold rooms and in a controlled atmosphere. (Udriste et al., 2018). Apples in warehouses that keep low temperature, refrigeration temperatures 0-4 0C are stored in pallets of different sizes, made of plastic or wood.

During fruit storage, the physiological and biochemical processes in them continue depending on the storage conditions. It has been shown that fruits improve their organoleptic properties by respecting temperature, humidity and hygiene conditions (Gaviuc, 2017). By using a controlled atmosphere for apples of the Golden variety and in parallel with the usual atmosphere, a negative change was observed in the appearance of the fruits stored in the normal atmosphere, they shriveled, their moisture decreased (they are no longer juicy), they are no longer crispy, their quality has decreased. In the case of controlled storage, the fruits did not change their appearance. In figure no. 2 we observe apples stored until March, they are juicy and look like during harvest. And the taste of those stored in a controlled atmosphere is much more appreciated compared to those stored in a normal atmosphere. We can also discuss consistency.



Figure no. 2. Apples in March kept in warehouses with controlled atmosphere

In order to benefit from the positive effects of storage in controlled atmosphere (figure no. 3 and 4), the stored fruits must be picked during the optimal harvest period, be healthy, picked and transported in hygienic conditions.



Figure no. 3. and 4. Warehouse with controlled atmosphere in the Valea Dămboviței area

If the hygiene conditions during picking, transport, and storage are not respected, the fruits can be contaminated with various microorganisms. Fungal infection causes spoilage of apples during storage. Identifying and removing this contamination prevents losses during storage. Methods for identifying pathogens have been sought. In addition to agents of a fungal nature, microtoxins and volatile compounds can also occur. The best known microtoxin found in apples is patulin. In our country there is a study that helps to identify sixteen fungal agents. The removal of diseases during storage can be done through the new molecular techniques discovered (Udriste et. al., 2018).

To improve storage in a controlled atmosphere, it is recommended to use continuous refrigeration treatment from apple picking to storage. This system presents the advantage of the rapid release of heat from the harvested fruits and the prevention of transpiration (causes dehydration of the fruits through water loss), thus increasing the storage period and maintaining high quality (Bodiu, 2015).

Depending on the storage temperature, the vitamin C in stored apples changes its concentration. This decreases as the temperature increases. And the amount of sugars in apples increases during storage. It has been shown that apple varieties react differently to applied temperatures (Maleca & Chihai 2013).

## 2. Materials and methods

We use apples from our own plantation in the Voinești area, Dâmbovită (Romania). The aim is to use some methods of planting, harvesting, technological process of obtaining the juice so as to ensure sustainability. Fruit processing produces waste such as peel, seeds and other by-products such as apple pulp which contains a large amount of pectin, cellulose and hemicellulose that can be used to obtain other foods, the total amount of waste during the obtaining of apple juice differs depending on the variety of apple used, this amount varies between 10 and 30% of the weight of the fruit (Vodovic et al., 2020). Byproducts contain compounds that are nutritionally valuable such as mineral salts, polyphenols, dietary fibers, vitamins, enzymes, etc. (Galanakis, 2020).

The right apple variety is chosen so that we get a good yield and the consumer is satisfied. To improve the nutritional value of pasteurized apple juice, add honey, pollen or royal jelly.

In the fruit juice industry, large losses are observed of:

- Energy (storage, washing, juice pasteurization)
- Water (cultivation maintenance, washing of fruits, machinery)
- Food (apple mince)

It aims to reduce these losses to a minimum and search for optimal solutions to ensure sustainability in the apple juice industry.

### **3. Results and discussions**

By ensuring sustainability when obtaining apple juice, the side of economic development, social development and environmental conservation has been improved. These dimensions of sustainable development are key to securing the future of the fruit juice sector.

Economic development: since I own an apple orchard, a sustainable business in this field is desirable. The business consists of developing a production line of 100% natural apple juice and other fruit juices based on apple juice in the future from the remaining borhot developing a jam/sweets business.

Social development: I aim to get a high quality juice with as much nutritional value as possible so that potential customers are satisfied with the juice quality, taste and price, so that they prefer my juice recipe.

Due to the seasonal ripening of apples, there is an imbalance between the production and consumption of these fruits fresh. One solution is to store the fruit in a controlled atmosphere warehouse to produce fruit juice all year round. But the cost of this deposit is very high, so to begin with I will choose the option to use the fruits for consumption immediately after harvesting and to turn the remaining ones into juice. The juice will be preserved so that it does not lose its properties (to have a nutritional value close to that of freshly squeezed juice) until the next fruit harvesting season. The 100% natural fruit juices will be preserved with the help of natural preservatives (honey, propolis, royal jelly and essential oils) and by light pasteurization so as to obtain a nutritional value close to that of freshly squeezed juice.

There are many orchards in my area (Voinești, Dâmbovița, Romania) but many apple growers have secured another source of income. Interest in apple culture decreased, orchards began to stop producing, grow old and disappear. I want to rekindle interest in apple culture.

Creating a good, functional environment, free of pollution and waste, in which life can unfold in all its glory:

As producers as well as consumers of 100% natural fruit juices, we each have our well-established role in supporting the transition to the natural economy.

Regardless of the intellectual resource we have or the level of income and where we live, the health and well-being of all of us depend on the environment (Ivana S., 2019).

Natural means choosing something that frees you from the daily grind and reconnects with authentic feelings. The products made from our own plantation, with the choice of appropriate varieties of fruit, help us achieve a harmonious connection with the environment. I made the plantation and I will capitalize on the fruits out of love for nature and at the same time I will promote the values of sustainability, these values should be assimilated by every person or fruit juice factory. Modern techniques help to promote a responsible climate and we are not affected by the consequences of pollution. We will not waste potable water when washing the fruits and the residues resulting from the processing of the fruits (the pulp) are sent for recovery. The rest of the residues: leaves, branches, defective and rotten apples can be used as compost.

#### 4. Conclusions

In order to ensure sustainability in the production of apple juice, the following is taken into account:

- Access to a safe and nutritious natural juice that ensures the health of the population.
- Development of a technological process oriented towards the efficient use of natural resources and the conservation of biodiversity.
- Enriching the human diet by developing a wide variety of aromas, tastes, textures;
- Enrichment of juice with biologically active substances.
- Healthy working conditions.
- Safe packaging without additional waste generation
- Reuse of waste resulting from processing (borhot - jams/sweets, rotten apples - compost).
- Efficient supply of food along the food chain and to the consumer.

#### References

1. Balan, P., 2020. *Apple growth and fruiting according to tree cutting system in super-intensive culture system*. In: Theses of the 73rd scientific conference of students. Chisinau: Agrarian University.
2. Balan, V., 2015. Technologies for the intensification of apple and cherry culture. *Magazine of Science, Innovation, Culture and Art "Akademos"*, 3(38), pp. 82-87.
3. Bodi, A., 2015. Optimizing the preservation and storage system of easily perishable products. *Theses of the 68th scientific conference of students and master's students*. Edition 68, T, May 20, 2015, Chisinau. Chisinau: Agrarian University.
4. Chirla, L., Pașca, I., 2008. *Apple Culture*. Bucharest: Ed. M.A.S.T.
5. Cimpoiș, G., 2014. Ensuring the quality of fruit products. *Science, Innovation, Culture and Art Magazine "Akademos"*.
6. Crucireșcu, D., 2019. Apple fruits in the early stage of ripening - raw material for obtaining the natural acidifier. *Technical-scientific conference of students, masters and doctoral students*. 1, March 26-29, 2019, Chisinau. Chisinau, Republic of Moldova. pp. 505-508.
7. Gănescu, M.C., 2012. Corporate social responsibility, a strategy to create and consolidate sustainable businesses. *Theoretical and Applied Economics*, Volume XIX (2012), 11(576), pp. 93-109.
8. Galanakis, C., 2020. *Valorization of Fruit Processing By-Products*. Cambridge, MA, USA: Academic Press.
9. Gaviuc L., Bujoreanu N., Bejan N., Harea I., Long-term storage, quality and gustative harmony of apple fruits. *Advanced technologies for cultivation and protection of crop plants*. Section IV. pp. 270-272.
10. Gaviuc, L., Bujoreanu, N., Bejan, N., Harea, I., 2017. Long-term storage, quality and gustatory harmony of apple fruits. *Genetics, physiology and plant breeding, international scientific conference*. Edition 6. Chisinau: Tipogr. "PrintCaro", 2017, p. 270-272.
11. Grișcan, S., Dadu, Z., Polihovici, L., Crivaia, P., 2016. *The study on foliar fertilization in apple culture. Integration through research and innovation. Natural and exact sciences*. Chisinau, Republic of Moldova. pp. 124-127.
12. Ivana, S., 2019. *Eco-innovation, Sustainability, Regeneration. Sustainable development strategies in disadvantaged mountain areas in Romania*. Bucharest: Ed. Royal Indigo.

13. Maleca, T., Chihai, M., 2013. The degree of modification of some biochemical indices depending on the applied storage temperature. *Scientific Annals of the Cooperative-Commercial University of Moldova*, 12(2), pp. 193-197.
14. Maleca, T., Chihai, M., 2013. Evaluation of the organoleptic properties of new apple varieties. *Scientific Annals of the Cooperative-Commercial University of Moldova*, 11(2), pp. 376-380.
15. Pamfilie, R., Bobe, M., Cristescu, L. and Toma, M.A., 2016. Innovative Food Quality Models - Developed as an Interface for Modern Consumers and Sustainable Business. *Economic Amphitheater*, 18(43), pp. 663-674.
16. Udriste, A.A., Ciceoi, R., Badulescu, L., 2018. Methods of early identification of phytopathogenic fungi affecting apples during storage. *Fruit Growing Research*, Vol. XXXIV, pp. 147-152.
17. Vodovic, S., Tepic Horecki, A., Vladic, J., Sumic, Z., Gavaric, A., Valkula, A., 2020. Apple. *Valorization of Fruit Processing By-Products*, Chapter 2. Amsterdam: Elsevier Inc.



## PUBLIC EXPENDITURES FOR EDUCATION IN ROMANIA AND THE EUROPEAN UNION

**Ph.D. Lecturer, Gica Gherghina CULIȚĂ**

Constantin Brâncoveanu University of Pitesti, Romania

E-mail: ggculita@yahoo.com

***Abstract:** The society we live in evolves and develops more and more. Along with this phenomenon, the needs of individuals diversify and grow. Some of these needs can be met at the private level, such as the need for food, clothing, but another part of these needs can be met at the public level, here we can mention: education, national defense, internal order. Public needs constitute one of the most important components of the social policy within a state, that is why the state allocates financial resources in order to satisfy these needs in order to increase the standard of living of the population. Public expenditures for education represent one of the main components of social-cultural expenditures, they occupy a leading place within the actions that the state finances. It is recognized the role that the education system has in the evolution and development of society, especially in the conditions of the scientific revolution, which leads to the need for modernization and continuous development of school institutions, as well as the granting of financial resources from the state budget for to finance education. From the desire to explore the state and necessary actions in the educational field, this paper aims to analyze the level of public expenditure for education in Romania and in the EU member countries.*

***Keywords:** education, public expenditures, financing education.*

***JEL Classification:** H, H5, H52.*

### **1. Public expenditure on education and how it is financed**

There is a close interdependence between the level of educational development and economic and social progress, which is why in most countries governments are aware of the need to improve education, which is an important prerequisite for future economic prosperity and the development of the population's standard of living.

The fact that most countries want to provide free or low-cost quality public education, or even support private education through subsidies, leads to increased public spending on education in both developed and developing countries.

The change in the size of this expenditure, and in particular its increase, is due to the action of certain factors, including: demographic factors: population growth, structural changes in the population by age group; economic factors: providing educational institutions with the technology and equipment needed to carry out their work; socio-political factors: aid granted to students and pupils, and school policies.

According to the functional structure, educational institutions are grouped as follows: pre-school, primary, secondary, university, postgraduate.

Within each of these institutions, expenditure is incurred, some of which is common to the others, while some is specific to only one stage of the education process.

In terms of economic content, expenditure on education and socio-cultural activities falls into two categories: investment or capital expenditure and current or operating expenditure.

In the first category we can mention the expenditure for the construction and maintenance of buildings necessary for the educational process, for the purchase of equipment, furniture, i.e. fixed assets that institutions need to function and carry out their activity in optimal conditions.

The second category refers to expenditure that is consumed in the current year and is also divided as follows:

- staff expenditure, from which the salaries of both permanent and auxiliary teachers are paid.
- expenditure on materials and services, incurred to purchase manuals, to carry out various repair works, transport.
- expenditure on school grants, under this category grants are awarded to educational institutions as well as scholarships.

Spending on education aims to ensure that the population is educated and prepared for the future in terms of a well-trained workforce.

The financing of education expenditure in Romania is provided by the state and local budgets, by extra-budgetary means, which are made up of tuition fees, by funds received from international financial bodies in the form of aid, credits received on the basis of programmes and by the expenditure of economic agents for professional training courses, donations and sponsorships made to various public educational institutions.

Education funding:

**a) State budget**

The state budget provides funding primarily for central specialist bodies. The Ministry of Education and Research, county school inspectorates, children's palaces, teachers' homes. The state budget also finances: the organisation of examinations, competitions, national olympiads, scholarships for pupils and students, reform projects financed by international financial bodies.

**b) Local budgets**

Financing of state pre-university educational institutions is provided from the budgets of municipalities, towns and communes. All schools that also have a primary cycle receive funding for the dairy and bakery programme from the budget of the county councils.

**c) Own income**

Most of the educational institutions' own revenue comes from tuition fees collected in accordance with the law. In addition, there is also income from rents, donations, production activities (school workshops), boarding school activities and canteens. The population contributes directly to the financing of education through school fees, but also incurs other expenses for the extra-curricular maintenance of pupils and students.

**d) External funds**

The Ministry of Education, Research and Youth has contracted numerous external funds to improve conditions for pupils and students.

## **2. Public expenditure on education as % of GDP**

Romania ranks second to last in the European Union in terms of the percentage of GDP allocated to education. According to a study published by Eurostat, based on 2019 data, it shows that Romania ranks 26th out of 27, ahead of Ireland, with an allocation of only 3.6% of GDP to education.

In 2023, Romanian education receives even less, only 2.1% of GDP, see table 1. Of all European countries, Iceland spends the most on education (7.1% of GDP), followed by Sweden (6.9%) and Denmark (6.3%), according to Eurostat. Belgium follows with 6.2% of GDP and Estonia with 6% of GDP.

Data from the last 10 years show that although the actual amount is higher this year, the percentage of GDP is the lowest since 2011, when the current education law was passed which provides 6% for Education. Unfortunately, we are still in a system with many problems: underfunded schools, poorly paid teachers and we cannot expect to have an increase in the quality of education, to have better and better education, when the state invests less and less in education.

**Table 1**

Anul	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Pondereea cheltuielilor publice pentru invatamant % PIB	2.8	3.0	3.1	3.3	2.8	2.24	2.92	2.90	2.39	2.28	2.1

Source: <https://www.edupedu.ro/breaking-bugetul-ministerului-educatiei-va-fi-de-21-din-pib-in-2023-proiect-ar-fi-cel-mai-mic-buget-din-istoria-recenta/amp/>

### 3. The role of public funding for education

The education and personal and professional training of young people play a very important role in the development and evolution of society, the economy, the standard of living and the degree of civilisation. That is why it is of paramount importance to make public expenditure in this regard.

The role that public spending plays in developing and maintaining the education system is major. Whereas the full education of young people requires institutions that provide them with all the opportunities they need, i.e. furniture, equipment, laboratories, qualified teachers, all this is provided by public money.

It follows that without state support there can be no prosperous and efficient education system. The results of these investments in human capital are not immediately visible; it takes time for them to achieve their objective. Spending on education is necessary both to create a skilled workforce and to create an internationally competitive economy.

This public expenditure on education is also important because education plays a significant role in overcoming economic crises, periods of economic decline, increases the skills of employees, employment, life satisfaction, and the development and training of critical thinking. Some studies show that the level of education leads to increased life expectancy, reduced obesity, increased resistance to vices.

### 4. Cost-benefit analysis

In order to determine the efficiency of actions in the field of education, special attention is paid to a method called "cost-benefit analysis", also known as "cost-benefit analysis".

This analysis is based on the idea that any action we want to take requires effort, but also costs, and in the end these costs must be translated into the results we want to achieve.

In the case of actions undertaken in the field of education, the aim is to identify the cost and effort on the one hand and, on the other, the results, the effects, the so-called benefits resulting from the actions financed.

In principle, it is necessary to make a comparison between several alternatives for carrying out the actions, and each of these alternatives must have different costs and advantages, and in the end the most advantageous option must be chosen in terms of the ratio between these variables.

We can understand that an objective can be achieved in different ways using different means, using different costs, and using different advantages.

As far as education expenditure is concerned, most of the cost elements are measurable and make it possible to compare them in order to choose the most appropriate option.

Expenditure in this case appears as cost items, which are common in other areas as well, such as staff costs, expenditure incurred as a result of wear and tear on equipment, while benefit items are the result of income earned either at individual or institutional level, either directly or indirectly through participation in the growth of gross domestic product, through the use of labour capacity, as well as the productivity of employees in the school. In this cost-benefit analysis of expenditure on education, particular attention is paid to the relationship between the age of the persons attending school and the earnings they obtain. It is considered and is certain that as the level of education increases, so does the income obtained by the graduate.

So, we can say that the "advantage" gained by those who choose to attend the courses materialises in the extra money they get from the extra training. Whereas the cost analysis takes into account expenditure from public funds as well as from private sources or family income. The application of this method in education is based on the idea that the expenditure made is an investment that will generate future income for both the individual and society. As a result, the state and individuals should pay particular attention to the vocational training of young people, so that the costs are kept low and the benefits obtained ensure a balance between the supply and demand for labour.

## 5. Conclusions

In carrying out this project we have identified how important and vital the education system is for the development of society and the economy.

In this respect, it has been found that in order to provide the market with a qualified workforce adapted to its requirements, a continuously developing and modernising education system is needed.

But to achieve such a system requires financial investment in this area. What we need to understand is that these investments are expenditures made in the present, but which will generate benefits in the future.

At present, it has been found that the amount of expenditure on education in Romania is at a low level, even among the lowest in the European Union, this is an effect of the economic crisis we are going through, but also of the reduction of the public budget.

Education not only produces economic benefits, it also contributes to the development of society, to the development of technology and technology, and to the maintenance of health.

Analysing all these benefits, we can say that in the context of the current crisis, one solution to overcome it is to increase the level of public spending on education.

## References

1. EduPedu, 2022. Bugetul Ministerului Educației va fi de 2,1% din PIB în 2023 – proiect / Ar fi cel mai mic buget din istoria recentă. [online] Available at: <<https://www.edupedu.ro/breaking-bugetul-ministerului-educatiei-va-fi-de-21-din-pib-in-2023-proiect-ar-fi-cel-mai-mic-buget-din-istoria-recenta/amp/>> [Accessed 12 March 2023].
2. Guvernul Romaniei, 2023. *Raport privind situația macroeconomică pe anul 2023 și proiecția acesteia pe anii 2024-2026*. [online] Available at: <<https://sgg.gov.ro/1/wp-content/uploads/2022/12/RAPORT.pdf>> [Accessed 12 March 2023].

3. Guvernul Romaniei, 2022. *Nota de fundamentare 0 OG nr. 19/18.08.2022*. [online] Available at: <<https://gov.ro/ro/guvernul/procesul-legislativ/note-de-fundamentare/nota-de-fundamentare-og-nr-19-18-08-2022&page=1>> [Accessed 12 March 2023].
4. Ministerul Educatiei, 2022a. *Comunicat de presa*. [online] Available at: <[https://www.edu.ro/sites/default/files/20.06.2022\\_comunicat\\_presa\\_Cheltuieli\\_educatie%202005-2022.pdf](https://www.edu.ro/sites/default/files/20.06.2022_comunicat_presa_Cheltuieli_educatie%202005-2022.pdf)> [Accessed 12 March 2023].
5. Ministerul Educatiei, 2022b. *Bugetul pentru învățământ prevăzut pentru anul 2023 este de 49509 milioane de lei, respectiv 3,2% din PIB*. [online] Available at: <[https://www.edu.ro/comunicat\\_presa\\_112\\_2022\\_buget\\_2023](https://www.edu.ro/comunicat_presa_112_2022_buget_2023)> [Accessed 12 March 2023].

## IS PROGRESSIVITY A SUPPORTER OF TAX REVENUES FOR THE PUBLIC BUDGET OF EU27 COUNTRIES?

**3<sup>rd</sup> Degree Researcher, PhD., Alina Georgeta AILINĂ**

“Victor Slavescu” Financial and Monetary Research Center, INCE, Romanian Academy

E-mail: alinageorgetaailinca@gmail.com

***Abstract:** The COVID-19 crisis calls into question the ability of governments to face the challenges, and covering the challenges can only be done with substantial budget revenues. Fiscal progressivity often reflects the discussion about equity, but also fiscal yield. In general, fiscal progressivity reflects the ability of the marginal tax rate to exceed the average rate or the superunitary tax elasticity of a certain type of income in relation to that income. Considering that there is no single answer as to what fiscal progressivity means, the article proposes, through three methods of calculating fiscal progressivity, the analysis of its ability to increase revenues from current taxes on income, wealth, etc. The analysis is based on the study of elasticities and reflects the importance of additional efforts to place as best as possible the elements of fiscal progressivity at the level of fiscal regulations in the countries of the European Union, both for improving fiscal equity for citizens and for increasing the state's self-sustaining capacity.*

***Keywords:** personal income tax, progressive taxation system, equity, fiscal yield, European Union countries*

***JEL Classification:** H11, H21, H24.*

### 1. Introduction

Considering the war in the vicinity of the border of Romania, and therefore in the vicinity of the border of the European Union (EU27), considering an accumulation of risks and challenges, from the energy crisis to the ecological crisis, the governments of the European Union must make constant efforts to improve the parameters fiscal budgets and especially for the increase of budget revenues. Revenues from taxes and fees represent a consistent source of revenue for the state budgets of the European Union countries. In this context, it is discussed whether and how fiscal progressivity can be improved. Progressive taxation basically means higher tax rates on income and wealth for those who earn more. In this sense, a good example is personal income taxation, while consumption taxation can be a good example for regressive taxes. An optimal mix of progressive taxes, regressive taxes and single rates can outline the performance of the fiscal system of a country or region of the world.

In this sense, the article tries to analyze not necessarily how progressive the tax systems of the European Union countries are, but especially their influence not only on social equity but also on budgetary performances, and here we have only taken into account the income from current income taxes and wealth. Thus, three methods, some more accurate and some more approximate, of reflecting through elasticity, the influence of fiscal progressivity on current incomes on income and wealth, were proposed.

### 2. Description of the problem

The COVID-19 crisis, but also the successive crises (energy and food) generated by the war in Ukraine, put into question how income inequalities can be reduced and how the tax burden can be distributed more equitably. The personal income tax, but also other taxes related to income from work and wealth play important roles in ensuring the efficiency of income, but also for a better equity of income distribution. In this sense, fiscal progressivity is not questioned, being practically a social necessity, the countries in the west of the European continent, never going through the experience of a single tax rate, and recently, also other countries in the east of the EU27 such as Slovakia, the Czech Republic, Latvia and Lithuania abandoned the single rate on personal income tax. Therefore, the discussion does not aim at the advantages and disadvantages of fiscal progressivity, but rather the

power of progressivity to satisfactorily regulate the relationship with fiscal-budgetary efficiency.

### **3. Literature review and the way to highlight the problem**

There is no correct and unique answer regarding what progressivity means and the manner of measurement in general, distinguishing between structural and distributional indices. Thus, in the paper of Norregaard (1990), there are discussed different measures of progressivity of personal income tax and the paper describes the different aspects of tax progressivity reflected by the different measures. Also, there are presented estimates of income tax progressivity in most OECD countries.

Using the Gini coefficient, several ways of measuring fiscal progressivity have been developed (e.g. Reynolds and Smolensky, 1977; Kakwani, 1976; Suits, 1977, etc.) but this coefficient has also been subject to criticism in other studies (Atkinson, 1970; Kiefer, 1984). Also, the different ways of measuring progressivity must take into account which income is subject to taxation, as well as the distinction between the individual and the household, the individual being generally the subject of the taxation system, while the household rather targets the system of social transfers (Varela, 2016). That is why, in order to more accurately measure progressivity at the household level, in general, the structure of the household members is taken into account and equivalence points are awarded to them, the equivalent income of the household being thus weighted by the sum of the equivalence points of the household members.

In general, the discussion on fiscal progressiveness is centered on the discussion on the problem of inequality, but the reduction of social and income inequalities is based on the increase of the state's budgetary resources. These are the main source of redistribution for health, education, public safety, defense, public transport, infrastructure, etc. In this sense, although Ivaškaitė-Tamošiūnė and Thiemann 's study (2021) highlights the situation of pension taxation, it deals with the problem of fiscal progressivity, and the transition between regimes, from the one with the highest tax exemption (double exemption scenario - EE) to the regime with maximum taxation (double taxation scenario - TT), at the level of the EU countries. The results of this study show that a switch to the EE scenario is associated with a fiscal cost of 0.9% of GDP, whereas the adoption of the TT scenario would lead to a fiscal gain of 1.2% of GDP, abstracting from behavioral reactions. The previous study, together with other analyses, highlights the need for a more thorough analysis of the relationship between progressiveness and fiscal yield.

Redistribution rather aims at the relationship with inequality, while progressiveness brings to the surface the way in which the fiscal burden is distributed. That is why progressiveness can positively influence the collection of tax revenues, but it can just as well be canceled by other effects with the opposite meaning. This says that progressivity itself cannot be a universal panacea for better income equity, it cannot ensure an optimal redistribution, nor does it necessarily mean that it can guarantee additional budgetary tax revenues compared to other taxation systems (based on the proportional share or the regressive one). In this sense, we can interpret progressiveness as a favorable factor for budget revenues, and not necessarily a guarantee for such direction.

### **4. Methodology and data source**

Fiscal progressivity knows various methodologies, it also takes into account the taxes that are analyzed, tax base, etc. But the article does not actually analyze progressivity, but rather seeks to see through three methods if and how progressivity, and especially of direct taxes, is related to income from current taxes on income and wealth. The analyzed period is

2011- 2021, data are Eurostat or DG Taxes and Customs. The first method takes into account the formula of Musgrave and Thin (1948) for measuring progressivity.

There is no perfect measure of fiscal progressivity, but in the work of Norregaard (1990), the method of Musgrave and Thin (1948) is also presented, which show a distributional tax progressivity index (M) that takes into account the evolution of the Gini coefficient before and after taxation. Thus, the M index is calculated as  $M = (1-G_a) / ((1-G_b))$  where  $G_a$  and respectively  $G_b$  are the Gini coefficients after tax income and respectively before tax income. The result regarding the calculation based on Musgrave and Thin's formula is reproduced in table 2. This progressivity index is then analyzed in relation to current income and wealth, through the elasticity study. Thus, elasticities are divided into supra- and sub-unit, positive and negative. In table 1, the initial variables used are described.

**Table 1. Variable description and source**

Indicators' notation	Indicators Description	Measurement unit	Source
CTIW	Current taxes on income, wealth, etc., Main national accounts tax aggregates	Million euro	Eurostat [GOV_10A_TAXAG_custom_5818064]
Gcoef	Gini coefficient of equivalised disposable income	Coefficient (scale from 0 to 100)	Eurostat, EU-SILC survey [ILC_DI12\$DEFAULTVIEW]
Gcoefbst	Gini coefficient of equivalised disposable income before social transfers (pensions included in social transfers)	Coefficient (scale from 0 to 100)	Eurostat [ILC_DI12B\$DEFAULTVIEW]
TRsp50	Tax rate, Single person without children earning 50% of the average earning	%	Eurostat, [EARN_NT_TAXRATES\$DEFAULTVIEW]
TRsp167	Tax rate, Single person without children earning 167% of the average earning	%	Eurostat [EARN_NT_TAXRATES\$DEFAULTVIEW]
Itrlabour	Implicit Tax rate on labour	%	DG taxation and customs union

Source: Eurostat data and DG Taxation and Customs Union; author's systematization

The second method takes into account the progressiveness measured by the gap between the division by categories of persons subject to taxation. In this sense, the category of single persons without children who earn 50% and 167% respectively of the average income was selected. This gap can speak about the equity of taxation at the level of a category of taxable subjects. Thus, this progressivity is also analyzed through elasticities in relation to the same type of income: the income from the current tax on income and wealth. The last method discussed, the third one, could have taken into account progressivity based on the maximum PIT rates (top person income tax rate). The maximum rates of PIT could have suggested a higher fiscal progressivity. Instead of PIT, it has been considered Implicit Tax rate on labor (Itrlabour) to be more appropriate. Thus, the elasticity of income from current taxes on income and wealth was discussed depending on the implicit tax rates on work.

## 5. Results

According to the form of Musgrave and Thin (1948), the value of the distribution index M greater than 1 indicates a progressive tax. So we can see in table 2 that there is a clear progression at the level of the EU countries for the period 2011-2021.

It has been reproduced this progressiveness in table 3 only regarding the three countries with the most progressive regimes and the three countries with the least progressive regimes. Thus, considering distributional tax progressivity index M, with variations from year to year, the countries such as: Sweden, France, Greece, Portugal,



Germany, Luxembourg are the most progressive countries while Estonia, Cyprus, Latvia, Slovakia, Malta, Bulgaria are the least progressive regimes, at the EU27 level, for the analysis period.

**Table 2. Distributional tax progressivity index M for EU27 countries for the period 2011-2021**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EU	1.425	1.428	1.430	1.435	1.432	1.430	1.416	1.415	1.405	1.406	1.408
EA	1.429	1.427	1.425	1.437	1.432	1.432	1.415	1.416	1.410	1.431	1.488
BE	1.409	1.405	1.401	1.414	1.419	1.437	1.435	1.399	1.392	1.384	1.443
BG	1.294	1.281	1.269	1.313	1.302	1.320	1.335	1.336	1.301	1.288	1.311
CZ	1.343	1.346	1.349	1.362	1.361	1.359	1.341	1.319	1.313	1.314	1.345
DK	1.476	1.491	1.506	1.542	1.503	1.467	1.445	1.416	1.411	1.437	1.437
DE	1.594	1.603	1.612	1.638	1.603	1.584	1.555	1.580	1.576	1.541	1.578
EE	1.276	1.283	1.290	1.312	1.281	1.267	1.260	1.242	1.252	1.257	1.273
IE	1.442	1.478	1.516	1.487	1.435	1.405	1.377	1.357	1.355	1.361	1.403
EL	1.630	1.668	1.708	1.679	1.674	1.672	1.593	1.574	1.537	1.488	1.473
ES	1.312	1.310	1.308	1.330	1.329	1.329	1.310	1.302	1.298	1.279	1.343
FR	1.453	1.425	1.398	1.408	1.422	1.437	1.450	1.456	1.445	1.678	1.716
HR	1.366	1.365	1.363	1.358	1.373	1.363	1.343	1.400	1.380	1.358	1.375
IT	1.317	1.322	1.328	1.328	1.315	1.322	1.302	1.293	1.290	1.288	1.337
CY	1.281	1.256	1.231	1.223	1.325	1.363	1.346	1.353	1.310	1.314	1.307
LV	1.277	1.297	1.317	1.298	1.269	1.250	1.241	1.241	1.239	1.231	1.241
LT	1.347	1.372	1.397	1.349	1.341	1.321	1.300	1.290	1.300	1.288	1.324
LU	1.410	1.394	1.378	1.371	1.378	1.370	1.386	1.449	1.419	1.658	1.473
HU	1.460	1.492	1.526	1.516	1.480	1.474	1.458	1.401	1.382	1.290	1.376
MT	1.277	1.281	1.286	1.293	1.289	1.286	1.273	1.273	1.261	1.242	1.251
NL	1.359	1.359	1.359	1.362	1.360	1.366	1.360	1.360	1.366	1.357	1.346
AT	1.379	1.378	1.377	1.387	1.389	1.381	1.373	1.363	1.384	1.370	1.396
PL	1.329	1.327	1.325	1.328	1.332	1.317	1.343	1.345	1.336	1.331	1.324
PT	1.528	1.487	1.492	1.654	1.638	1.673	1.591	1.561	1.513	1.509	1.519
RO	1.385	1.391	1.397	1.389	1.338	1.398	1.382	1.430	1.361	1.337	1.377
SI	1.344	1.348	1.352	1.346	1.346	1.340	1.341	1.332	1.328	1.326	1.346
SK	1.282	1.287	1.291	1.292	1.280	1.287	1.265	1.260	1.268	1.278	1.269
FI	1.421	1.408	1.394	1.417	1.422	1.446	1.448	1.447	1.439	1.438	1.468
SE	1.685	1.676	1.667	1.732	1.693	1.712	1.698	1.702	1.696	1.661	1.698

Source: Eurostat data; author's calculation. EA - Euro area countries; EU- European Union countries

**Table 3. Evidence regarding the first and last 3 countries regarding the M distribution index of fiscal progressivity for EU27 countries for the period 2011-2021**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>MIN (first)</b>	EE	CY	CY	CY	LV	LV	LV	LV	LV	LV	LV
<b>MIN (second)</b>	LV	MT	BG	SK	SK	EE	EE	EE	EE	MT	MT
<b>MIN (third)</b>	MT	BG	MT	MT	EE	MT	SK	SK	MT	EE	SK
<b>MAX (first)</b>	SE	SE	EL	SE	SE	SE	SE	SE	SE	FR	FR
<b>MAX (second)</b>	EL	EL	SE	EL	EL	PT	EL	DE	DE	SE	SE
<b>MAX (Third)</b>	DE	DE	DE	PT	PT	EL	PT	EL	EL	LU	DE

Source: Eurostat data; author's calculations The information from the previous table is used

Table 4 analyzes the result by country regarding the classification of the elasticity of income from current taxes on income and wealth in relation to the M index. Thus, we see that most of the countries can be classified in most of them in positive or negative supra-unitary reactions, so fiscal progressivity definitely has an effect on tax receipts from work and wealth. We observe that the Central and Eastern European countries that are still under tax regimes with flat rates show subunit elasticities, both positive and negative. In this sense, Romania's potential can also be observed that by entering a progressive fiscal

regime, at least through the personal income tax, it can reach the category of countries with a strong influence on fiscal revenues from current taxes on income and wealth.

**Table 4. The situation of income elasticity from current taxes on income, wealth according to the distributional tax progressivity index M for EU27 countries**

Elasticity type	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Positive superunit elasticities</b>	EU, DK, DE, EE, IE, ES, IT, CY, LV, LT, MT, PL, RO, SK	EU, DK, DE, EE, IE, ES, IT, CY, LV, LT, MT, PL, PT, RO, SK	EU, EA, BE, CZ, DK, DE, EE, EL, ES, FR, HR, CY,MT, NL, AT, PL, SK, FI	BE, DK, EL, FR, LU, AT, PL, FI	EA, BG, IT, NL, AT, SK, FI, SE	BG, FR, LU, PL, SI, FI	EA, BG, DK, DE, FR, HR, IT, CY, LU,MT, PL	BE, EE, EL, LV, NL, AT, SK, SE	BE, DK, DE, EE, IE, EL, ES, HR, IT, MT, NL, AT, PL, PT, RO, SI, FI	EU, EA, BE, BG, DK, DE, EE, EL, ES, FR, IT, LV, LT, MT, AT, PT, RO, SI, FI, SE
<b>Positive subunit elasticities</b>	CZ	CZ	-	HR	BE, FR, RO	EL	HU	-	DK, HU	-
<b>Negative superunit elasticities</b>	EA, BE, BG, EL, FR, HR, LU, NL, AT, PT, SI, FI, SE	EA, BE, BG, EL, FR, HR, LU, NL, AT, SL, FI, SE	IE, IT, LV, LT, LU, HU, RO, SI	EU, EA, BG, CZ, DE, EE, IE, ES, IT, LV, LT, HU, MT, NL, PT, RO, SI, SK, SE	EU, CZ, DE, EE, IE,EL, ES, HR, LV, LT, LU, MT, PL, PT, SI	EU,EA, BE, CZ, DK, DE, EE, IE, ES, CY, ES, LV, LT, NL, HU, MT, NL, AT, RO, SK, SE	EU, BE, CZ, EE, IE, EL, ES, LV, LT, NL, AT, PT, RO, SI, SK, FI, SE	EU, EA, BG, CZ, DK, DE, IE, ES, FR, HR, IT, CY, LU, HU, MT, PL, SI, FI	EU, EA, CZ, CY, SK	EL, CY, LU, HU, NL, PL, SK
<b>Negative subunit elasticities</b>	HU	HU	PT, SE	CY	CY, DK	HR, IT, PT	-	PT	BG, FR, LV, LT, LU, SE	CZ, HR

Source: Eurostat data; author's calculations and systematization

We notice that in table 4 in 2021, an almost ideal situation is encountered in which the increase in progressiveness leads to the recovery of income from current taxes on income and wealth. In general, the inelasticity of collections depending on progressivity should not be condemned because fine adjustments up or down of fiscal elements are normal, from rate changes to changes that affect the tax base. It should also be taken into account that the negative elasticity can be explained rather by the changes in what means progressiveness and less in what means public income, income decreasing only in periods of crisis (e.g. 2020, the year of the outbreak of the Covid-19 crisis, almost at the level of all EU27 countries) or for certain medium or long periods, for countries affected by specific internal crises (e.g. Greece, through the prism of the sovereign debt crisis). Also, the reverse side of an increased fiscal progressivity is the reduction of the incident and the systematic attempt to place the bearers of the fiscal burden on the shoulders of another taxable subject (e.g. the seller over the buyer, the employer over the employee). The economic situation, changes in wages and prices, overlapping crises, etc. all modify the reporting of tax payers in relation to fiscal progressivity. That is why the "virtues" of fiscal progressivity must be viewed with specific caution. The discussion is all the more sensitive as social inequity is put in relation to the fiscal yield desired by the state to increase fiscal progressivity. Large negative supra-unit elasticity can highlight the increased sensitivity of incomes (in our case incomes from work and wealth) to the evolution of progressivity, but not necessarily in the direction desired by governments.

Thus, table 5 reflects the evolution of the same income category, but through the prism of the difference between Tax rates for single person without children earning 167% of the average earning and the one earning 50%, we thus observe that the countries that still have flat tax regimes (e.g. Bulgaria, Hungary and Romania) shows, almost throughout the

analysis period, also inelasticity compared to the income from current taxes on income and wealth.

**Table 5. The situation of income elasticity from current taxes on income, wealth in relation with the difference between Tax rates for single person without children earning 167% of the average earning and the one earning 50% for EU27 countries**

Elasticity type	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Positive superunit elasticity</b>	DK, EE, IE, FR, HR, LV, MT, AT, PT, RO, SI	DK, EE, IE, FR, HR, LV, MT, AT, PT, RO, SI	BE, DE, ES, AT, PT, SI, FI	DK, SI, FI	EL, MT, AT, SE	DE, IE, CY, LU, HU, NL, AT, FI, SE	EU, EA, BE, EL, HR, IT, CY, LT, SI, FI, SE	DE, HR, CY, HU, NL, AT, PL, FI	CZ, IE, EL, FR, HR, MT, NL, SI	IE, ES, FR, IT, CY, MT, NL, SE
<b>Positive subunit elasticity</b>	CZ, CY, HU	CZ	EU, EA, LV, LT, NL	BE, EL, ES, HR, IT, HU, PT, SK	EU, EA, BE, EE, FR, LV, LT, NL, PT, RO, FI	EL, HR, LV, LT	EE, ES, HU, RO	ES, LU, PT, SE	ES, LV, LT, LU, RO	HR, PL
<b>Negative superunit elasticity</b>	EU, EA, BE, DE, EL, ES, LT, LU, PL, SK, FI, SE	EU, EA, BE, DE, EL, ES, CY, LT, LU, PL, SK, FI, SE	DK, EE, IE, EL, HR, CY, LU, MT, SK	EU, EA, CZ, DE, IE, EE, CY, LT, LU, AT, PL, SE	CZ, DE, IE, ES, HR, IT, LU, SI	EU, EA, BE, CZ, DK, ES, FR, MT, PL, PT, SI	CZ, DK, DE, IE, FR, LU, MT, NL, AT, PL, PT	EU, EA, BE, CZ, DK, IE, EL, IT, LT, MT, SI	EU, EA, BE, DE, EE, IT, CY, HU, PT	EU, EA, BE, DK, DE, EE, EL, LV, LT, LU, AT, SI, SK, FI
<b>Negative subunit elasticity</b>	BG, IT, NL	BG, IT, NL	BG, CZ, FR, IT, HU, PL, RO, SE	BG, FR, LV, MT, NL, RO	BG, DK, CY, HU, PL, SK	BG, EE, IT, RO, SK	BG, LV, SK	BG, EE, FR, LV, RO, SK	BG, DK, AT, PL, SK, FI, SE	BG, CZ, HU, PT, RO

Source: Eurostat data and DG Taxation and Customs Union; author's calculations and systematization

The last approach, the third method (see Table 6), takes into account putting of income from current taxes on income and wealth in the relationship to the evolutions of implicit taxation from work.

**Table 6. The situation of income elasticity from current taxes on income, wealth in relation with to the Implicit Tax rate on labor for EU27 countries**

Elasticity type	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Positive superunit elasticity</b>	EU, EA, DK, DE, IE, FR, LV, LT, LU, MT, NL, AT, RO, SK, FI	EU, EA, BE, BG, DE, IE, EL, FR, HR, IT, CY, LT, LU, HU, MT, NL, AT, PT, RO, SI, SK, FI	EU, EA, BG, CZ, DE, IE, EL, ES, IT, LT, HU, MT, AT, PL, SI, SK, FI, SE	BE, FR, LT, LU, HU, NL, AT, PL, PT, SI, SK, SE	BG, CZ, DE, EL, ES, LU, HU, MT, NL, AT, PL, PT, SK, FI, SE	EU, EA, BG, CZ, DK, DE, EE, ES, FR, IT, CY, LV, MT, PL, RO, SK, SE	EU, EA, BG, CZ, DK, DE, IE, EL, ES, CY, LV, LT, LU, MT, AT, PL, PT, SI, SK, SE	BE, BG, CZ, DK, DE, EE, IE, HR, LU, HU, PL, PT, SK, SE	EU, EA, DE, EL, FR, HR, HU, NL, AT, SI, SK	EU, EA, DK, DE, EE, IE, EL, ES, CY, LV, LT, HU, MT, AT, PL, PT, RO, SI, SK, FI, SE
<b>Positive subunit elasticity</b>	IT	CZ	FR	-	DK	-	HU, NL	ES, CY	BG, DK, PL, FI	CZ, HR
<b>Negative superunit elasticity</b>	BE, BG, EE, HR, CY, PT, SI, SE	DK, EE, ES, SE	BE, DK, EE, HR, LV, LU, NL, RO	EU, EA, BG, CZ, DK, DE, EE, IE, EL, ES, FR, HR, LV, LT, RO, FI	EU, EA, EE, IE, FR, HR, LV, LT, SI	BE, IE, LT, LU, HU, NL, AT, PT, SI, FI	BE, EE, FR, HR, IT, RO	EU, EA, EL, LT, MT, NL, AT, RO, SI, FI	BE, CZ, EE, IT, LU, MT, PT, RO	BE, BG, FR, IT, LU, NL
<b>Negative subunit elasticity</b>	CZ, EL, ES, HU, PL	LV, PL	CY, PT	HR, CY, LV	BE, IT, CY, RO	EL, HR	FI	FR, LV	IE, ES, CY, LV, LT, SE	-

Source: Eurostat data and DG Taxation and Customs Union; author's calculations and systematization

The implicit taxation from work exits the area of analysis beyond the values of personal income tax rates. According to this analysis, fiscal progressivity influences, positively and above unitary, almost during the entire analysis period, for most countries, the corresponding incomes from labor and wealth taxes. And this method, even more obviously than the first one, supports the possibility of fiscal reform and a moderate transition of our country from a fiscal system based on proportional rates to progressive tax rates.

## 6. Conclusions

The COVID-19 crisis, but also the multiple crises triggered by the war in Ukraine, brought into question not only the need to protect citizens from dangers, but also the need to ensure budget balances. That's why any means that can contribute to increasing budget receipts must be carefully studied by the governments of the EU27 member states.

Ensuring the most correct and fair taxes is a permanent necessity for the governments of the EU27 states, and fiscal progressivity promises to ensure this. In general, the countries of the former ex-Soviet bloc in the European Union showed increased reluctance to implement or return to a progressive taxation system. But in some situations, the tax returns expected by the authorities through a phenomenon of rolling benefits as a result of a tax haven for entrepreneurs, with reduced tax rates, with a flat, simplified regime, did not materialize. Therefore, perhaps a rethinking of the taxation system in some EU27 member countries would be necessary.

In this sense, the article investigates through elasticities, through three relatively simple methods, if and how fiscal progressivity fits into the fiscal yield scheme for the state. The results indicate the need for finer or more substantial adjustments, depending on the countries, regarding the adjustment of the fiscal regimes in the EU27 countries. However, there is a potential that could be exploited by the countries that still have a flat taxation regime through the gradual transition, at the beginning with a reduced number of thresholds, towards a more progressive and fairer tax system. Among the three methods, the first but also the third indicate quite well the link between the potential of fiscal progressivity on the income from current taxes on taxes and wealth.

## References:

1. Atkinson, A.B., 1970. On the measurement of inequality. *Journal of Economic Theory*, 2(3), pp. 244-263.
2. Ivaškaitė-Tamošiūnė, V. and Thiemann, A., 2021. The budgetary and redistributive impact of pension taxation in the EU: A microsimulation analysis. *Joint Research Centre Working Papers on Taxation and Structural Reforms*, No 08/2021.
3. Kakwani, N.C., 1977. Measurement of Tax Progressivity: An International Comparison. *The Economic Journal*, 87(345), pp. 71–80.
4. Kiefer, D.W., 1984. Distributional Tax Progressivity Indexes. *National Tax Journal*, 37(4), pp. 497–513.
5. Musgrave, R.A. and Thin, T., 1948. Income Tax Progression, 1929-48. *Journal of Political Economy*, pp. 498-514.
6. Norregaard, J., 1990. Progressivity of income tax systems. *OECD Economic Studies*, No.15, Autumn. [online] Available at: <<https://www.oecd.org/economy/growth/economicstudies.htm>> [Accessed 12 March 2023].
7. Reynolds, M. & Smolensky, E., 1977. Post-Fisc Distributions of Income in 1950, 1961, and 1970. *Public Finance Quarterly*, 5(4), pp. 419–438.
8. Suits, D.B., 1977. Measurement of Tax Progressivity. *The American*

Economic Review, 67(4), pp. 747–752.

9. Varela, P., 2016. What are progressive and regressive taxes? *Tax and Transfer Policy Institute (TTPI)*, Policy Brief 3/2016, February.

## Annexes

### 1. Presentation of the elasticity of income from current taxes on income and wealth according to the first method for EU27 countries

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EU	20,9	20,2	7,9	-17,0	-25,3	-5,8	-49,1	-4,8	-35,2	99,9
EA	-22,3	-21,6	2,3	-11,2	3,5	-4,5	40,8	-7,0	-2,9	2,6
BE	-17,4	-16,5	2,4	3,4	0,9	-63,4	-1,8	5,8	6,1	2,3
BG	-8,9	-8,5	2,1	-11,5	6,9	11,5	55,7	-3,7	-0,3	14,2
CZ	0,0	0,0	1,1	-136,3	-73,6	-8,1	-8,1	-13,3	-48,2	-0,2
DK	5,5	5,2	5,4	2,1	-0,2	-3,2	1,2	-34,1	0,6	645,4
DE	7,8	7,4	2,3	-2,4	-5,8	-3,3	3,4	-11,3	2,8	5,5
EE	31,7	26,8	5,4	-3,7	-1,2	-8,2	-8,9	6,7	8,3	18,9
IE	1,2	1,1	-4,4	-3,4	-1,9	-2,9	-8,2	-60,5	5,4	7,2
EL	-3,3	-3,5	4,7	11,9	-39,2	0,1	-4,1	1,8	4,7	-10,7
ES	4,6	4,7	1,2	-51,5	-53,9	-4,5	-14,5	-5,1	1,9	2,9
FR	-2,7	-2,6	1,0	1,6	0,6	5,6	14,8	-2,3	-0,3	2,7
HR	-44,1	-41,4	16,9	0,2	-15,7	-0,9	2,0	-5,3	5,5	-0,4
IT	1,3	1,2	-690,1	-2,3	3,9	-0,7	1,0	-14,6	22,3	1,8
CY	1,3	1,3	5,1	-0,3	-0,1	-7,8	13,0	-1,5	-7,4	-36,2
LV	2,9	2,7	-2,7	-1,9	-6,3	-12,7	-264,9	6,9	-0,1	15,8
LT	4,7	4,3	-1,7	-19,7	-5,2	-2,8	-16,7	93,4	-0,2	9,4
LU	-4,9	-4,7	-5,8	20,4	-12,8	5,7	4,0	-1,8	-0,2	-1,1
HU	-0,4	-0,4	-10,3	-3,4	-23,4	-7,4	0,3	-5,3	0,6	-1,0
MT	38,7	34,3	18,0	-18,9	-74,6	-12,9	397,0	-11,1	5,3	29,8
NL	-213,0	-215,0	47,1	-79,2	10,4	-31,9	-86,5	24,0	3,0	-11,5
AT	-71,8	-68,8	7,4	40,5	10,7	-8,3	-11,5	2,8	9,5	7,7
PL	14,2	14,3	21,9	23,8	-1,7	6,4	171,7	-14,4	3,5	-28,4
PT	-15,0	90,4	-0,2	-2,6	-1,1	-0,7	-3,5	-0,3	12,6	4,4
RO	24,5	22,0	-15,5	-3,7	0,8	-3,5	-3,5	-1,7	2,6	6,6
SI	-19,7	-20,8	-13,8	-78,3	-19,6	162,9	-18,7	-14,9	13,8	12,9
SK	35,9	31,4	211,7	-12,5	4,4	-2,8	-14,8	7,0	-2,5	-23,9
FI	-6,2	-6,0	1,6	8,8	1,4	33,8	-14,6	-4,4	61,2	5,1
SE	-9,3	-9,0	-0,1	-3,0	5,0	-4,5	-18,6	4,0	-0,5	6,1

Source: Eurostat data; author's calculations

## AUDIT QUALITY ATTRIBUTES AND FINANCIAL PERFORMANCE: A PANEL STUDY OF QUOTED FIRMS IN NIGERIA

**Kenny Adedapo SOYEMI**

Department of Accounting, Olabisi Onabanjo University, Ago-Iwoye, Nigeria

E-mail: kenny\_ade.soyemi@oouagoiwoye.edu.ng

**Mariam Abosede TIAMIYU**

Department of Accountancy, The Polytechnic, Ibadan, Nigeria

**Emily OMALE**

Department of Accounting, Olabisi Onabanjo University, Ago-Iwoye, Nigeria

**Abstract:** *This study examines the influence of audit quality on financial performance of 40 quoted non-financial firms in Nigeria for 10 years from 2009 to 2018. Audit quality measures adopted include audit fees, audit committee experience, audit committee financial expertise, auditor tenure, and audit firm size while operating cashflow was adopted to proxy financial performance. Secondary data, panel in nature, were gathered from annual reports and audited accounts of these firms that were selected using a stratified sampling technique. Thereafter, ordinary least squares (OLS) was adopted to estimate the model specified for this study. The result revealed significant and positive influence of audit tenure and audit firm size on operating cashflow. Further, there were insignificant and positive relationship between audit fees, audit committee experience and operating cashflow, as well as insignificant and negative relationship between firm size and operating cashflow. Consequently, this study recommends a sustained audit tenure regulation among professional firms, alongside continuous engagement of the Big4 firms to improve on firms' financial performance. In addition, small and medium local indigenous professional accounting firms should adopt an expansion strategy, through mergers and acquisition to improve capacity, thereby ensuring consideration for sustained engagement by large firms (clients).*

**Keywords:** *Audit fees, auditor tenure, audit committee expertise, firm size, performance.*

**JEL Classification:** *M42, G32.*

### 1. Introduction

Firms, public or private, are established for specific objectives. Among these objectives, profit-making is predominant, especially for private firms, who must make enough revenue to cover cost, or at least equals costs, to continue operations. Therefore, the need to increase revenue and reduce cost in order to earn profit is at the heart of many firms, especially to remain competitive in the industry. Firms' performances may be financial or otherwise. Examples of non-financial performance indices are customer satisfaction, employee motivation, high market share, among others, while financial performance may be measured as profit after tax, profit before tax, return on assets, return on equity, positive and sustainable operating cashflow, etc. The financial statement is typically prepared, as stewardship report by management on how resources of the firm were used. It is a medium through which financial health of the firm is reported and evaluated by members (shareholders). In order to get assurance on the credibility of the financial statements, shareholders engage auditors to assist in examining such financial statements and give a report on their truthfulness and fairness.

The Report of the 'Committee on Basic Auditing Concepts' published in 1973 by the American Accounting Association (AAA) cited in Soyemi (2014) defines audit as 'a systematic process of objectively obtaining and evaluating evidences regarding assertions about economic events and actions to ascertain the degree of correspondence between those assertions and established criteria and communicating the results to intended users'. In doing this, auditors are under the contractual obligation to conduct their engagements with due diligence, skill and care. Specifically, the auditor carry out audit procedures through testing, thereby gathering and evaluating sufficient and appropriate audit evidence in order to arrive at conclusions. These conclusions form the basis upon which the audit report is based. Audit

of historical financial statements is conducted in compliance with laws, international standards on auditing and guidelines which guarantee effective and efficient audit engagement, alongside reduction of audit risk. Overall, these assure audit quality, as well. Audit quality is a goal that gives reasonable assurance to users of financial statements, with respect to assertions concerning assets, liabilities, equity, income and expenses, as contained therein. The findings regarding relationship between audit quality and financial performance is mixed in the literature. While some studies [Wijaya (2020); Alsmairat, Yusoff, Saleh & Basnan (2018); Matoke & Omwenga (2016); Aobdia, Lin & Petacchi (2015)] have confirmed positive and significant association, a few [Elewa & El-Haddad (2019); Temple & Ofurum (2016)] have also provided empirical evidence to the contrary. Consequently, this study seeks to examine the influence of audit quality measures on financial performance among quoted non-financial firms in Nigeria. Aside from providing further empirical contribution in this area, the country provides a rich context for this study in the following ways. First, as an emerging country, quoted firms would be able to know specific audit quality measures that have significant effects on their financial performances. Second, with dominance of her audit industry by the Big4 accounting firms, their linkage with firm performance is empirically studied, consideration their associated huge audit fees, compared to small and medium indigenous professional firms. This paper is arranged as follows: Section 2 reviews related literature, alongside theoretical framework. Section 3 describes specific methodology adopted for the study. Section 4 presents results arising from data analyses and model estimation while Section 5 concludes the paper.

## **2. Literature Review**

### **2.1 Financial Performance**

The financial performance of entities, public or private, governmental or non-governmental, plays an important factor, especially during evaluation and assessment. It is a basis for consideration by investors, potential and actual, as attraction of capital, as well as payment of dividend, interest, among others, depend largely on a positive and favourable financial performance. In finance literature, profit maximization objective of the firm is usually said to be inconsistent with wealth maximizing objective. This is because of the varying definitions of profit, which appear vague and skewed in a way, the later seem to enjoy consensus among finance scholars; hence the basis upon which basic financial management decisions are adjudged. However, the profit maximization objective of the firm is still popular, despite its apparent criticism. According to Santos and Brito (2012) cited in Phan, Lai, Le and Tran (2020), financial performance is a multi-dimensional concept with different approaches adopted by varying studies in its measurement. Among these measurement basis, profitability-related bases, that is, excess of income over expenses, is prominent [Iliemena and Okolocha (2019); Ogbodo & Akabuogu (2018); Ezejiofor & Erhirhie (2018); Matoke and Omwenga (2016)]. However, contrary to the shareholders' view of profitability, but similar to the study by Enekwe, Nwoha, and Udeh (2020), this study adopted the stakeholders' theory by adopting free cashflow approach, that is, ratio of cashflow from operating activities to total assets.

### **2.2 Audit and Audit Quality**

Audit is lending credibility to the financial reporting process through an assurance engagement as to whether the financial statement is fairly presented in compliance with applicable financial framework. In order to guarantee its quality, audit is typically conducted in accordance with statutory legislations and international standards on auditing. Bahram (2007) cited in Patrick, Vitalis and Mdoom (2017) posits the need for auditors to deliver

quality audit so as to meet expectations of users of accounting information. According to DeAngelo (1981) cited in Soyemi (2020), audit quality is defined as twin possibilities of an auditor detecting material misstatements in the course of audit engagement, as well as reporting such via an audit report. While the former describes competence of auditors, the latter refers to auditor independence. The study maintained the unobservable nature of audit quality, hence its attendant difficulty in measurement and usage of proxies such as Big4 [Soyemi (2020); Ezejiofor & Erhirhie (2018)], auditor independence [Phan, et al (2020)], audit fees [Enekwe, Nwoha, and Udeh (2020); Soyemi (2014)], auditor specialization [Soyemi, Afolabi & Obigbemi (2021)], audit committee attributes [Ogbodo & Akabuogu (2018)] among others. Besides, Esplin, Jamal & Sunder (2018) also defines audit quality as aggregate of factors to include audit plan, staff, timing, risk assessment and accounting knowledge of audit itself. Little wonder why Gaynor, Kelton, Mercer and Yohn (2016) had earlier equate audit quality with financial statement quality. The level of quality exhibited in the financial statements prepared by management and those charged with governance of entities and audited by auditors is a major factor usually considered by users of financial statements, especially potential investors, who may want to invest in such entities. The capital market functions on information which is timely, accurate, reliable and relevance. This is fulcrum of a quality audit. Aobdia, et al (2015) state that audit quality provides support to capital markets in two ways, namely provision of positive signal to uninformed investors as well as lending integrity to information as contained in the audited financial statements. While studies in audit quality abound, the renewed interest is owing to its apparent absence evidenced in series of litigations alongside sanctions by regulatory authorities. Aside from a few major ones, like Enron, Worldcom in the US and Kanebo in Japan involving Anderson and ChuoAoyama (part of PwC global network), witnessed earlier, new cases abound. These include Wirecard (in Germany), NMC Health (in United Arab Emirates), Carillion Construction limited (in the United Kingdom) involving Ernst & Young (E&Y) and KPMG. According to Rahman, Ying, Zhu and Ji (2020), these trend of audit failures have damaging effects on clients (insolvency and bankruptcy), audit firms (reputational losses, sanctions, etc) and markets (loss of confidence, decline in capitalization, etc) culminating into changes in policies and regulations (SOX).

## **2.2 Empirical Review**

This section discusses previous studies conducted in developed economies, emerging economies, as well as Nigeria.

### **2.2.1 Evidence from Developed Economy**

A cross-sectional study was conducted by Kyere and Ausloos (2021) who examine the effect of corporate governance on financial performance of 252 firms listed on the London Stock Exchange in the year 2014. Of the five explanatory variables, audit committee diligence (the frequency of meetings held during the year) is of interest as it is a measure of audit quality. Two measures of financial performance including ROA and Tobin's Q were adopted as dependent variables, with firm size and leverage as control variables. The results from the OLS estimation indicate among others a negative and statically significant association between audit committee diligence and ROA but insignificant with Tobin's Q. While firm size exhibit negative and significant association with financial performance (ROA and Tobin's Q), leverage shows a positive and significant relationship with ROA but negative and significant with Tobin's Q.

Similarly, Phan, Lai, Le, Tran and Tran (2020) investigate the influence of audit quality on performance among 228 firms listed on the Vietnam Stock Exchange. Unlike previous studies, both financial and non-financial performance measures were adopted.



Financial performance include profitability and growth rate while non-financial performance consist of customer loyalty and employee satisfaction. Overall, the study provides empirical evidence on the positive and significant influence of audit quality on both measures on high level with respect to financial performance and medium level as to non-financial performance. Further, Assad and Alshurideh (2020) also confirm comparable results during their study on the effect of twin-explanatory factors of audit and financial reporting qualities on financial performance, proxied with investment efficiency, among 150 firms in Gulf Cooperation Council (GCC) economies for 4 years from 2012 to 2015. Their findings were consistent with previous positive and significant relationship between audit quality, as well as financial reporting quality and investment efficiency.

While conducting a comparative study between northern and southern Europe, Caldeira (2019) explore the association between audit quality and performance among 90 listed firms in Finland, Norway, Denmark, Sweden, France, Belgium, Italy, Portugal and Spain. The measures of audit quality adopted in the study include auditor size, auditor change, auditor opinion, audit fees and board size. Except for board size, all other explanatory variables display positive and significant influence on firm performance with audit fees displaying more importance in reinforcing firms' performance across the two regions. Using 349 dataset, comprising of 45 listed financial and non-financial firms the Gulf Cooperation Council (GCC) countries, over a period of 6 years from 2005 to 2012, Pillai and Al-Malkawi (2018) also conduct a study on the impact of internal corporate governance mechanisms of government shareholding, auditor-type, board size, corporate social responsibility and leverage. The estimates from the GLS regression indicate positive and significant impact of all explanatory variables (including auditor-type) on firm performance among listed firms in Gulf Cooperation Council (GCC) economies. Similarly, Sabri, Houcine, Ftiti and Masri (2018) examine the effect of audit quality on investment efficiency among 125 listed French firms for 8 years from 2008 to 2015. Contrary to previous results, findings from this study indicate an inverse relationship between audit quality and financial performance.

### **2.2.2 Evidence from Developing Economy**

Within Pakistani context, a cross-sectional study was conducted by Khan, Parksh, Shamim and Ali (2021) on the influence of audit quality on performance of 150 out of 439 public listed firms that were in operation in 2018. Applying ordinary least square to estimate the model for the study, the initial results from the OLS indicated audit quality and efficiency as determinants of increase in performance of firms while foreign ownership bears a negative and significant association with performance. Further and in a bid to cure the heteskedacity problem associated with OLS estimates, weighted least square estimates reveal audit quality (auditor- type), efficiency and size as positive and significant determinants of financial performance while leverage and CEO duality appear negative and significance relationship with performance. The study reported an adjusted  $R^2$  of 27% implying that 27% of variations in the financial performance of Pakistani listed firms are accounted for by audit quality.

Similarly, Sattar, Javeed and Latief (2020) examined the role of the product market competition (PMC) in moderating the relationship between audit quality and performance among manufacturing firms in Pakistan. From a population of 242 firms, 147 made up of the final sample size selected using stratified sampling technique. The study period is 10 years from 2008 to 2017. Thereafter, panel OLS was applied in estimating the study model. The study confirms a direct relationship between audit quality and firm performance. In addition, the results also indicate the moderating role of product market competition in the case of high product market competition but a non-moderating role with less product market competition.

Wijaya (2020) also investigated the effect of audit quality on firm value (proxied with Tobin Q) among 410 purposively selected manufacturing firms in Indonesian for a period of 5 years from 2013 - 2017. Data were gathered from the annual reports and audited financial statements of these selected firms. Thereafter, OLS was adopted as the estimation technique to estimate the model specified for the study. The results reveal a direct relationship between firm value and audit quality measures having returned a positive and significant values. However, the model was able to account for 8.1% of variations noticeable in firm performance of quoted Indonesian firms.

Baldavoo and Nomlala (2019) further provide empirical evidence on the effects of audit quality on performance in Ghana. In addition, the duo also evaluate the moderating effect of effective corporate governance on the relationship between audit quality and performance. The study gathered data on 36 banks for 8 years from 2010 to 2017 while applying the OLS as the estimating technique. The results indicated that audit quality is an effective determinant of bank performance, having shown a positive and significant relationship with performance. In addition, such relationship is reported to be strengthened in the light of effective corporate governance mechanisms. Elewa and El-Haddad (2019) assessed the outcome of audit quality on firm performance (proxied with ROA and ROE) among 30 EGX non-financial firms in Egypt. Data were collated from these firms' financial statements for 5 years spanning 2010 to 2014. Similar to previous studies, OLS was adopted to estimate the model. However, audit quality measures of auditor experience and independence, though displayed positive association with both measures of performance (ROA and ROE), but both were statistically insignificant. Consequently, the study concluded that audit quality plays no role in improving the financial performance of listed firms in Egypt.

Further, Matoke and Omwenga (2016) investigated the influence of audit quality measures to include audit firm size, auditor independence, audit team attributes and auditor experience on financial performance (ROE and ROA) of listed companies in Nairobi Securities Exchange. However, unlike previous studies which largely utilize only secondary data, this study adopted a descriptive research design using a semi-structured questionnaire administered on 89 respondents comprising of Certified Public Accountants in public practice and serving the 9 listed companies in Kenya. In addition, secondary data were also collated from annual reports and audited accounts of selected companies. The results indicate largely the direct association between audit quality measures (audit firm size=80%, auditor independence=96%, audit team attributes=81% and auditor experience=82%) and profitability of Kenyan firms. Using Malaysian data, Sayyar, Basiruddin, Rasid, and Elhabib (2015) also examined the impact of audit quality on firm performance (ROE and Tobin Q) among 542 out of 980 firms quoted on Bursa Malaysia for 10 years from 2003 to 2012. The results display a wide variance between the two measures of performance adopted for this study. With and adjusted  $R^2$  of 11%, both audit fees and leverage displayed negative and significant relationship while firm size shows a positive and significant association with ROA. On the other hand, while audit fees shows a positive and significant association, leverage depicts a negative and significant relationship with Tobins Q, accounting for 6.1% variations in Tobins Q.

### **2.2.3 Evidence from Nigeria**

Ado, Rashid, Mustapha and Ademola (2020) examine the influence of audit quality on performance using 84 non-financial firms for 9 years spanning 2010 to 2018. This culminate into 756 dataset. Thereafter, multiple regression analysis for employed to estimate the model specified for the study. The results depict a positive and significant influence of auditor size and independence while the two control variables, that is, firm growth and age

display negative and significance association with ROA, the measure for financial performance. Overall, the explanatory variables only explain 17% of variations in performance of these quoted firms. Further, Amahalu and Obi (2020) also investigate the effects of audit quality, proxied with audit committees' attributes to include size, independence and expertise, on financial performance (ROA) using all quoted firms in the conglomerate sub sector of the Nigerian Stock Exchange. The duration of study was 10 years from 2010-2019. Similar to previous studies, secondary data that is panel in nature were gathered from the audited accounts of these selected firms. The results indicate that audit committee size, independence and expertise appear positive and significant relationship with return on assets. This is similar to firm size as a control variable. The adjusted  $R^2$  has a higher value (45%) compared with that of Ado, *et. al* (2020).

Still within the Nigerian context, Enekwe, Nwoha, and Udeh (2020) also provided empirical evidence on the relationship between audit quality and performance using a sample six of 24, out of a total of 80 quoted manufacturing firms. Audit quality measures that were adopted are auditor independence, size of audit committee, audit fees while ROA measures firm performance. Leverage, firm size and cash flow from operating activities were adopted as control variables. Auditor independence, size of audit committee display positive and significant relationship while audit fees bears negative and significant association with firm financial performance. Control variables of leverage depict negative and significant but firm size and cashflow from operating activities bear positive and significant relationship with firm performance. Using the banking industry as context of study, Ugwu, Aikpitanyi and Idemudia (2020) examine the influence of audit quality on firm performance among all 15 quoted commercial banks for a period of 7 years from 2011 to 2017. Audit firm size, joint audit and audit fees constitute the explanatory variables while ROA represents measures of performance. With an adjusted  $R^2$  value of 7%, audit firm size appears positive and statistically significant with ROA, joint audit displays negative and significant relationship with ROA while audit fees influences ROA positively but insignificant. Another sectoral study was conducted by Iliemena and Okolocha (2019) who examine audit quality on firm performance among all 24 quoted firms in the industrial goods sub sector. The period of study was 7 years form 2012-2018. With an adjusted  $R^2$  value ranging from 20.8% to 90.9%, the further provided empirical evidence on the positive and significant relationship between audit quality measures and financial performance as both audit firm rotation and audit fees display positive and significance influence on firm performance.

Furthermore and similar to that of Ugwu, Aikpitanyi and Idemudia (2020), Ezejiofor & Erhirhie (2018) and Ogbodo & Akabuogu (2018) also conducted studies on the effect of audit quality on firm performance among deposit money banks in Nigeria. Ezejiofor & Erhirhie (2018) used 15 banks for 8 years from 2009 to 2016 and found a positive and significant relationship between size of audit committee, while audit committee independence displays positive but insignificant relationship with firm performance with adjusted  $R^2$  value of 0.3%. Ogbodo & Akabuogu (2018) adopted similar methodology but used 16 banks for 10 years from 2008 to 2017. Specifically, all explanatory variables exhibited significant association with firm performance, with audit firm size and audit committee independence showing positive while size of audit committee showing negative signs in relation to financial performance.

### 2.3 Theoretical Framework

Among the various theories upon which this study may be hinged upon, the following three (3) are considered predominant. These are theory of economies of scale and agency theory. These are discussed hereunder.

First is the theory of Economies of scale describes cost advantage accruing to a firm as production becomes efficient. This is as a result of increase in output; hence, the spread of cost is made possible over massive output. It is regarded as a cost competitive advantage associated with large firms, being able to reduce unit cost, culminating into an increase in profit margin. Consequently, large firms are linked with positive and significant financial performances. Second is the agency theory. No doubt, the agency theory is underlying auditor engagement by firms. The shareholders, as resource owners, are principals whose interests need to be protected by directors, who are agents responsible for the day-to-day management of the firm. The shareholders then engage auditors to lend credibility to the stewardship report prepared by the agents (directors). Consequently, the auditor is expected to apply due diligence and skill in discharging his duties by examining financial statements prepared by management and giving an opinion as to whether in all material respect, such report is free from material misstatements. By so doing, quality audit engagements must reduce information asymmetry and gives credibility to financial information.

### 3. Methodology

The study used an *ex post facto* research design which makes use of existing data not necessarily amassed for this study. In addition, it is not possible for the researchers to manipulate or exercise any authority over the available data. The data used for this study are panel and secondary data obtained from the audited financial statements of 40 quoted non-financial firms listed on Nigerian Stock Exchange (NSE) out of 115 which makes up the total population.

#### 3.1 Variable Description and Measurement

The description, alongside measurement of studied variables are as given in table 1 below:

Table 1: Variable Description and Measurement

Variables	Symbol	Measurement
Dependent:		
Financial Performance: Operating Cash Flow	OPCF	This is the ratio of operating cash flow or free cash flow to total assets
Independent:		
Audit Fees	AFES	Natural logarithms of audit fees as charged by the external auditor
Audit Committee Experience	AUCE	It is measured as the number of years of the committee
Audit Committee Financial Expertise	ACFE	This is the proportion of members with financial expert or that are financially literate to the total number of member.
Audit Tenure	AUTN	Dichotomous variables which is equal to 1 if the same auditor in year t-1 is same as in year t, otherwise zero.
Audit Firm Size	AUFS	Dichotomous variables which is equal to 1 if the auditor is one of the BIG 4 audit firm, otherwise zero.
Control Variables		
Firm size	FISZ	This is measured as the natural log of total assets

Source: Researchers' Compilation (2021)

### 3.2 Model Specification and Estimation Techniques

This study adapted the model of Ojeka, Iyoha, & Obigbemi (2013) to estimate the effect of audit quality on financial performance of quoted non-financial firms in Nigeria. It is as written in equation 1.1 below:

$$OPCF_{it} = \beta_0 + \beta_1 AFES_{it} + \beta_2 AUCE_{it} + \beta_3 ACFE_{it} + \beta_4 AUTN_{it} + \beta_5 AUFS_{it} + \beta_5 FISZ_{it} + \mu_{it} \text{ -----}$$

- 1.1

Where:

OPCF = operating cash flow

AFES = audit fees

AUCE = audit committee experience

ACFE = audit committee financial expertise

AUTN = audit tenure

AUFS = audit firm size

$\beta_0$  = constant/intercept

$\beta_1 - \beta_5$  = slope of the independent and controls variables

In order to estimate the model as specified in equation 1.1, thereby analysing the relationship between audit quality and performance, this study adopted OLS pooled, fixed and random effect model in analyzing the data collected. The time series and cross-sectional data were analyzed based on fixed and random effect model, while Hausman test was used to select the best model. Fixed effect method is used to control all the static characteristics of the firms included in the study over a fixed period of time following the assumption of time series data. This technique removes biasness from the data and provides statistically better result by explaining only the variation within the sample. The Random effect method is applied on cross sectional data when the characteristics of sample differ. As one of the techniques of linear regression, its main function/goal is to closely fit a function with the data so as to minimize the sum of square errors from the data.

### 4. Results and discussion of findings

This section reveals statistical process employed in this study. The pre-estimation test such as descriptive statistics, which explains the individual behavior of each variable and how they are distributed, as well as, correlation which test the association among the variables used in this study. Thereafter, results of estimation of the studied model is presented alongside a discussion of findings.

#### 4.1 Descriptive Statistics

Table 2 presents the descriptive statistics of variables as used in this study.

**Table 2: Descriptive Statistics**

	OPCF	AFES	AUTN	AUCE	ACFE	AUFS	FISZ
Mean	0.116589	4.152487	0.665000	0.394854	2.287500	0.760837	7.359218
Median	0.107800	4.221674	1.000000	0.500000	2.000000	0.778151	7.381741
Maximum	0.793514	5.014100	1.000000	0.833333	5.000000	0.903090	9.050950
Minimum	-0.336990	3.000000	0.000000	0.000000	0.000000	0.602060	5.894102
Std. Dev.	0.132910	0.427099	0.472582	0.143236	0.867020	0.047881	0.650508
Skewness	0.317305	-0.497781	-0.699167	-0.634868	-0.474351	-2.521137	-0.019070
Kurtosis	5.215577	2.763915	1.488834	3.095812	2.877638	8.616780	2.377494
Jarque-Bera	88.52518	17.44802	70.64931	27.02350	15.25015	949.5457	6.482813
Probability	0.000000	0.000163	0.000000	0.000001	0.000488	0.000000	0.039109
Sum	46.63559	1660.995	266.0000	157.9417	915.0000	304.3347	2943.687
Sum Sq. Dev.	7.048344	72.78309	89.11000	8.186144	299.9375	0.914734	168.8413
Observations	400	400	400	400	400	400	400

Source: Authors' Computations (2021)

Table 2 reveals the descriptive statistics of the variables used in this study. It is shown that operating cash flow (OPCF) which measures the ratio of operating cash flow to total assets has a mean value of 0.12 and a median value of 0.11 with a standard deviation value is 0.13. Thus, this implies that the data are not too far from each other. Audit fees (AFES) has a mean value of 4.15, median value of 4.22 with a standard deviation as 0.42. This show that the data are far from each other. Audit tenure (AUTN) has a mean value of 0.66 and median value of 1.0 while the standard deviation is 0.47. This show that the data are not far from each other. Audit committee experience (AUCE) has a mean value of 0.39 and a median value of 0.50 while the standard deviation value is 0.14. Audit committee financial expertise (ACFE) has a mean value of 2.28 and a median value of 2.0 while the standard deviation value is 0.86. The standard deviation value is far from the mean; this reflect the level of variation in the data. Audit firm size (AUFS) has a mean value of 0.76 and median value of 0.77 while the standard deviation value is 0.04. This show that the data are far from each other. The control variable, that is, firm size (FISZ) has a mean value of 7.36 and median value of 7.38 while the standard deviation value is 0.65 which shows that the data is very far from each other.

The independent variables (audit fee, audit tenure, audit committee experience, audit committee financial expertise, audit firm size and firm size) are negatively skewed while the dependent variable (operating cash flow) is positively skewed. On the extremeness of values, most of the data are platykurtic, that is, with less extreme values while operating cash flow (OPCF), audit committee experience and audit firm size are leptokurtic variables with more extreme values.

#### 4.2 Correlation Analysis

The result of the correlation analysis is as presented in table 1.3 below:

**Table 1.3: Correlation Matrix**

	OPCF	AFES	AUTN	AUCE	ACFE	AUFS	FISZ
OPCF	1.00						
AFES	-0.02	1.00					
AUTN	0.08	0.27	1.00				
AUCE	-0.02	-0.15	-0.18	1.00			
ACFE	-0.03	-0.11	-0.19	0.96	1.00		
AUFS	0.05	0.12	-0.07	-0.02	0.24	1.00	
FISZ	0.06	0.58	0.36	-0.24	-0.19	0.17	1.00

Table 1.3 revealed the correlation matrix of the variables of the variables used in this study. Operating cash flow (OCF) has a positive relationship with audit tenure and firm size but negative relationship with audit fee, audit committee experience, audit committee financial expertise and audit firm size.

#### 4.2 Model Estimation and Test of Hypothesis

Table 1.4 below depicts regression estimates of the pooled, fixed and random effects model based on the static OLS panel approach, alongside, the results of the L-M test as well as Hausman' test.

**Table 1.4: Regression Estimates**

Variables	Pooled		Random		Fixed	
	Coef.	t-value	Coef.	z-value	Coef.	t-value
DV=OPCF						
AFES	-0.031	-1.574	0.004	0.134	0.019	0.588
AUCE	0.230	1.215	0.251	0.951	0.281	0.877
ACFE	-0.040	-1.294	-0.048	-1.131	-0.053	-1.055
AUTN	0.086	1.894***	0.070	1.888**	0.057	1.465***
AUFS	0.077	-1.669***	0.076	-1.825**	0.091	-1.973**
FISZ	0.025	1.826***	-0.004	-0.174	-0.025	-0.959
Const.	0.056	0.607	0.143	0.967	0.260	1.302
Adj. R <sup>2</sup>	0.007298				0.432	
F/Wals (p-value)	1.479113 (0.1830)		0.801274 (0.569365)		7.232 (0.0000)	
L-M test	276.6149 (0.0000)					
Hausman test			3.407561 (0.0262)			

Source: Authors' Computation (2021)

\*\*\*significant at 10%; \*\* significant at 5%; \* significant at 1%

From the table, L-M results 276.6149 (p=0.0000) supports pooled estimates while Hausman's test 3.407561 (p=0.0262) which compares fixed and random effects is in support of the random effect. Therefore, the latter becomes the estimates upon which this study is based. Of all the explanatory variables, auditor tenure appears positive and statistically significant to operating cashflow. Audit fees, audit committee experience, though positive appear insignificant. This is similar to audit committee financial expertise which appears negative but insignificant as well. However, firm size (natural log of total assets) as the only control variable depict negative and statistically significant to financial performance.

### 4.3 Discussion of Findings

The findings, rooted in the results, emanating from this study are largely consistent with previous scholarly studies of Khan, et al. (2021) and Sattar, Javeed and Latief (2020). Both studies provide empirical evidence on effect of audit quality on financial performance (ROA) with Big4 (auditor-type, audit firm size) among others, significantly and positively related to ROA in Pakistan. This is similar to a positive and significant association returned for this study. In addition, Ogbonna, Onuoha, Christopher and Ojeaburu (2020) in their study, using Nigerian data, reported a significant and positive influence between size of audit firm (Big4) and audit committee and EPS but an insignificant relationship between the duo and ROA. Earlier, Aledwan, Yaseen and Alkubisi (2015) also reported a direct association between audit quality (audit firm size and auditor independence) and net profit margin among Jordanian firms. Aside studies using non-financial firms, studies like that of Ugwu, et al (2020), Ezejiofor and Erhirhie (2018) and Tyokoso, U-ungwa and Ojonimi (2017) were conducted using quoted banks as unit of analyses to validate the claim of positive and significant relationship between measures of audit quality and financial performance. Ugwu, et al (2020) showed a positive and negative but significant association between audit firm size and joint audit respectively and ROA, insignificant negative relationship was returned for audit fees. Ezejiofor and Erhirhie (2018) reported a significant and negative relationship between size of audit committee and an insignificant and positive relationship between independence of audit committee and ROA. Similarly, findings from Tyokoso et al (2017) indicate a significant and positive relationship between audit firm size and Tobin Q, an insignificant and positive relationship between audit tenure and Tobin Q, a significant and

negative relationship between client importance and Tobin Q, an insignificant and negative relationship between auditor specialisation and Tobin Q.

However, a few inconsistencies were noticed in the studies of Kyere and Ausloos (2021), Amahalu and Obi (2020), Elewa and El-Haddad (2019) as well. Specifically, Kyere and Ausloos (2021), using London data, reported a negative and significant impact of audit quality, proxied with committee diligence and both measures of performance (ROA and Tobin Q). Further, Amahalu and Obi (2020) while confirming the positive impact of audit quality on financial performance in Nigeria, reported positive and significant relationship between audit committee financial expertise and ROA. This is unlike this study that shows a negative, though insignificant association with ROA. This is similar with that of Elewa and El-Haddad (2019) who examined the effect of audit quality and performance among EGX100 in the year 2018. Though positive, auditor experience (Big4) appears insignificant with both measures of financial performance (ROA and ROE), while auditor independence displayed negative and insignificant relationship with ROA and ROE.

### 5. Conclusion

This study provides empirical evidence to support the claim on the positive and significant influence of audit quality on financial performance of quoted firms in Nigeria. Though audit quality attributes such as audit fees, audit committee experience, audit committee financial expertise are insignificant and positive, auditor tenure and audit firm size are predominant audit quality factors, in relation to improving return on assets of quoted Nigerian firms. Impliedly, proper monitoring and sustained regulation of auditor tenure, alongside continuous engagement of Big4 professional accounting firms are determinants of financial performances. Besides, small and medium local indigenous professional accounting firms should adopt an expansion strategy, through mergers and acquisition to improve capacity, thereby ensuring consideration for sustained engagement by large firms (clients).

### References

1. Ado, A.B., Rashid, N., Mustapha, U.A. & Ademola, L.S., 2020. The impact of audit quality on the financial performance of listed companies Nigeria. *Journal of Critical Reviews*, 7(9), pp. 37-42.
2. Al-ahdal, W.M. and Hashim, H.A., 2021. Impact of audit committee characteristics and external audit quality on firm performance: evidence from India. *Corporate Governance: The International Journal of Business in Society*.
3. Aledwan, B.A., Yaseen, A.A.B. & Alkubisi, A., 2015. The role of audit quality on the relationship between auditor's and financial performance quality of selected cement firm in Jordan. *International Journal of Business and Social Science*, 6(12), pp. 138-146.
4. Alsmairat, Y.Y. Yousef., Yusoff, W.S., Fairuz, M., Saleh, M. and Norida, B., 2018. International Diversification, Audit Quality and Firm Value of Jordanian Public Listed Firm. *Academy of Accounting and Financial Studies Journal*. 22 (Special Issues), 1-7.
5. Amahalu, N. & Obi, J.C., 2020. Effect of audit quality on financial performance of quoted conglomerates in Nigeria. *International Journal of Management Studies and Social Science Research*, 2(4).
6. Aobdia, D., Lin, C.J. and Petacchi, R., 2015. Capital market consequences of audit partner quality. *The Accounting Review*, 90(6), pp. 2143-2176.



7. Assad, N.F. & Alshurideh, M.T., 2020. Financial reporting quality, audit quality, and investment efficiency: evidence from GCC economies. *WAFFEN-UND Kostumkd. J*, 11(3), pp.194-208.
8. Baldavoo, K. & Nomlala, B.C., 2019. Audit Quality and Corporate Governance as Determinants of Banks' Performance in Ghana. *Acta Universitatis Danubius. Economica*, 15(7).
9. Caldeira, C.D.C., 2019. The impact of audit quality in companies performance: A comparison between Northern and Southern Europe (Doctoral dissertation).
10. Elewa, M.M. and El-Haddad, R., 2019. The effect of audit quality on firm performance: A panel data approach. *International Journal of Accounting and Financial Reporting*, 9(1), pp. 229-244.
11. Enekwe, C., Nwoha, C. & Udeh, S.N., 2020. Effect of Audit Quality on Financial Performance of Listed Manufacturing Firms in Nigeria (2006-2016). *Advance Journal of Management, Accounting and Finance*, 5(1), pp.1-12.
12. Esplin, A., Jamal, K. & Sunder, S., 2018. Demand for and assessment of audit quality in private companies. *Abacus*, 54(3), pp. 319-352.
13. Ezejiofor, R.A. & Erhirhie, F.E., 2018. Effect of Audit Quality Evidence from. *International Journal of Trend in Scientific Research and Development*, 2(6), pp. 1235-1244.
14. Gaynor, L.M., Kelton, A.S., Mercer, M. & Yohn, T.L., 2016. Understanding the relation between financial reporting quality and audit quality. *Auditing: A Journal of Practice & Theory*, 35(4), pp. 1-22.
15. Iliemena, R.O. & Okolocha, C.B., 2019. Effect of audit quality on financial performance: evidence from a developing capital market. *International Journal of Recent Research in Commerce Economics and Management (IJRRCEM)*, 6(3), pp. 191-198.
16. Khan, M.N., Parksh, R., Shamim, M. & Ali, S., 2021. Does Audit Quality Matter for Firm Performance? Empirical Evidence from Pakistani Public Listed Companies. *Elementary Education Online*, 20(5), pp. 3953-3960.
17. Knechel, W.R., 2016. Audit quality and regulation. *International Journal of Auditing*, 20(3), pp. 215-223.
18. Kyere, M. & Ausloos, M., 2021. Corporate governance and firms financial performance in the United Kingdom. *International Journal of Finance & Economics*, 26(2), pp. 1871-1885.
19. Matoke, V.N. & Omwenga, J., 2016. Audit quality and financial performance of companies listed in Nairobi securities exchange. *International Journal of Scientific and Research Publications*, 6(11), pp. 2250-3153.
20. Monametsi, G.L. & Agasha, E., 2020. Audit quality and firm performance: evidence from Botswana and Uganda. *Journal of Accounting, Finance and Auditing Studies*, 6(4), pp. 79-95.
21. Ogbodo, O.C. & Akabuogu, N.J., 2018. Effect of Audit Quality on the Financial Performance of Selected Banks in Nigeria. *International Journal of Trend in Scientific Research and Development (IJTSRD)*, 3(1).
22. Ogbonna, G.N, Onuoha, T.E., Christopher, I.S. & Ojeaburu, F., 2020. Audit Quality and Financial Performance of Quoted Firms in Nigeria. *West African Journal of Business and management sciences*, 9(4), pp. 14-43.
23. Patrick, Z., Vitalis, K. & Mdoom, I., 2017. Effect of auditor independence on audit quality: A review of literature. *International Journal of Business and Management Invention*, 6(3), pp. 51-59.

24. Phan, T., Lai, L., Le, T., Tran, D. & Tran, D., 2020. The impact of audit quality on performance of enterprises listed on Hanoi Stock Exchange. *Management Science Letters*, 10(1), pp. 217-224.
25. Pillai, R. & Al-Malkawi, H.A.N., 2018. On the relationship between corporate governance and firm performance: Evidence from GCC countries. *Research in International Business and Finance*, 44, pp. 394-410.
26. Rahman, J.M., Ying, Y., Zhu, L. & Ji, P., 2020. What Do We Know About Audit Failure So Far?. *Accountancy Business and the Public Interest*.
27. Sabri, B., Asma, H., Zied, F. & Hatem, M., 2018. Does audit quality affect firms' investment efficiency?, *Journal of the Operational Research Society*, 69(10), pp. 1688-1699.
28. Soyemi, 2014. *Auditing and Assurance Services*. Ibadan: Leksilicon Publishing Company Limited.
29. Soyemi, K.A., 2014. Clients'/Auditors' attributes and external audit fees among listed nonfinancial companies in Nigeria. *The Business & Management Review*, 5(1), 131.
30. Soyemi, K.A., 2020. Internal corporate governance practices and choice of external auditor in Nigeria: A logistic regression analysis. *Binus Business Review*, 11(1), pp. 9-16.
31. Soyemi, K.A., Afolabi, O. & Obigbemi, I., 2021. External Audit Quality and Clients' Corporate Governance Mechanisms in Nigeria. *International Journal of Commerce and Finance*, 7(1), 141.
32. Soyemi, K.A., Olufemi, O.A. & Adeyemi, S.B., 2020. External audit (or) quality and accrual earnings management: Further evidence from Nigeria. *Malaysian Management Journal*, 24, pp. 31-56.
33. Temple, M. and Ofurum, C., 2016. Audit committee characteristics and quality of financial reporting in quoted Nigerian banks. *International Journal of Advanced Academic Research*, 2(5), pp. 2488-9849.
34. Tyokoso, G.M., U-ungwa, M.M. & Ojonimi, A.G., 2017. Effect of Audit Quality on Performance of Deposit Money Banks (DMBs) In Nigeria. *Nigerian Journal of Management Sciences Vol*, 6(1).
35. Ugwu, C.C., Aikpitanyi, L.N. & Idemudia, S., 2020. The effect of audit quality on financial performance of deposit money banks (evidence from Nigeria). *Journal of Economics and Business*, 3(1).
36. Wijaya, A.L., 2020. The effect of audit quality on firm value: a case in Indonesian manufacturing firm. *Journal of accounting, finance and auditing studies*, 6(4), pp. 1-15.

## CHANGES CAUSED BY THE COVID-19 PANDEMIC IN THE EDUCATIONAL ENVIRONMENT

Postdoctoral researcher, **Georgiana-Tatiana BONDAC**

”Valahia” University of Târgoviște, Romania

E-mail: georgianabondac@yahoo.com

**Abstract:** *The pandemic had the power to change everything around, but most of all it left its mark on school, education and the education system. Some studies show that this period has created gaps that can never be filled, others see an opportunity to reimagine and revitalize education, in all its forms. Clearly, even in the best of normal times, training children is a far more complex goal than getting them into a classroom. Therefore, the purpose of the article is to find an answer to the question "Is the impact of the change caused by the COVID-19 pandemic in the educational environment positive?"*

**Key words:** *change, school environment, digitization, pandemic.*

**JEL classification:** *M15, O15.*

### 1. Introduction

Schools and universities have an important role in the development of young people, but also in maintaining a mental balance for them. In addition to providing them with stability, routine and a certain consistency, educational institutions are for young people an important part of the interaction they need.

At the beginning of the pandemic period, the education system was forced to adapt, to turn its attention to investment in technology, resources and training of education providers. These aspects were necessary so that, in turn, the direct beneficiaries of education obtain optimal learning conditions.

The most effective tool for engaging students in teaching activities and maintaining access to learning was online courses. But on the other hand, lack of access to technology or fast and reliable internet access prevented students from rural areas and disadvantaged families from benefiting from the same conditions.

Thus, the pandemic influenced the quality of education, bringing negative effects on it and affecting the interaction between teachers and students. In addition to this aspect, through online courses, a decrease in the quality of information and the degree of interest that students give to the lessons has been observed.

Due to the fact that they are not stimulated by new teaching and learning techniques, children prefer to study teaching materials individually. Moreover, a need identified among the students was that of accessing new courses from the professional or personal sphere, which in turn satisfy the need to deepen the materials presented during the classes. The pandemic has also brought negative effects on interpersonal relationships, in that students no longer have the context to work and collaborate as a team to develop a task.

Regarding the mental health of students, changes in education have brought negative effects on it. A recent study by YoungMinds in June 2020 showed that 74% of teachers and staff in educational institutions agreed that the closure of schools and universities had a negative impact on the mental health of young people. At the same time, for many young people, not having access to resources and materials with which to learn, there is a subsequent negative effect on both their academic achievement and their well-being.

On the other hand, we can conclude that education during the pandemic has registered a decrease also due to the fact that no measures were taken regarding technological investments for students, not ensuring the proper functioning of the way of learning and assimilating information.

The impact of the pandemic is deeply felt by education systems. The rapid need for digitalization, the challenges related to the creation of a new curriculum adapted to online

teaching, the negative psychosocial impact felt by young people, generated by isolation, anxiety, insecurity, but especially the increase in the school dropout rate caused by the lack of access to online learning tools, are a few of the realities faced by the educational system at the global level.

The COVID-19 pandemic has determined a series of implications with a strong impact on the economic and social life of the population. As a result of the rapid spread of the pandemic, the authorities have taken several measures to prevent and reduce the incidence of infections, including distancing and physical isolation measures. These interventions had a profound impact on the psycho-emotional balance of the members of the entire society. Physical interaction has been shown to be closely related to population well-being, health and social opportunities.

Global studies on the impact of the pandemic show that young people are among the most affected population groups. They had to adapt to dramatic changes in education or the labor market, daily routine and family life. Some have had setbacks, depression or other traumatic experiences during the period of isolation, while groups that were marginalized or disadvantaged until the pandemic are now at increased risk of becoming even more isolated.

## **2. The impact of the pandemic on school organizations**

The imposition of the state of emergency in mid-March 2020 and the closing of schools brought with it important changes in everyone's routine, the students being in turn affected by the limitations generated by the new circumstances. In this context, marked by movement and interaction restrictions, communication with others and leisure time needed adjustments.

In the case of teachers, the most affected people are older teachers, many of whom are not familiar with the use of smartphones or computers. A very big problem that both students and teachers encounter during the pandemic is that they had to change their learning/teaching methodology by 180°. The most affected category of students is that of teenagers from rural areas because many of them, for various reasons, do not have access to the Internet, smart phones or computers. These elements caused both a feeling of exclusion among students and teachers, but above all a feeling of helplessness.

Parents who do not have the opportunity to provide their children with the technological support they need to attend classes are in the same situation. In order to help students who do not have access to the Internet, many teachers have chosen the option of empowering other students with the task of forwarding the material to their colleagues or of sending the material by mail in physical format.

In this situation, a good collaboration between students, teachers and parents is necessary to be able to make the learning process as efficient as possible. As for the limits of online education, a survey in this regard highlighted six major shortcomings of it: the relaxation of pupils / students, due to the education carried out at home; weak / unstable internet connection; poor provision of the necessary devices for conducting online education; the poor training of some teachers in the use of devices and online platforms; the large number of pupils/students with whom a teacher carries out his activity, respectively the loss of interest of the teaching staff in ensuring a quality education.

The didactic activity until the outbreak of the Covid-19 pandemic had the aspect known to all the factors involved in the instructional-educational process: students, parents, teachers.

The change that has occurred has brought with it many challenges at all levels of society, but in the case of education they have a much more severe impact and on a much longer term. The direct interaction between student and teacher, an essential factor in the educational process, suffered enormously in this context. This change was felt by many

teachers, which came as a challenge that I had to face, an adaptation on the fly, undirected, uncoordinated without much detail from anyone.

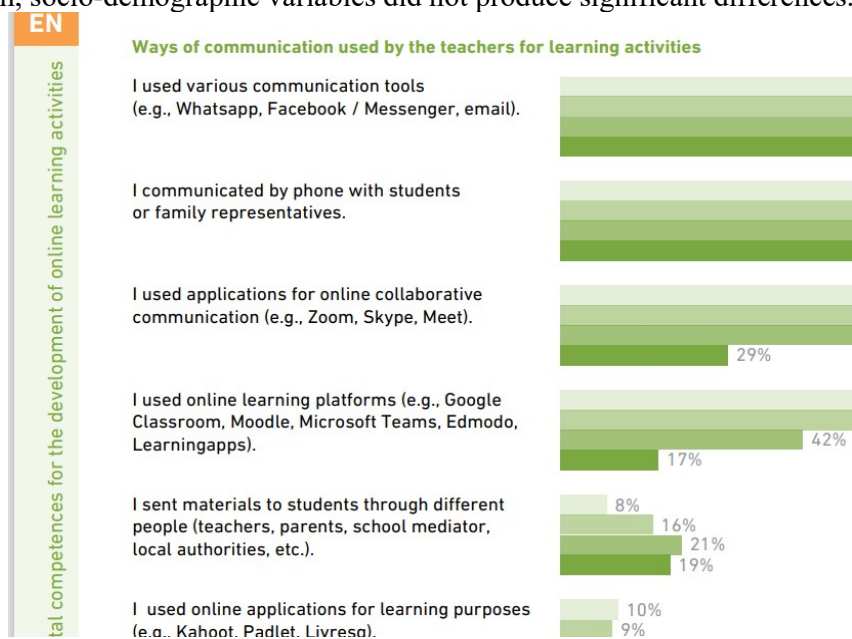
As a teacher and as a director, they had to deal with this situation, trying to be present for both the students and their parents, trying to clarify as much as could be clarified at that time, any aspect related to online learning.

If in the case of professional life things had a difficult evolution, but it still happened after watching dozens of tutorials on the use of educational platforms, online training courses, online evaluation methods and techniques, online teaching, etc. in the case of personal life the challenge of working from home was, I think, the ultimate challenge.

When the family members work from home, the kindergarten is done online, at the same time as online classes at school, adding to them the efficient management of household activities, everything turns into a permanent challenge that must, somehow, to face it. It is also observable from the interaction with the students during this period of the pandemic, the changes made at the level of communication, of socialization, between and with the students, an aspect that is difficult to fix in the near future, the impact is even greater in the case of children who have not had the possibility of participating in online classes, where the gaps are obvious and difficult to recover.

### 3. Digital skills for conducting online learning activities

According to the research study "Distance school during the covid-19 pandemic" in terms of students' digital skills, necessary to participate in online lessons and activities, over two thirds of students managed on their own, and a quarter needed helpful only at the beginning. Only 5% of student respondents frequently needed help using apps or devices, and among them, socio-demographic variables did not produce significant differences.



**Chart 1. Ways of communication used by teachers for learning activities**

Source: ȘCOALA LA DISTANȚĂ ÎN PERIOADA PANDEMIEI COVID-19, [Microsoft Word - Rezumat ancheta Scoala la distanta.docx \(ise.ro\)](#)

It can be seen that 40% of teachers report that they have not used applications for collaborative communication during homeschooling, while only 10% have used applications in learning activities with students (e.g. Geogebra, Kahoot, Padlet, Livresq, Socrative, Menti, Canva, etc.). About 25% of teachers declare that they do not have enough experience in

working with different online tools and applications, with a similar share of teachers who declared that they experienced professional discomfort in interacting with students in contexts.

The analysis of the research data indicates that the main skills that need to be developed relate to: designing / adapting activities for the online environment and structuring online learning activities (the balance between synchronous / asynchronous); identification/use/development of educational resources, including open educational resources (EORs); working on learning platforms; the use of digital tools in formulating feedback/evaluation; activating, stimulating students' motivation and autonomy in participating in online activities.

Although students rarely reported difficulties related to digital skills in participating in online activities, over a third of teachers believe that some students in the classes they worked with online did not demonstrate sufficiently developed digital skills to allow them to use different tools and applications - especially in rural areas and at primary and pre-school levels.

Major deficiencies of online education in Romania:

1. Lack of protocols. The teachers benefited from an extremely permissive approach, given that there was no coherent approach from the authorities regarding online education and minimal training: in the first phase, they could choose whether or not to hold classes, and the program was reduced to a minimum (1-2 hours in the primary cycle), just to justify the salary he received. This was the basis of the educational deficiencies of students accumulated during the COVID-19 pandemic;

2. Insufficient training of teachers and the platforms used for online education. Most teachers no longer taught online, there was no unitary platform approved by the Ministry, everyone adapted as they could (and if they could!), at the beginning there were no minimum courses for teachers to acquire the skills basic for the use of IT platforms;

3. The infrastructure and access to the Internet for teachers and students, aspects we discussed before.

#### **4. Conclusions**

The impact of the Covid-19 pandemic on education tends to affect not only learning, but also other social aspects such as mental health, violence or pronounced social inequalities. The response from government, civil society and development partners has been prompt and decisive, but there are still gaps and challenges that need to be addressed. Distance learning experiences have so far provided valuable lessons, including the importance of quickly adapting the education system to changing realities.

Traditional education must not only be adapted and reformed, but this reforming process must embrace opportunities for innovation and thus become more open to meet the current demands of children, young people, including those from vulnerable groups, and members of society at large.

The pandemic situation can turn into an opportunity to rethink the curriculum, the teaching-learning-evaluation processes and the development of students' skills in order to strengthen their online learning skills and support their motivation. According to some international data, despite global efforts to support the recovery of educational systems, they still face major disruptions and obstacles. There should be an emphasis on maintaining continuity of education as a priority for world governments.

Opinions about online education are divided: while some education experts believe that it is a "pure disaster" with lifelong consequences for current students generating huge educational losses and emotional disturbances, others believe that it represents the solution of

the future . Online education cannot replace the classical one, especially in small classes, but it can complement it. And in health crisis situations, such as the coronavirus pandemic, it can be a viable solution for states with fragile medical systems, such as the Romanian one, contributing to a reduction in pressure on them.

At the same time, such "events" can contribute to a real modernization of Romanian education, by introducing and familiarizing teachers and students on a large scale with computerized work techniques and improving skills in this regard. This is provided that the "technological advantage" gained thanks to online education is not subsequently wasted, given that public health specialists believe that global environmental changes are creating the conditions for an ever-increasing frequency of pandemics: "it is painful that Romania has so far not been concerned with digitizing the education system, although E-learning platforms have been created".

**Acknowledgements:** This work is supported by project POCU 153770, entitled "Accessibility of advanced research for sustainable economic development - ACADEMIKA", co-financed by the European Social Fund under the Human Capital Operational Program 2014-2020.

### References

1. Baker, J.A. and Maupin, A.N., 2009. School satisfaction and children's positive school adjustment. *Handbook of Positive Psychology in Schools*, eds R. Gilman, E. S. Huebner, and M. J. Furlong (New York, NY: Routledge), pp. 189–196.
2. Golberstein, E., Wen, H. and Miller, B.F., 2020. Coronavirus disease 2019 (COVID-19) and mental health for children and adolescents. *JAMA Pediatr*, 174, pp. 819–820.
3. Grosu, V., Socoliuc, M., Bostan, I., Hlaciuc E., Moraru, M., Domil, A., Mates, D. and Artene, A., 2014. Improving the Structure of the Balance Sheet by Incorporating the Value of Intellectual Capital. *Journal of Society for Development of Teaching and Business Processes in New Net Environment in B&H, Technics, Tehnologies and Education Management*, 9 (2), pp. 397-401.
4. Haddon, L., Livingstone, S., 2014. The Relationship between Offline and Online Risks. Young people, media and health: risks and rights, Nordicom Clearinghouse Yearbook 2014 (pp. 21–32). Eds. C. von Feilitzen and J. Stenersen. Goteborg: Nordicom.
5. Hanage, W-P., Brownstein, J-S., Layan, M., Vespignani, A., Tian, H., Dye, Ch., Pybus, O-G., Scarpino, S-V. (2020). The effect of human mobility and control measures on the COVID-19 epidemic in China, *Science*, 368(6490), pp. 493-497.
6. Martiny, S.E., Thorsteinsen, K., Parks-Stamm, E.J., Olsen, M. and Kvalø, M. (2021). Children's Well-being during the COVID-19 pandemic: relationships with attitudes, family structure, and mothers' Well-being. *Eur. J. Dev. Psychol.* 2021, pp. 1–21.
7. Monti, M., 1989. *Fiscal Policy, Economic Adjustment, and Financial Markets*. Washington, D.C.: IMF Publication Service.
8. Thorsteinsen, K., Parks-Stamm, E.J., Kvalø, K., Olsen, M. and Martiny, 2021. The well-being of Norwegian mothers during the COVID-19 pandemic: gender ideologies moderate the relationship between share of domestic work and well-being. Manuscript under review.
9. Velicu, A., 2020. Școala la distanță (primăvara 2020) și folosirea tehnologiilor digitale de către copii. Opiniile părinților și ale copiilor din România. *Raport KiDiCoTi. București: Institutul de Sociologie.*

10. Viner, R., Russell, S. et al., 2021. Impacts of school closures on physical and mental health of children and young people: a systematic review, *MedrxIV*.



## THE MANAGEMENT OF PROFESSIONAL STAFF TRAINING WITHIN ECONOMIC ENTITIES

**Associate Professor, Ph.D., Lilia SAVA**

Technical University of Moldova, Republic of Moldova

E-mail: lilia.sava@tse.utm.md

**Associate Professor, Ph.D., Valentina TÎRȘU**

Technical University of Moldova, Republic of Moldova

E-mail: valentina.tirsu@tse.utm.md

**Abstract.** *Human resources are the key factor in ensuring the success of any economic entity. The value of personnel increases as they accumulate new knowledge, abilities, skills, and competences that allow them effectively to carry out their work tasks and responsibilities. Ensuring performance both at an individual and organizational level can be achieved by employees who have the highest professional knowledge and skills, developed through professional training of employees, which has become a strategic factor and a source of competitive advantage. The purpose of this paper is to investigate the professional training needs of employees, to develop training objectives, and to identify the benefits and drawbacks of this activity in order to implement training activities within economic entities.*

**Keywords:** *human resources, professional training, training programs.*

**JEL Classification:** *Q54, Q57, Q58.*

### 1. Introduction

The rapid development of technologies has led to an increase in the complexity of production and service delivery systems, a fact that continuously contributes to the permanent updating of employees' knowledge. In addition, improving management by imposing a new approach to it requires knowledge and professional skills, considered unique categories of staff, without which economic entities cannot develop in the future.

Therefore, the professional training of employees is a problem that every economic entity must face. The quantity and quality of training provided varies by organization, depending on the methodology used, and is influenced by several factors at the same time:

- The nature of changes in the external environment (technological changes, legislative changes, etc.).
- Internal changes (introduction of new activity processes, expansion of the organization's fields of activity, finding new sales markets, etc.).
- The existence of appropriate knowledge, skills, and qualifications among the available workforce.
- The level of commitment of the organizations' senior managers to the idea that training is an essential element for the organization's success.
- The extent to which the organization's top management considers training as a motivating factor in work.
- The level of knowledge and skills of the persons responsible for carrying out the professional training of the employees.

To be effective, employee training must be planned and supervised. Otherwise, the results may not correspond to those expected by the entity. To avoid inefficiency, senior managers of the organization must consider two functions of training, namely:

1. *The usefulness* that reflects the fact that the training programs contribute to the development of the knowledge, skills, and behavior of the employees, which is reflected in the performance of the work tasks.

2. *The motivation* aims to give employees a feeling of confidence in their professional skills. These results cannot be obtained if employees perceive the training

system as an obligation, if it is not relevant to their concrete work needs, or, worse, if it does not offer any career perspective.

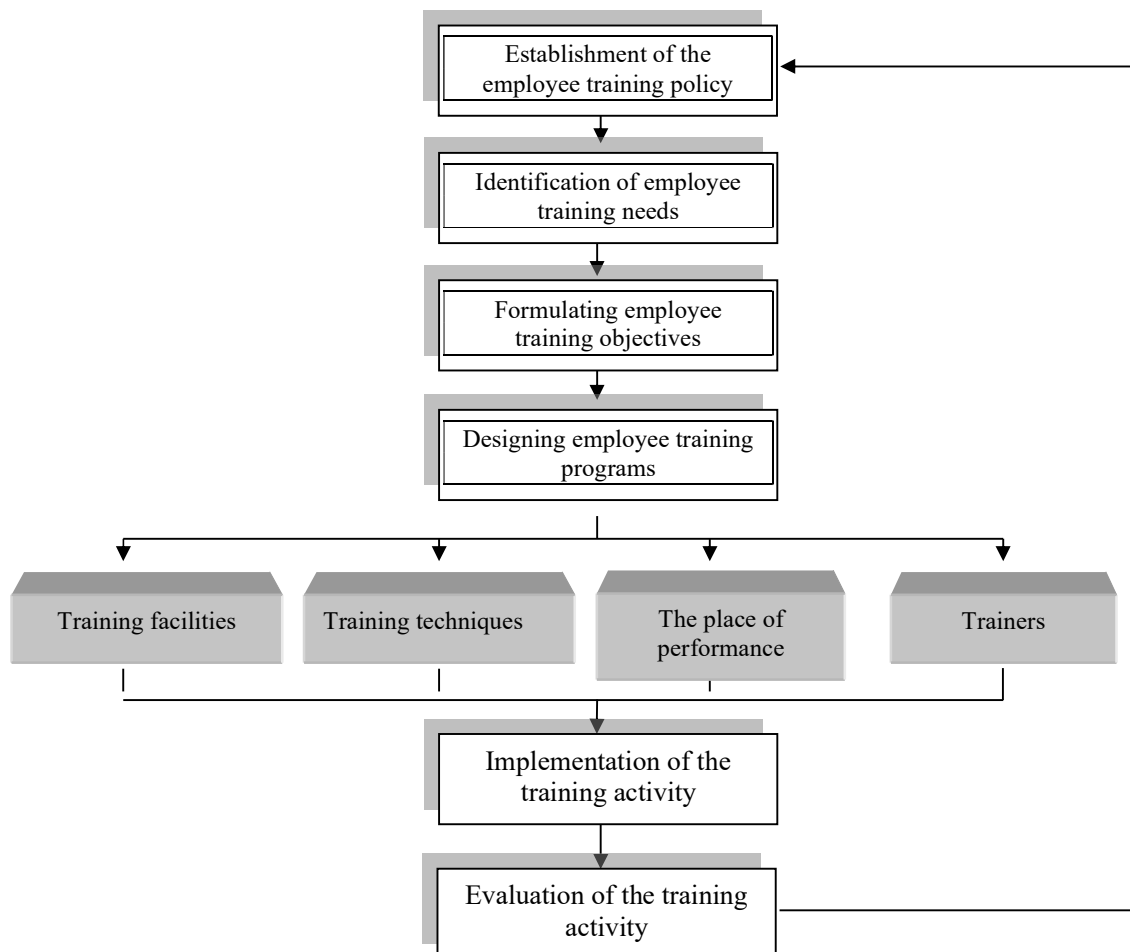
The purpose of this research is to develop the professional training process and highlight the stages in the process of implementing the training activity within economic entities.

The purpose of the work is achieved through the following objectives:

- a description of the staff training process;
- establishing the staff training policy;
- identifying the professional training needs of employees;
- formulating training objectives for employees;
- conception of employee training programs;
- implementation of the training activity.

## 2. Description of the Problem

Methodologically, the professional training of the staff must be carried out according to a concrete plan that includes all the elements of the training and takes into account all the factors that could influence, directly or indirectly, this activity within the organization (Figure 1).



**Figure 1 - The professional training process of the staff**

Source: Processed in accordance with (Armstrong, 2003; Lefter et. Al., 2020).

Neglecting one or another stage of the training process could lead to unfavorable results for the organization, taking into account the costs it had to bear.

Therefore, the adoption of a systematic professional training methodology implies obtaining some advantages for the organization, namely:

- Maintaining a sufficient and appropriate range of skills among employees.
- Developing the knowledge and skills of all employees.
- Increasing the degree of professional performance.
- Increasing the level of product quality.
- Increasing the motivation level of employees, etc.

### **3. Methodology and Data**

The methodological support focused on the application of different quantitative and qualitative methods. The research methodology was based on activity analysis, comparative analysis, documentary analysis, systemic analysis, etc.

The scientific arguments, methodological procedures, and tools applied in the work have theoretical value, but at the same time, they also have practical applicability. Human resources specialists employed in the real economy who deal with the development of training and professional development programs can use the mentioned approaches. The practical value of the work is characterized by:

- Proposing a logical algorithm for the professional training of employees within organizations.
- Formulating the activities that must be carried out by specialists in the field for the professional training of employees within organizations.

### **4. Results**

#### ***Establishing the staff training policy***

The professional training policy of employees within an organization must be part of a whole series of policies regarding the use of human resources. In general, the training policy must express the organization's commitment to the permanent development of the professional skills and abilities of employees. This would ultimately lead to increasing the contribution of employees to the development of the organization. In addition, by offering opportunities for continuous improvement of professional knowledge and skills, the chances of career advancement for employees increase, as does their employability, both inside the organization and outside it.

Moreover, the professional training policy of the staff within the organization can be implemented in two ways. On the one hand, some organizations have a long tradition of developing their own managers and specialists, providing substantial internal training and professional development programs to fully meet their own requirements. On the other hand, other organizations rely entirely on the contracting of external services from providers such as secondary and higher education institutions, consultants, and specialized professional training organizations. Organizations that apply the second method regarding the professional training of employees are subject to a greater risk because the training programs proposed by external organizations may not fully include the volume of knowledge and skills that the requesting organization would like.

By developing a professional training policy, the organization must be convinced that it is in its own and the employees' best interests for professional training to receive the full support of senior management.

The training policy must emphasize the importance of training within the organization by helping employees better perform their current tasks and assume new ones in the future.

Also, through the policy developed by the organization, it must be provided that the training is correlated with the work performance, that is, that the training activity is related to the necessary skills imposed, for example, by the introduction into production of a new product, process, or system.

However, the vocational training policy must indicate:

- **Deployment directions.** It is taken into account whether the training policy is oriented towards certain categories of employees, or whether the professional training includes, periodically, the employees of an organizational subdivision, or whether the professional training includes those employees whose work tasks have been modified as a result of the introduction of new technologies in the production process.

- **The amount of training to be provided.** It presupposes the establishment, for each category of employees, of the minimum number of days of formal training during a year. The minimum and maximum number of annual professional training days are established, depending on the purpose pursued, the categories of employees, the usefulness of the training, etc.

- **The percentage of the turnover that must be allocated to the training activity.** The senior managers of the organization decide on the amount of money that will be allocated to professional training during the calendar year.

- **Responsibility for the professional training activity.** It is determined according to the size of the organization. In small organizations, the responsibility for professional training staff must rest with managers. In the case of large organizations, the attributions for professional training are divided between the human resources department and the managers of the subdivisions.

Therefore, the professional training policy has a special significance in the process of administering the training of the employees of any organization. On the other hand, better said, the effectiveness of the professional training activity expected by the senior managers of the organization also depends on the elaborated policy.

#### **Identifying the professional training needs of employees**

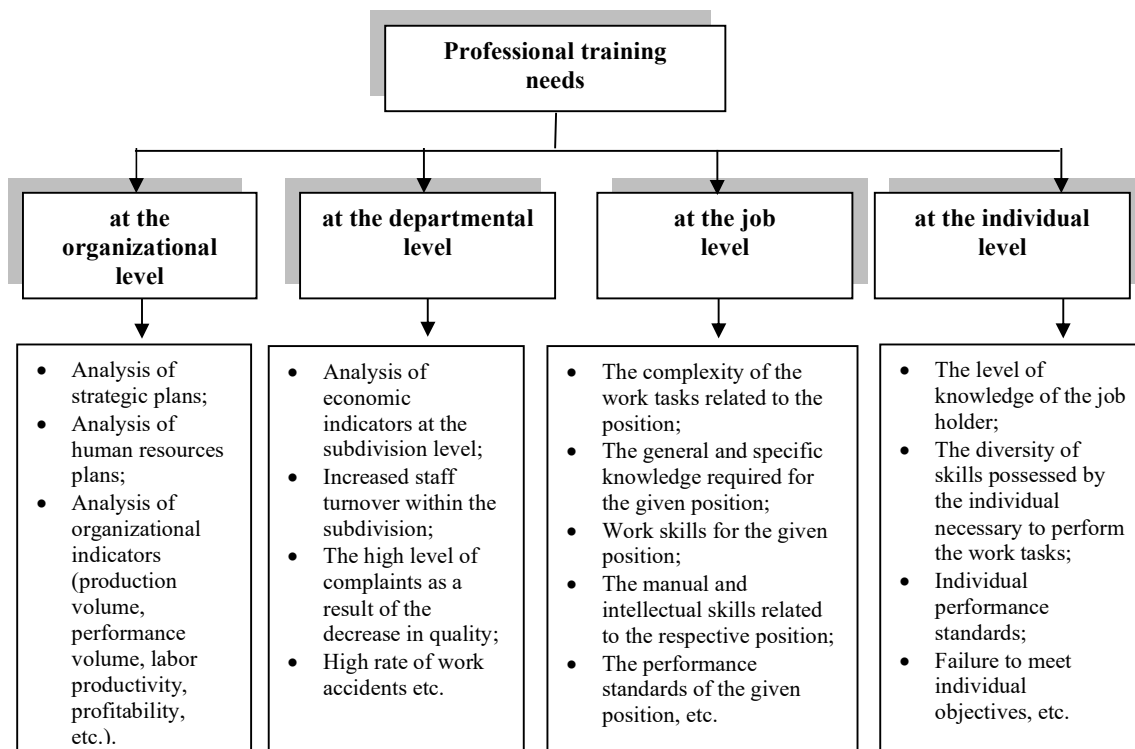
Professional training must have a well-defined purpose, and this can only be defined if the training needs of the organization, of groups of employees, and of individual employees within the organization are systematically identified and analyzed.

According to managerial theory and practice in the field of human resources, professional training needs must be analyzed at different levels: organizational, departmental (subdivision), job, and individual (Figure 2).

According to the figure, the analysis of professional training needs depends on each individual situation. For example, if changes in the external environment act as pressure factors for change within the organization, then an organizational analysis of training needs must be adopted. If the problem lies in the poor performance of an organizational subdivision, an analysis of the training needs at the departmental level is required. But if the problem consists in improving a person's professional skills, then the problem arises in analyzing training needs at the individual level.

There is a direct relationship between the types of analysis and the professional training requirements. On the one hand, the analysis of training needs at the organizational level leads to the identification of training needs within the various departments, which, in turn, indicate the training that individual employees need. On the other hand, as the individual training needs are analyzed separately, the collective training needs become clearer, which can be satisfied at the departmental level. The sum of the training needs at the individual and group levels contributes to the definition of the training needs at the organizational level.

*Training needs at the organizational level* are influenced, following the research carried out, both by the organization's long-term objectives and by the external environment that influences its activity (Likacs, 2002; Bucea-Manea-Țonis et. al, 2017). In order to satisfy the long-term activity development requirements and achieve the proposed objectives, the organization must provide basic training for a sufficient number of employees. In turn, the external environment constantly exerts pressure on the organization, forcing senior managers to adopt appropriate measures with reference to the technological requirements, the restructuring of the activity, or those imposed by the organization. On the other hand, the organization can face external pressures through a well-trained staff that is able to meet all the demands dictated by the external environment.



**Figure 2 - Types of analysis of professional training needs**

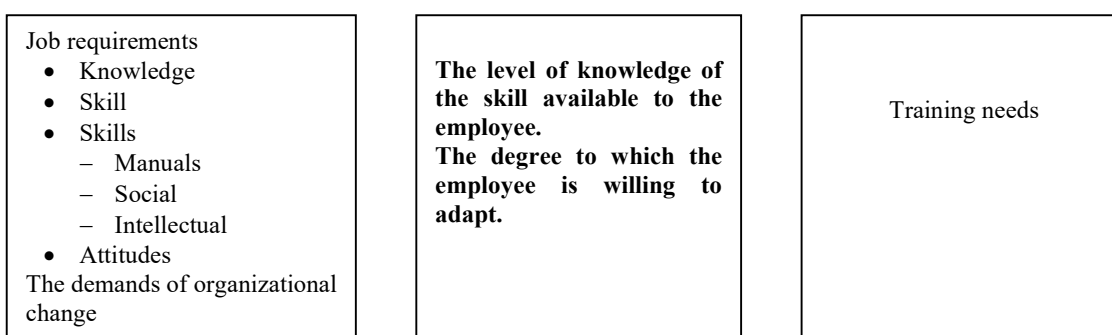
*Source: Prepared by the author.*

*Training needs at the departmental level.* It is determined based on the results obtained by each individual subdivision as well as the structured work groups that are part of the respective subdivision. Organizations analyze their training needs according to the deficiencies observed in the performance of the activities of each subdivision. The aim is to improve the skills of the employees and increase the performance of the respective subdivision.

*Training needs exist at the job level.* Modifications to products or services, work methods, technology procedures, materials, equipment, or other changes that necessitate performing some aspects of the activity differently than before have a long-term impact on the structure and content of positions within organizations. In order to be able to meet the new requirements, the specialists within the organization have the obligation to define the activities that are different from what the employees usually perform and to establish an

adequate training program for them.

*Training needs at the individual level.* Employees, depending on the company's needs and individual capabilities, are included in different professional training programs. The need for professional training at the individual level arises when an employee is transferred or promoted from one job to another within the organization. Likewise, the analysis of training needs at the level of the individual employee can be identified based on the low level of performance achieved by each employee. The gap between the performance standard and the level achieved by the employee can be remedied with the help of appropriate professional training. At the same time, it should be taken into account that not only additional training is required to reach performance standards, but there are also other factors such as: salary increase, replacement of existing machines with more efficient ones, simplification of work procedures, etc. If professional training is the cause of failure to meet professional performance standards, then the equation of professional training needs from the perspective of the individual employee may contain (Figure 3).



**Figure 3. The equation of professional training needs at the individual level**

*Source: Processed in accordance with (Borza, 1999; Bircă, 2005).*

Figure 3 shows us that the requirements of the position are made up of appropriate proportions of knowledge, skill, and attitude. By adding these factors and the demands imposed by the organizational change, we will get a picture of the conditions necessary to carry out the activity in the respective context. In addition to the job requirements, the employee's level of knowledge, skill, and so on are taken into account, as is his willingness to voluntarily participate in the change. If the two parts fit perfectly, no training will be required. However, as happens in the most frequent cases, if there is a mismatch between what is required and what exists, the need for professional training must be identified.

The sources from which professional training needs can arise are the job requirements and the organizational requirements. In the first case, it is necessary to improve or supplement knowledge, skills, abilities, etc.; in the second case, it is necessary, first, to change attitudes, such as personal adaptability.

Professional training needs must also be analyzed from a strategic point of view, which requires the consideration of several aspects.

**First**, it is necessary to study the evolution of external factors and contextual changes. The change in the behavior of competing organizations on the market and the change in technologies and work methods must be treated carefully in the case of the analysis of long-term training needs. Or, the development of strategic professional training activities without taking into account the mentioned factors could create certain impediments in the development of the content of professional training programs for different categories of employees.

**Secondly**, it is necessary to identify the volume of professional training requirements

for all employees, regardless of the hierarchical positions they occupy. It is necessary to see for which categories of employees professional training is more important, and the problems that have arisen require a quick solution to be able to take into account the achievement of the organization's objectives. This is done with the aim of determining the expenses that the organization will bear, or they are established depending on the volume and duration of the training programs, as well as their value for the employees.

**Thirdly**, the organization's top management must take into account the possible changes in professional training requirements for employees depending on the evolution of professional standards and respective qualifications. Considering that society is in permanent flux, it is normal for professional standards to evolve in accordance with the requirements dictated by society. This is also related to the fact that in an information society, some of the more technical professions disappear and new ones based on intellectual work appear. When it comes to professional standards and the necessary qualifications for the future, organizations must be oriented in this direction.

**Fourthly**, the development of standards of professional knowledge and skills for all the categories of trades and specializations existing within the organization will determine how to carry out the professional training of the respective employees. The standards (levels) of professional knowledge and skills for each job or specialty must be developed while considering scientific and technological progress and constantly updated, a mission shared by senior management and the human resources department.

Therefore, without a strategic analysis of professional training needs, it is difficult to establish the immediate needs of professional training, both at the organizational level and at the individual level. In addition, the strategic analysis of training needs will allow the formulation of concrete professional training objectives.

#### ***The formulation of the training objectives of the employees***

The objectives of professional training represent, moreover, the desired results of the professional training process. The formulation of objectives is very useful for evaluating the effectiveness of professional training and building appropriate training programs. If the objectives are not clearly formulated, one cannot talk about the effectiveness of professional training. In general, any vocational training objective must: show the results of the training; illustrate what the trained person will be able to do; be realistic.

By initially stating the objectives and expectations, the employee's chances of achieving a certain level of performance increase. In M. Armstrong's opinion, training objectives can be defined as "behavioral criteria," i.e., the standards or changes in professional behavior that must be achieved for the training to be considered a success (Armstrong, 2003; Zlate, 2004).

Determining training objectives is a rather difficult process that involves a complex assessment of all the problems faced by the organization in terms of professional training. Figure 4 shows the phases of determining the training objectives.

Therefore, by formulating the objectives of the professional training, it is determined which aspects of the employees' professional activity should be paid attention to: knowledge, skills, competences, etc., which should be improved so that, subsequently, they can perform their work tasks more efficiently and be able to assume greater responsibilities, if necessary. Knowing what the problem is in terms of professional training, the people responsible in this field will be able to develop and structure the content of the courses that will be offered to the people who need training, so that their efficiency is maximized, both for the organization in general and for each employee participating in the training in particular.

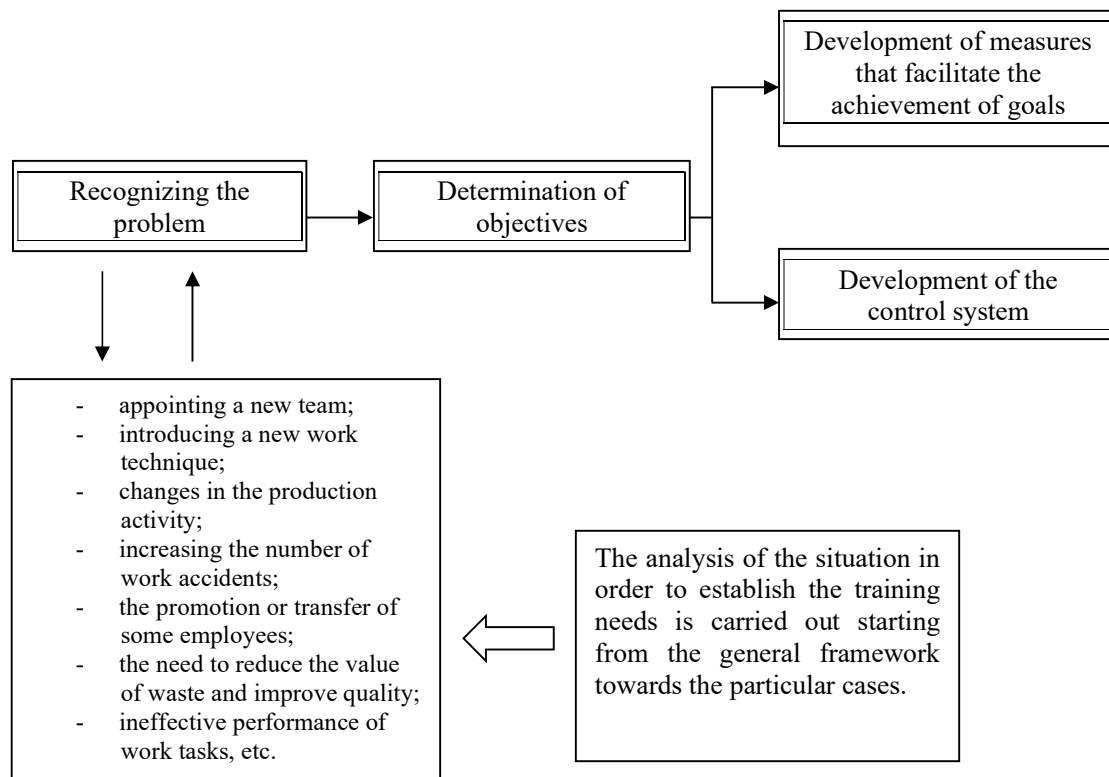
#### ***Designing employee training programs***

Any professional training program must be made individually, with its structure continuously changing as new learning needs arise or when the feedback obtained requires some changes.

The professional training program must include elements related to knowledge, elements related to qualification, and elements related to attitude. Many of the existing employees will be highly motivated to learn new skills, especially those related to new technologies.

*Training facilities.* The problem of professional training employees calls for a certain tactical and strategic conception. In this sense, the tactical problems are grouped around the purpose of the professional training action and the way of analyzing the situation from which it starts. The professional training strategy is based on the knowledge of the unit in the past and present, as well as its configuration, the knowledge of the staff, their ideas, and the strengths and weaknesses of the organization. Once the strategic and tactical conceptions of the training program have been established, the next problem concerns the content and sequence of the elements that must be taught so that efficiency is maximized.

Many professional training programs (Figure 4) are typically designed for the long term, and as a result, if not grounded in short-term designed plans, they can become ineffective. It is very possible that a project lasting longer than five years does not contain the skills needed by employees in a certain field, taking into account the rapid changes that take place in society. For this reason, it is necessary for the senior managers of the organization to carry out a preliminary analysis of the long-term, medium-term, and short-term training needs in order to include strictly necessary elements in the development of flexible, continuous professional training programs.



**Figure 4. Phases of determining training objectives**

Source: processed in accordance with (Lefter et. al., 2001; Chișu, 2002).



A special place in the development of professional training programs belongs to their organization. Managerial theory and practice know several forms of organization for professional training (table 1) (Tellier & Roventă-Frumușani, 1999; Chișu, 2002).

**Table 1. Forms of training organization**

<b>Forms of training</b>	<b>The specific characteristic</b>
Fragmented training	It happens more occasionally and is not structured.
Formal training	It takes place according to programs developed based on the training needs of the employees.
Focused training	It is oriented on the present and future needs of the organization.
Integrated training	It is designed based on the organizational and development strategy of the organization.

Another aspect that must be taken into consideration when developing professional training programs refers to establishing their duration. Usually, the duration of vocational training programs depends, naturally, on their content. However, the possibility of accelerating learning with techniques such as computer-aided training should be taken into account.

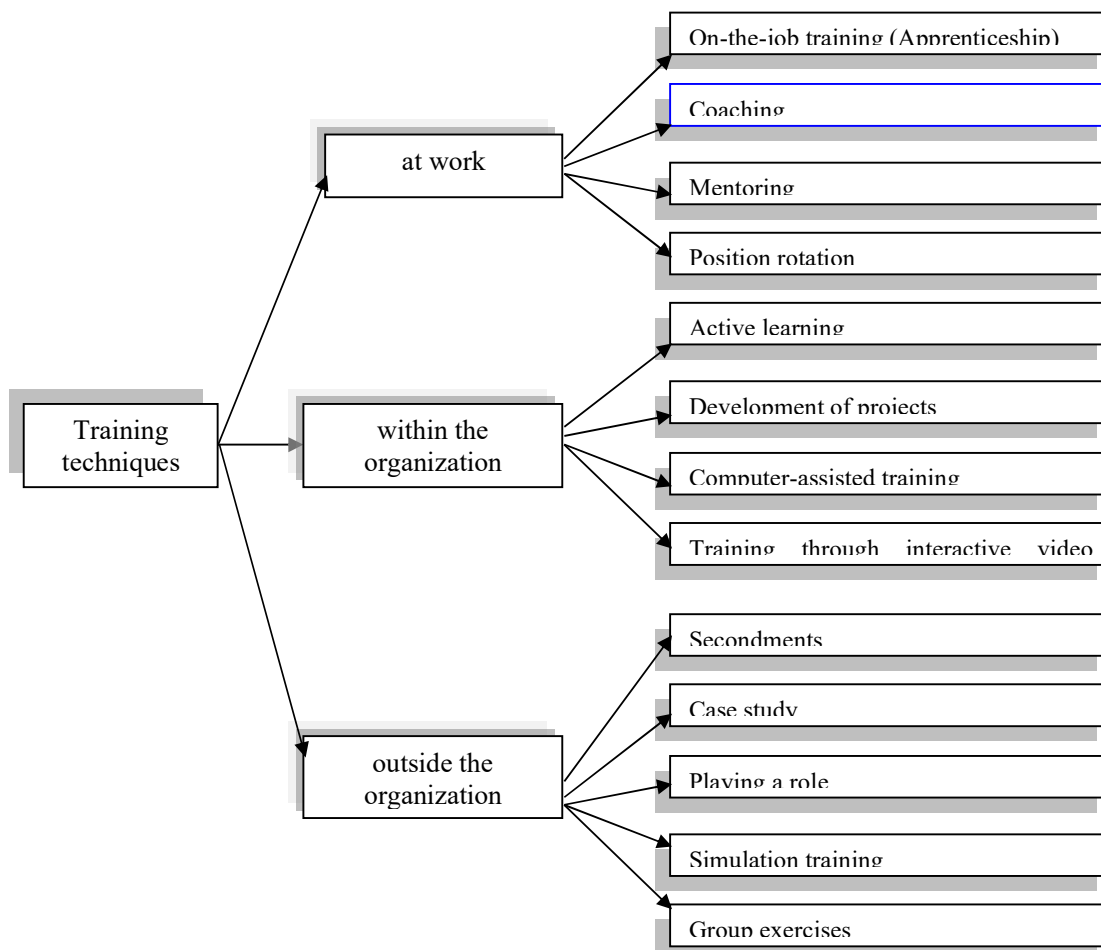
As already mentioned, the effectiveness of professional training depends, largely, on the content of the training programs, and the responsibility rests with their authors. In the process of developing professional training programs, their authors must take into account the following aspects:

- the main ideas, principles, and procedures that the professional training activity requires;
- the necessary knowledge, skills, and attitudes that students must acquire in order to achieve the training objectives;
- the usefulness of the information for the students and for the organization;
- the durability of the knowledge, skills, and attitudes acquired by the students;
- the feasibility of the program content, taking into account the time period and available resources.

Therefore, the development of a professional training program requires a rather careful analysis so that, following its acquisition, both the student (employee) and the organization will gain. However, most of the time, the organizations in the Republic of Moldova are, to some extent, reluctant to participate in the training programs offered by different organizations specializing in this field. This is explained by the fact that there is a knowledge and skills gap between what actually exists in organizations and what organizations providing such services offer. In order for the efficiency to be maximized, it would be opportune that, first of all, the actual state of the organization in terms of professional training should be evaluated, after which the content of the professional training programs should be developed so as to increase both individual motivation, i.e., that of those who participate in professional training courses, as well as organizational motivation, because the organization bears the training costs.

*Training techniques.* The diversity of requirements regarding the level of professional training of employees determined the development of a multitude of training methods. The applied training technique is an important factor in the success of the professional training program. Figure 5 shows the professional training techniques, and Annex No. 6 shows their defining characteristics.

According to Figure 5, there is a multitude of professional training techniques that have greater or lesser effects on employees in order to acquire knowledge and skills that would allow a better performance of work tasks. In the process of administering professional training programs, any training technique can be applied, but in order for the training effect to be as high as possible, different training techniques can be combined, both at the workplace and outside it.



**Figure 5. Vocational training techniques**

*Source: Prepared by the author.*

The choice of one or another training technique depends on the knowledge and skills that the person participating in the training must acquire. In this sense, we can distinguish two categories of knowledge and skills:

- General and transferable knowledge and skills;
- Unique knowledge and abilities that cannot be transferred.

If the emphasis of professional training is on the acquisition of general and transferable knowledge and skills, then this can be done outside the organization. If the emphasis is placed on the acquisition of specific knowledge and skills related to the position held, it is appropriate for the training to be carried out within the organization or even at the workplace.

Another aspect that must be taken into account when choosing one or another of the

training techniques is the degree of freedom in learning granted to the students. Some instructional techniques allow learners to use their own resources and learning styles, while others do not allow such possibilities due to the increased degree of control on the part of the learner. For example, on-the-job training allows instructors to maintain greater control over the learning process but limits the freedom of learners to develop their own approaches. Case studies and secondments, on the other hand, represent a happy medium that allows students to gain real-world experience with new approaches.

*The place of performance.* The professional training of employees can be carried out both within the organization and outside of it. Managers, specialists, or trainers can carry out the professional training of the personnel within the organization, if the respective persons have the appropriate professional skills and a certain vocation and predisposition to carry out this activity. Within the organization, professional training can be carried out at the workplace and outside of it, that is, in specially equipped training centers with qualified personnel.

Professional training outside the organization is carried out when the organization does not have competent personnel to implement certain professional training programs, as well as when it is necessary to obtain new professional qualifications or skills. In addition, training outside the organization is welcome for the development of managerial, technical, and leadership knowledge and skills, especially when the course refers to standard theories and practices that can be transferred from the general to the particular. In the given case, the professional training can be carried out in different specialized educational institutions or in different professional training centers existing on the labor market.

Following the analysis of the place where the professional training of the staff takes place, we can identify both advantages and disadvantages (table 2).

**Table 2. The advantages and disadvantages of the location of the training activity**

<b>The place of performance</b>	<b>The chosen option</b>	<b>Benefits</b>	<b>Disadvantages</b>
<b>Within the organization</b>	<b>Outside the workplace</b>	<ul style="list-style-type: none"> <li>• Promotes its own sets of organizational norms and standards;</li> <li>• Represents a more cost-effective option.</li> </ul>	<ul style="list-style-type: none"> <li>• The approach to problems can be limited due to the specifics of the organization;</li> <li>• There is a risk that the organization's personnel used in the role of instructor will not have credibility in front of the trained;</li> <li>• It promotes a certain amount of conservatism in work methods.</li> </ul>
	<b>At work</b>	<ul style="list-style-type: none"> <li>• The authentic professional context allows the faster acquisition of professional knowledge and skills;</li> <li>• The existence of a direct and precise</li> </ul>	<ul style="list-style-type: none"> <li>• It is influenced by the factors of pressure and distraction that act in the usual work environment.</li> </ul>

		connection with the own procedures and with the demands of the job.	
<b>Outside the organization</b>	<b>Educational institutions</b>	<ul style="list-style-type: none"> <li>• Covers general training principles;</li> <li>• Develops the students' intellectual skills;</li> <li>• Complete with obtaining a certified qualification.</li> </ul>	<ul style="list-style-type: none"> <li>• Insufficient practical activity;</li> <li>• Long duration of the training program.</li> </ul>
	<b>Agencies or private vocational training centers</b>	<ul style="list-style-type: none"> <li>• Meets the professional requirements of the organization;</li> <li>• Solves the problem of insufficient resources of the organization;</li> </ul>	<ul style="list-style-type: none"> <li>• The content of the proposed courses might not correspond to the organization's requirements;</li> <li>• It could be too costly for the organization;</li> </ul>
	<b>Participation in special projects through secondment</b>	<ul style="list-style-type: none"> <li>• Allows the expansion of professional experience;</li> <li>• Provides a relevant way of practicing skills and solving problems.</li> </ul>	<ul style="list-style-type: none"> <li>• There is a risk that the employee will not meet the expected performance;</li> <li>• The difficulty of finding suitable employees for the role of mentors.</li> </ul>

Source: Prepared by the author.

As a result, the location of the professional training activity has a significant impact on the students' ability to acquire professional knowledge and skills in accordance with the organization's requirements. All the opportunities for the organization should be analyzed, in case the training takes place outside it, as well as the effects if the training is carried out within it.

*Trainers.* They play an especially important role in the organization's staff training process. First, the trainers must agree on the training principles and specific issues, as well as identify the action factors for the training within the organization. Second, the trainers participate in research projects and the realization of studies that allow a variety of learning methods. Thirdly, the trainers are responsible for the content and sequence of the material taught within the training programs.

In addition, the trainer must collaborate at a high level with middle-level managers within the organization to ensure that the designed training activities are appropriate and meet the identified needs. This collaboration is also necessary because managers must understand the training methodology applied by the trainers in order to be able to follow its implementation.

In order for the professional training programs to be as effective as possible, it is necessary for the trainers to get involved, more and more frequently, in the analysis of the training needs. It is also necessary to assess the trainers' performance by competent people both within the organization, such as senior managers, and outside the organization, namely specialists from specialized training centers. If the trainee's training is carried out directly at his workplace, the evaluation of the trainer's activity can be carried out by the observation method. For this, it is necessary to develop a form for observing the activity of the trainer that can be applied to the evaluation of his actions.

In organizations where on-the-job training is not carried out systematically, it is

recommended that managers and supervisors fulfill the role of trainer when necessary. It often happens that managers and supervisors, because of the urgent problems they have to solve, interrupt the training program, and the result is not the desired one. In addition, the managers concerned are not very concerned and do not have enough time to prepare adequately and prepare their training material. Thus, the effectiveness of the training program is much lower than if an instructor is used, even with a part-time work schedule.

### ***Implementation of the training activity***

In the research process, it was found that many staff training programs are developed for the long term, and, because of this, they can become ineffective if they are not based on short-term plans. It is possible that the skills needed by employees in a certain field of activity cannot be included in a project lasting longer than five years.

Therefore, to avoid such problems, the organization must:

- Encourage employees' initiatives related to expanding their professional experience, by acquiring new knowledge and developing new skills, both inside the organization and outside it, by participating in different programs; encourage employees' initiatives related to expanding their professional experience, by acquiring new knowledge and developing new skills, both inside and outside the organization, by participating in different programs.
- Stimulate the professional training of employees through different forms of motivation: internal and external. Internal motivation consists of the employee's commitment and interest in enriching professional knowledge and skills. External motivation results from additional rewards for the ability to perform tasks that are more complex and assume greater responsibility. Therefore, employees want to learn when the results are important for them, not only from a material point of view but also from the desire to know and to obtain a certain status.

Professional training must be strictly correlated with the needs of the organization and carried out at the appropriate time.

Another aspect that must be taken into consideration in the process of implementing the professional training activity is related to the content of the professional training programs focused on different categories of employees. For this, it is necessary to apply sectoral professional training programs aimed at certain groups of employees, such as managers and team leaders, sales staff, office staff, executive staff, etc.

When it comes to the implementation of manager and team leader training, the emphasis must be on on-the-job training, whether through mentoring, projects, or planned work. This can be supplemented, but not replaced, by off-the-job training. The latter is beneficial for enriching the knowledge held, for developing additional professional skills, and changing attitudes.

Therefore, the professional training of managers must be seen as a continuous process. Training programs for managers and team leaders should be designed as ongoing activity at all managerial levels to avoid loss of interest and promote the gradual development of leadership skills as conditions change and new work experiences arise.

The training program must be continuous; there should not be long periods in the professional life of the sales employee during which training is missing.

For the most part, the top management of organizations attracts less attention, thereby underestimating, in a way, the training of administrative and office staff. Moreover, this can be an important factor in decreasing the efficiency of the organization as a whole. In order to avoid such problems, the administrative and office staff must be motivated by the organization's top management for the continuous training and improvement of this category

of employees. The top management of the organization must be aware of the fact that employees who have development potential should not stagnate within a single post or subdivision but be offered the opportunity to improve themselves in order to assume greater responsibilities.

In the case of executive staff, the emphasis is on technical and skills training. In the given case, the training programs are quite varied, resulting from the specifics of the activities to be carried out as well as the technological equipment applied during the performance of the work tasks. The senior managers of the organization must provide technical and skills training programs for employees whenever new technologies that require new knowledge and skills will be implemented in the organization in order to apply new work methods specific to the new technologies. If the introduction of new technologies in the organization does not precede professional training programs for those employees who will have to apply them, the efficiency expected by senior managers will leave much to be desired.

The post-training period plays an essential role in the success of any training program. Post-training is important because it aims to establish whether the expected standard is actually applied in his work. The performance standard for the employee's work is reached when he manages to effectively apply, at his place of work, all the acquired knowledge. For the most complete application of the accumulated knowledge, the employee needs the help of the manager or his immediate superior. The manager or supervisor has an essential role in this process and must be able to act in such a way that the employee feels the importance of the knowledge and skills acquired during the training.

Therefore, the professional training activity is considered a key element in achieving the organization's objectives and competitiveness in relation to competing organizations. That is why the management of the organizations should not neglect the professional training activity, but it should be seen as a primary activity because, depending on how it is approached, the success of the organization will also depend. In order to develop the activity of permanent training within the organization, it is necessary to change the perspective of senior managers in domestic organizations in which training is not treated as an expense but as a long-term investment in human resources.

## 5. Conclusion

In all fields of activity, the professional training of employees has become a requirement of the period in which we live. If in the past people who acquired a profession or trade managed, based on the knowledge accumulated during school, to exercise it throughout their lives, today the knowledge expires very quickly, which leads to non-performance rather than performance on the part of the respective employees.

The existence of employees who no longer manage to keep up, on a professional level, with the changes taking place in the way of carrying out activities in the competitive economy is a problem that concerns more and more organizations. In the organizations of the Republic of Moldova, training and professional development activities are perceived as a necessity, but they are not yet a priority. In the current period of rapid change that organizations in the Republic of Moldova are going through, training and professional development must become a continuous and organized process that takes into account all the changes that take place in organizations as well as any external challenges that could affect the subsequent activity of the organizations.

## References

1. Armstrong, M., 2003. *Managementul resurselor umane. Manual de practică*. București: Editura CODECS.

2. Bîrcă, A., 2005. Managementul resurselor umane, Manual. Chişinău: Editura ASEM.
3. Borza, A., 1999. *Managementul resurselor umane în context european*. Cluj-Napoca: Editura Dacia.
4. Bucea-Manea-Ţoniş, R., Lianu, C., Bucea-Manea-Ţoniş, R., Dobre (Gudei), S.-C., Lianu, C., 2017. *Inovare și digitalizare din perspectiva managerială*. Bucureşti: Editura Economică.
5. Chişu, V.-A., 2002. Manualul specialistului în resurse umane. Bucureşti: Casa de editură IRECSO.
6. Lefter, V., Deaconu, A., Bogdan, A., 2001. *Management des ressources humaines*. Bucureşti: Editura ASE.
7. Lefter, V., Deaconu, A., Pascari, L., Văduva, S., Marinaş, C., Igret, R., Marin, I., Cioară, A., Sass, C., Neagoie, D., 2020. *Managementul resurselor umane, prima ediție*. Bucureşti: Editura ASE.
8. Lukacs, E., 2002. *Evaluarea performanțelor profesionale*. Bucureşti: Editura Economică.
9. Petrescu, I., 2003. *Managementul personalului organizației*. Bucureşti: Editura Expert.
10. Tellier, Z., Roventă-Frumuşani, D., 1999. *Resurse umane și dezvoltare organizațională*. Bucureşti: Editura Cavallioti.
11. Zlate, M., 2004. *Tratat de psihologie organizațional – managerială*. Bucureşti: Editura Polirom.
12. Winston, B.E., 2018. *Biblical Principles of Hiring and Developing Employees*. Palgrave Macmillan.

## TOURISM IN THE CENTRAL REGION AFTER TWO YEARS OF THE PANDEMIC

**Ph.D., Ec. Kinga LÁZÁR**  
E-mail: kadarkynga@yahoo.com

**Abstract:** *The negative impact of the pandemic has been felt by the vast majority of industries around the world. However certain industries were forced to stagnate, they were partially able to continue their activity, even on a reduced scale. Before the pandemic (2019), tourism had become one of the most important sectors of the world economy.*

**Keywords:** *tourism, pandemic, vacation tickets, epidemics.*

**JEL classification:** *M31, Z32.*

### 1. Introduction

The pandemic affected tourism in the Center region, respectively tourism in Covasna county.

The number of tourists coming to the county has doubled compared to the first nine months of 2020, even surpassing the number of tourists registered in 2019. In numbers, the situation looks like this:

- 101.877 - tourists arriving in Covasna County in the first nine months of 2019;
- 57.648 - tourists arriving in Covasna County in 2020;
- 102.601 - tourists arriving in Covasna County in the first nine months of 2021.

Covasna county represented 2.6% of the total number of overnight stays registered in Romania in the first nine months of 2021, a remarkable number for a small county like Covasna. This percentage in 2019 was only 1.8%.

In 2020, in terms of the number of overnight stays, Covasna county was visited by 78.654 tourists, and thus there is a decrease of over 42% compared to 2019, when a total of 136.530 tourists arrived in the county (Luca, 2021).

On a national level, the decrease is 52%, because in 2019 there were a total of over 13.268.000 tourists, and in 2020 – over 6.335.000 (Luca, 2021).

Covasna County won the Best Spa Destination in Romania 2021 award at the Termalia Awards Gala, inform the local authorities (Covasnamedia, 2021).

At the county level, the decrease in the number of tourists was lower than at the national level and due to the Covasna Safe Place tourism relaunch campaign, Laszlo Endre said.

The aim of the Association for the Development of Tourism in Covasna County is to promote the tourist destination and the tourist potential of the county, as well as to increase the number of arrivals in the region. The pandemic context has created an uncertain situation and generated unpleasant consequences regarding foreign travel, thus contributing to a sharp growth for domestic tourism products and services. Given this context, as well as the basic objectives of the Association, the main direction towards which its efforts were channeled during 2021 was to make Covasna County a visible destination at the national level.

In 2021, the association carried out a total of 33 projects and events to promote the county. Three monthly articles were published on family, lifestyle, balneology, wellness&spa, local gastronomy, castles and mansions as tourist destinations. These have appeared in print publications as well as various online platforms. The total number of publications is 249, and the number of hits is about one and a half million (Covasnamedia, 2022).



## **2. The tourism industry during the pandemic**

A quarter of the HoReCa units are currently bankrupt, and their proportion could increase to a third if the Government does not grant state aid to the HoReCa sector, said the president of the Employers' Organization of Hotels and Restaurants (HORA), Daniel Mischie, in a press conference.

The average loss of a HoReCa unit in 2021 was 120.000 euros. "So including for the year 2021, the current Government must think about a compensation program for the restriction from functioning", stated Daniel Mischie (Agerpres, 2021).

Tourism operators claim that the 2021 season was much better than 2020 from the point of view of receipts, but it has not yet reached the level of 2019, the lack of holiday vouchers being felt in domestic tourism (Economica.net, 2021).

The hoteliers have chosen to increase the prices "to the minimum", by 10-15%, even though the rates of products and services in Romania have increased by percentages between 10% and 30% compared to the levels before the pandemic, claim the representatives of the National Association of Agencies of Tourism (NAAT).

"Tourism operators had better receipts than the previous year, but in no case at the level of 2019. Compared to 2020, this year many have been immunized or vaccinated and there is greater predictability, everyone knowing the rules of the game, having "run-in" last year. Usually, vaccinated tourists book more in advance and choose any popular destination, while non-vaccinated tourists booked earlier, chose Romania or more predictable destinations ahead of time, regarding the constancy of the green color. For Romania, there was a lack of external tourism promotion, which must be ensured by the state, by the relevant ministry. In order to have foreign tourists, promotion must be started early, even in times of crisis. There is also a lack of holiday vouchers for this year. These vouchers would have enormously supported domestic tourism, and here I'm not necessarily referring to the coast, because we have many other forms of tourism and other regions that need support," said the NAAT spokesperson, Traian Bădulescu.

Regarding the pandemic waves, travel agencies have faced the complaints of unvaccinated tourists regarding the countries that entered the red lists, although the agencies do not bear any responsibility for changing the destination classification between the date of purchase of tourist services and the date of return.

Regarding the prices registered in the tourist sector in Romania, Bădulescu claims that they have been adjusted to inflation.

### **2.1. Favorite destinations of Romanians in 2021**

During the summer season, the Romanian coast and the Bulgarian coast did well excellently, says Traian Bădulescu, because the first one is in his own country, and Bulgaria did not request, until September 1, any additional document other than the identity document.

"For Romania, the star of the summer season was, by far, the coast. But many Romanians who want peace, isolation or tourism in nature have also opted for mountain resorts, spa resorts or rural guesthouses. During the summer, Romanians have no choice not necessarily a weekend at rural guesthouses or in mountain resorts, but a complete stay of one week", added the NAAT representative.

According to the quoted source, the Romanian coast of the Black Sea had a comeback season in 2021. The tour operators who sell the Romanian coast and their resellers have made a good choice, having ensured survival and even a minimal profit, plus greater predictability.

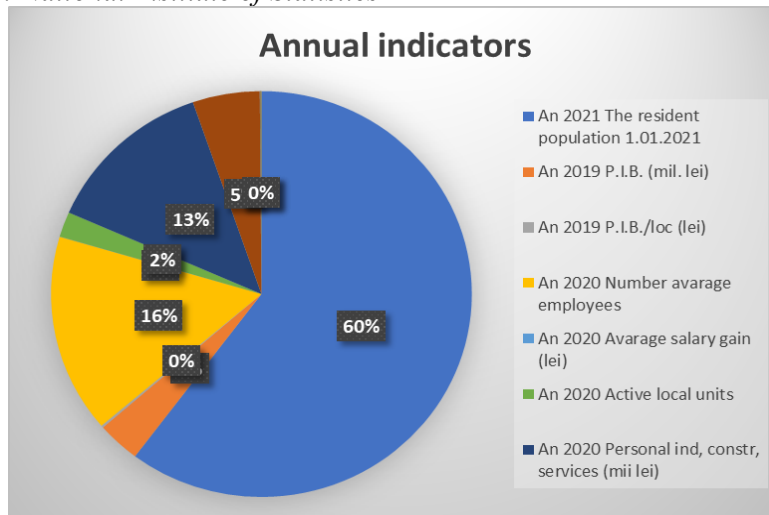
In the Central Region, the tourist potential was exploited because during the pandemic, tourists preferred to visit natural landscapes, castles, agritourism guesthouses.

The strong impact generated by the COVID 19 pandemic on the society and economy of the Center Region presented by ADR Centru:

Annual indicators

	Year 2021	Year 2019		Year 2020						
	Resident population 1.01.2021	P.I.B. (mil. lei)	P.I.B./loc (lei)	Average number of employees	Average salary gain et (lei)	Active local units	Personal ind, construction, services (mii lei)	Turnover of independent construction, services (mii lei)	Family businesses	PFA
Romania	19186201	1058973	54654	5031767	3217	640104	4184330	1641095	19972	19972
<b>Center Region</b>	<b>2302227</b>	<b>119142</b>	<b>51417</b>	<b>640530</b>	<b>2953</b>	<b>76029</b>	<b>533748</b>	<b>194691</b>	<b>2630</b>	<b>43065</b>
Alba	320831	17258	53141	89830	2846	10063	67241	30132	239	6772
Braşov	552929	35214	63684	176508	3111	23411	162874	58886	209	9018
Covasna	200003	7957	39410	48381	2579	4640	28792	8328	211	3807
Harghita	299128	12264	40611	65333	2483	8165	51084	13389	978	6180
Mureş	529220	22760	42600	131717	2975	15886	105611	41410	584	9809
Sibiu	400116	23688	59034	128761	3165	13864	118146	42547	409	7479

Source: National Institute of Statistics



Source: INS Own processing.

2.2. Operators about the 2021 summer season

Tourism continued to operate in 2021 in the context of the restrictions imposed by the authorities to limit the pandemic. The cancellation of holiday vouchers was felt by tourism operators, and the sector had to face a second consecutive year of job losses. However, receipts in tourism have increased compared to the first year of the pandemic.

In relation to the increase in the number of tourists at the county level, during 2021, the president of the Covasna County Council, Tamás Sándor, concluded that, if we could talk about the positive effects of the pandemic on tourism, then they would be expressed by an increase in demand for outdoor activities in nature. "Tourists prefer more intimate destinations with fewer visitors. This is to the advantage of Covasna County, given its natural resources and urban structure. Most tourism operators have reorganized their activities following the emergency situation caused by COVID-19, changing their profile when

necessary and opening up to new opportunities to maintain their businesses", stated the president C.J. Covasna (Covasnamedia, 2022).

*"We want in 2022 the activities of the association to be carried out on the basis of the professional benchmarks established last year: our basic responsibility is to carry out communication and promotion campaigns focused around those tourist products, which represent the strengths of Covasna county. These campaigns and activities are directed almost exclusively to markets outside the county, because the key performance indicator of our work is the increase in the number of nights registered in this region" - emphasized the director of the association, Godra Árpád.*

Romanians choose tourist destinations from all over the country, especially rural guesthouses, mountain and spa resorts, as well as the Danube Delta.

According to the Danube Delta Tourist Destination Management Association (AMDTDD), the summer of 2021 brought approximately 25,000-30,000 tourists to the delta in July, and 10% more in August. The figures are roughly at the same level as those of the reference year 2019. "The tourist season in the delta is longer than the one on the coast. The summer months were good. They cannot be compared with the summer of last year because 2020 was an atypical year with a very high tourist pressure for a short period of time (June-September). We can compare 2021 with 2019, being at a similar level, but with a single minus: 11.3% represented by foreign tourists. Unfortunately, in-coming tourism has not recovered", says Cătălin Țibuleac, AMDTDD president.

### **3. Lack of vouchers**

At the beginning of the year, the Government canceled the granting of holiday vouchers for 2021, and tourist operators protested, showing that holiday vouchers largely ensure the survival and development of tourism.

#### **3.1. No holiday vouchers in 2021**

The lack of holiday vouchers was felt in domestic tourism.

There was no promotion to attract foreign tourists, which had to be provided by the state and the relevant ministry.

Regarding the prices recorded this year in the tourism sector in Romania, the representatives of the national association of agencies in the field claim that they have only been adjusted with inflation.

"By eliminating holiday vouchers for 2021, the Government proves once again that tourism is the fifth wheel in the cart. Holiday vouchers largely ensure the survival and development of domestic tourism, as well as the preparation of incoming tourism. No Government has taken into account in the most serious way that Romania can earn money from exports, and incoming tourism can become one of the main forms of service export of our country. Holiday vouchers add value to domestic tourism and ensure tourism taxation. A Government that thinks in perspective, in the medium and long term, can understand this aspect", explained NAAT representatives.

Later, the employers' organization drew attention to the fact that the holiday vouchers issued during 2019-2020 created more than 45.000 jobs, so they should be seen by the Government as an investment.

"Vacation vouchers should have been viewed by the Government as an investment and not as an expense from the budget, being probably one of the most profitable allocations of funds from the budget. For every RON invested in holiday vouchers, 0.51 money is found in GDP, and for every 64.000 lei a job is created and maintained (ASE and APET study). Doing a simple calculation, the holiday vouchers issued during 2019-2020 created over

45.000 jobs (Economica.net, 2021). Holiday vouchers ensure, for the most part, the survival and development of domestic tourism, as well as the preparation of incoming tourism, accumulating about 30% of the sales of travel agencies specialized in domestic tourism. In addition, holiday vouchers mean taxed tourism, they can only be used in classified accommodation units or in licensed travel agencies", according to a press release from NAAT.

In autumn, after the Government announced the re-introduction of holiday vouchers for 2022, tourism employers requested the granting of holiday vouchers for a period of 5 years, both for employees in the state system and for employees in the private sector.

"The 24 organizations that cover the entire spectrum of the hospitality industry, united under the name of the Alliance for Tourism (APT), as well as other union and employer organizations that represent all areas of the national economy, support the major importance of reintroducing holiday vouchers starting in 2022.

It is essential that this decision be legislated by the end of this year. APT, together with the other union and employers' organizations, welcomes the public announcement regarding the reintroduction of vacation vouchers, for all categories of employees starting in 2022, and propose to the government an improved formula.

The Alliance for Tourism argued that the holiday vouchers contributed essentially to improving the taxation of the tourism sector, through the accelerated increase in the number of classified tourist structures, guaranteeing the collection of taxes and fees to the public budget.

"In just 11 years, more precisely between 2010 and 2021, they determined a 326% increase in the number of classified tourism units and a doubling of accommodation. More precisely, in October 2010, according to the relevant ministry, there were 5.458 accommodation units totaling 255.623 places, and in November 2021, the figure reached 17.800 accommodation units, respectively 523.177 places (DobrogeaExplore, 2021). The investments stimulated by the vacation vouchers project meant both the construction of new accommodation units and the modernization of some that remained in an inadequate condition for decades, the appearance of 4 and 5 star health centers in spa resorts, but also the construction of swimming pools, spa centers, modern restaurants and other facilities oriented towards sustainable tourism and digitized management", according to the APT press release.

### **3.2. Tourism continued to lose employment**

The biggest damage recorded in the tourism industry in Romania is that it has lost over 30% of its workforce in 18 months, said on December 15, the president of the Romanian Hotel Industry Federation (FIHR), Călin Iie.

"In 2020, we recorded 14.4 million overnight stays, compared to approximately 30 million overnight stays in 2019, so a decrease of more than 50%. In 2021, we have almost 20 million overnight stays, an increase of 5 million compared to 2020 (Profit.ro, 2021). The biggest damage in our industry is that we lost over 30% of our workforce. Labor force forced to migrate to other sectors, it is natural and absolutely correct. Some went to retail, IT, construction. I saw cooks who are working in the courier. Losing 30% of the workforce in about 18 months is an enormous damage that we will have a very hard time compensating for, especially when there is no reaction from the state and then we have to react through campaigns to attract them, increasing salaries to the extent that the businesses prove to be sufficiently sustainable", stated Călin Iie.

### **3.3. Tourism increased in 2021 compared to 2020, but the lack of vouchers was felt**

Tourism continued to operate in 2021 in the context of the restrictions imposed by the authorities to limit the pandemic. The cancellation of holiday vouchers was felt by tourism operators, and the sector had to face a second consecutive year of job losses. However, receipts in tourism have increased compared to the first year of the pandemic.

In January, when the authorities imposed a two-week quarantine for people entering the country, the National Association of Travel Agencies (NAAT) requested the Government to implement, as an alternative measure, carrying out a Covid-19 test upon returning to the country instead of the 14-day quarantine, the mandatory quarantine generating a new wave of cancellations of contracted travel service packages, refunds and litigation.

Due to the restrictions, Romanians did more tourism in the country this year.

The most favorable choice in this period was agromontane tourism: horse riding, outdoor sports for families, hiking, visiting the tourist attractions in the area, cycling. Packages for small groups. Which targeted not only families with children but also the elderly and everyone who wanted to spend active holidays.

## **4. Epidemics that changed the course of history**

"Epidemics are often described as threats to civilization, similar to hurricanes or asteroids. It suspends ordinary life and leaves deep trauma behind. However, they can also be an effect of civilization, of a certain type of civilization, obsolete, eroded, useless, which can no longer support the progress of the world. That is why they are followed by catalytic events, by inventions and innovations, which essentially change our conception of life" (Manolachi, 2020).

Great epidemics such as the plague of Athens, the bubonic plague (black death), the so-called "Spanish flu" or AIDS changed the situation in the world and influenced the course of history, according to the Spanish doctor Pedro Gargantilla (Manolachi, 2020). The Spanish expert assures that the economic effect is already visible. Although he believes that it is too soon to know if the epidemic will have the effect of a historical change, the isolation and quarantine measures, the recession in China or the consequences on the industrial and economic structure already entail losses that are difficult to quantify, with a devastating effect on commerce, tourism and the business world.

In 2003, over 270 cases of Severe Acute Respiratory Syndrome (SARS) were confirmed worldwide, according to the WHO and medical authorities in the affected countries (Lazar, 2018). The events of September 11, 2001, the wave of terrorist attacks, the war in Iraq, the epidemic of atypical pneumonia dealt a serious blow to tourism (Kadar (Lazar), 2019, p. 120). However, he has already found his way to growth, so that the arrivals of international tourists in the world increased from 25 million in 1950 to 715 million in 2002 (See the World Tourism Organization website at <http://unwto.org/index.php>) and to 846 million in 2006, which equates to an annual growth rate of 6.5% over the period 1950-2006 (European Commission, 2007).

The so-called "Spanish flu" of 1918 caused as many deaths as the First World War, and some experts assure that this world conflict ended because of the epidemic. But the epidemic did not appear in Spain. Spain, which was not part of the conflict, reported the most cases of influenza, which received the name from this country. During that period of war and epidemic, economic activity collapsed and enormously boosted migratory movements.

Another great epidemic, from 1981, was AIDS, which involved the stigmatization of a part of the population and had a huge influence on customs, perceptions and sexual relations.

Gargantilla also mentioned other epidemics that have followed each other throughout this century, such as the Middle East Respiratory Syndrome (MERS), in Saudi Arabia, in 2012; Ebola from 2014 to 2016 in Africa; or Zika that prevented the smooth running of the 2016 Olympic Games.

The pandemic has had enormous socio-economic impacts on workers in all branches of the national economy and all types of businesses, especially on SMEs and the informal economy, with an unprecedented reduction in economic activity and working time. OIM estimates show that, in the first half of 2020, the level of lost work time has clearly worsened, especially in developing countries.

### **5. Advantages and disadvantages in the Covasna area after the pandemic:**

The negative impact of the pandemic has been felt by the vast majority of industries around the world.

- the lack of an airport in the area is a disadvantage, as rising fuel prices make air travel cheaper.
- another disadvantage compared to last year is that tourists can travel to neighboring countries without covid restrictions.
- recent inflation has influenced the value of holiday tickets, which is reflected in the number of overnight stays and the type of stay
- according to the source (3szek.ro, 2022) of the most read county newspaper. To the question: Where do you spend your vacation? From 1958 respondents until 22.08.2022:
  - \* 17.21 % (337 people)- in Romania
  - \* 24.97 % (489 people) – in abroad
  - \* 45.35 % (888 people) – they don't have vacation money
  - \* 12.46 % (244 people) – in the area

Granting holiday vouchers in the private sector would also help both tourists and Romanian tourism.

- the granting of holiday vouchers favors domestic tourism
- spa tourism in Romania must be a national priority, but at the moment it is buried, because apart from the restrictions imposed by the pandemic, along with the increase in electricity and natural gas tariffs, most spa treatment centers risk not being able to afford to continue their activity, warns the president of the Employers' Organization of Spa Tourism in Romania (OPTBR), Nicu Rădulescu.
- an advantage is that after a very long time a 4-star hotel was inaugurated in Covasna county - BTheHotel, the first superior category hotel in St. George and even in the region. Made from financial support for socio-economic development projects in Transylvania by the Budapest government.

The pandemic has changed consumer preferences towards greener options that bring them closer to nature.

### **6. Conclusions**

Tourism in Covasna county recorded increases of 10% in turnover and 50% in profit in 2021, compared to 2019. The statistics are even more spectacular compared to the pandemic year 2020, when the increase in turnover was 56% and 1.836% in profit! The analysis belongs to the Covasna Chamber of Commerce and Industry (CCI). Although the data are optimistic to say the least, they were recorded in an atypical period for tourism, which means that for 2022 we could see other trends, closer to reality.

In 2019, tourism in Covasna county registered a turnover of almost 185 million lei, last year, in 2021, it amounted to 203.5 million lei, according to the latest data. Compared to the pandemic year 2020, the comparison is almost painful, because the turnover was far below even 2019, of almost 130.2 million lei (Draghici-Taras, 2022).

As for the profit, in 2021 there was talk of 32.8 million lei, a lot compared to the reference year 2019, when it was 21.8 million lei. Again, it cannot even be compared with 2020, because then tourism companies had a total profit of only 1.7 million lei (Draghici-Taras, 2022).

In terms of the number of employees, the data show no notable changes, but only a 2% decrease between 2021 and 2019, respectively an increase of 1% between 2021 and 2020. Specifically, in 2021, 1.361 employees worked in tourism in Covasna county (Draghici-Taras, 2022).

An analysis by CCI Covasna also shows that, compared to the total turnover of the companies in the county, tourism represents only 2.52% of the total, the penultimate place, while industry remains the categorical leader, with 34.87%.

### References

1. 3szek, ro, 2022. *Where are you planning your holiday this year?* [online] Available at: <<https://www.3szek.ro/load/Surveys&op=results&pollID=143>> [Accessed 22 August 2022].
2. Agerpres, 2021. *Mischie (HORA): Ne indreptam spre o treime din unitatile HoReCa intrate in faliment.* [online] Available at: <<https://www.agerpres.ro/economic-intern/2021/02/08/mischie-hora-ne-indreptam-spre-o-treime-din-unitatile-horeca-intrate-in-faliment--657226>> [Accessed 15 February 2023].
3. Covasnamedia, 2021. *Judetul Covasna, castigatoarea la categoria Best Spa Destination in Romania, la Gala Termalia Awards.* [online] Available at: <<https://covasnamedia.ro/turism/judetul-covasna-castigatoarea-la-categoria-best-spa-destination-in-romania-la-gala-termalia-awards>> [Accessed 15 February 2023].
4. Covasnamedia, 2022. *Numarul turistilor din judetul Covasna a ajuns in 2021 la nivelul inregistrat inaintea pandemiei.* [online] Available at: <<https://covasnamedia.ro/turism/numarul-turistilor-din-judetul-covasna-a-ajuns-in-2021-la-nivelul-inregistrat-inaintea-pandemiei>> [Accessed 15 February 2023].
5. DobrogeaExplore, 2021. *Alianta pentru turism cere Guvernului alocarea voucherelor de vacanta pentru minim 5 ani.* [online] Available at: <<https://dobrogeaexplore.ro/alianta-pentru-turism-cere-guvernului-acordarea-voucherelor-de-vacanta-pentru-minim-5-ani/>> [Accessed 15 February 2023].
6. Draghici-Taras, I., 2022. *Turismul covasnean, dupa pandemie: cresteri de peste 50% la profit.* *Covasnamedia.ro.* [online] Available at: <<https://covasnamedia.ro/turism/turismul-covasnean-dupa-pandemie-cresteri-de-peste-50-la-profit>> [Accessed 15 February 2023].
7. Economica.net, 2021. *Turismul, in al doilea an al pandemiei – intre volatilitatea restrictiilor, eliminarea voucherelor de vacanta si pierderea fortei de munca – retrospectiva 2021.* [online] Available at: <[https://www.economica.net/turismul-in-al-doilea-an-al-pandemiei-intre-volatilitatea-restrictiilor-eliminarea-voucherelor-de-vacanta-si-pierderea-fortei-de-munca-retrospectiva-2021\\_550705.html](https://www.economica.net/turismul-in-al-doilea-an-al-pandemiei-intre-volatilitatea-restrictiilor-eliminarea-voucherelor-de-vacanta-si-pierderea-fortei-de-munca-retrospectiva-2021_550705.html)> [Accessed 15 February 2023].
8. European Commission, 2007. *Agenda for a sustainable and competitive European tourism.* COM (2007)621 final, of October 19.

9. Luca, D., 2021. *Judetul Covasna: cu peste 42% mai putini turisti in 2020*. [online] Available at: <<https://covasnamedia.ro/turism/judetul-covasna-cu-pest-42-mai-putini-turisti-in-2020>> [Accessed 15 February 2023].
10. Manolachi, M., 2020. *Epidemics in world cultures| the new world, the old world and the exchange of epidemics*. [online] Available at: <[unibuc.ro](http://unibuc.ro)> [Accessed 22 August 2022].
11. Profit.ro, 2021. Calin Ile, FIHR: *Industria turismului din Romania a pierdut peste 30% din forta de munca in 18 luni*. [online] Available at: <<https://www.profit.ro/povesti-cu-profit/turism/calin-ile-fih-industria-turismului-din-romania-a-pierdut-pest-30-din-for-ade-munca-in-18-luni-20507794>> [Accessed 15 February 2023].



## EFFICIENCY OF THE ROMANIAN RDI SYSTEM IN GLOBAL CONTEXT

**Associate Professor, Ph.D., Mădălina TOCAN**

Ecological University from Bucharest, Romania

Scientific Researcher III, Institute for World Economy, Romanian Academy, Romania

E-mail:madalina.tocan@gmail.com

***Abstract:** Research, development and innovation play an important role in ensuring sustainable economic growth. By producing new knowledge, research is essential to the development of new and innovative products, processes and services that contribute to increased productivity, industrial competitiveness and ultimately prosperity. For this reason, the encouragement of the research-development and innovation activities has become now an extremely important imperative of the modern socio-economic and technological policies in developed and less developed countries. The present paper tries to present an overview of the efficiency of the research, development and innovation system in Romania in a global context. The analysis of the Global Innovation Index shows that the existing research-development-innovation system in Romania is not able to ensure overcoming the condition of being a modest innovator, due to some of its weaknesses. Thus, Romania is in a not exactly favourable situation, a fact that influence in a negative way the country's competitiveness and long-term growth prospects.*

***Keywords:** innovation, research, development, innovation performance.*

***JEL Classification:** O10, O30, O39.*

### 1. Introduction

By producing new knowledge, research is essential to the development of new and innovative products, processes and services that enable increased productivity, industrial competitiveness and ultimately prosperity. For this reason, research and innovation plays an important role in generating sustainable economic growth and job creation.

Following the crisis caused by the Covid-19 pandemic, economic growth was, and continues to be, a primary government strategies objective, both at the European Union countries and international level. Given that, in the new context of global competitiveness, technological progress is recognized as one of the sustainable economic development key elements, a central place in this equation being the research, development and innovation sector. It is well known that supporting the research, development and innovation sector is achieved through a mix of policies and varied instruments, many of them complementary.

### 2. The efficiency of the Romanian research, development and innovation sector

The Global Innovation Index (GII) report is made by the World Intellectual Property Organization, "Cornell" American University and the French School of Management "INSEAD" and is published annually from 2007. The aim of the Global Innovation Index report is to familiarize interested persons and institutions with all the new aspects in the field of innovations that appear in society and to approach this field beyond traditional innovation mechanisms (Saharneau, 2019). The reasons behind the creation of this report are multiple. Because many governments place innovation at the heart of their economic growth strategies, the first reason is determined by the importance of innovation in driving economic progress and competitiveness – for both developed and developing economies,. The second reason is determined by the expansion of the definition of innovation, which now is not limited to only theoretical research. Nowadays innovation is much more general and includes social, technical and business model aspects. The last, but not the least, reason is determined by the fact that in emerging markets innovation is a key element in inspiring the next generations of entrepreneurs and innovators.

The Global Innovation Index report adopts a broad definition of innovation, originally introduced in the Oslo Manual developed by the European Communities and Organization for Economic Co-operation and Development (OECD) - "An innovation is the implementation of a new or significantly improved product (a good or service), or a process, or a new marketing method, or of a new organizational method in business practice, in the organization of workplaces or in external relations" (Maier, 2014) This definition reflects the evolution of the way in which innovation has been perceived and understood in recent decades. Previously, economists and policy makers focused on research, development and product technological innovation, today innovation capacity is seen more as the ability to exploit new technological combinations.

The GII do not intend to realize a final and definitive ranking of economies in the field of innovation, but aims to improve innovation by measuring it as accurately as possible and by identifying policies, best practices and other levers that encourage innovation. It helps to create an environment where the influencing factors of innovation are under continuous evaluation and provides a key tool and a rich database that can contribute to the development of innovation policies.

Over the past decade, GII has established itself as a leading reference in the field of innovation. Better understanding of the human aspects behind innovation is essential for developing policies that help promote economic development. Recognizing the key role of innovation as a driver of economic growth and prosperity and the need for a broad overview of innovation applicable to developed and emerging economies, the GII includes indicators that go beyond traditional measures of innovation, such as the level of research and development and the amount of investment allocated in innovation (Saharneau, 2019).

The global innovation index is built on the basis of two sub-indices – the input innovation sub-index and the output innovation sub-index. The first targets at the elements that influence innovative activities, such as research and development – while the output innovation sub-index targets at the results of these activities (Cristina, 2020). Each sub-index is divided into pillars, pillars into sub-pillars and each sub-pillar is composed of individual indicators. The scores for each sub-pillar are calculated as the weighted average of the individual indicators, and the pillar scores are calculated as the weighted average of the sub-pillar scores. The overall global innovation index is calculated as the simple average of the input and output sub-indices. The innovation efficiency ratio is the ratio of the output sub-index to the input sub-index.

The innovation input sub-index is built on the basis of five sub-pillars that assess the factors that enable and favour innovative activities: institutions, human capital and research, infrastructure, market sophistication, business sophistication.

The output sub-index for innovation is built on the basis of two pillars that assess the results of innovative activities within economies - Knowledge and technology outputs, creative outputs. Although it includes only two pillars it has the same weight in calculating the value of the Global Innovation Index as the inputs sub-index (Cristina, 2020).

The Global Innovation Index 2022 provides a detailed picture of the innovation performance of 132 countries and economies around the world. Its 81 indicators explore a wide area of innovation, including politics, education and business. From year to year the number of innovation performance indicators and the countries participating in the study differed. For example, in 2013 the GII used 84 indicators for the comparative evaluation of the innovation capacities of 142 countries (which included 94.9% of the world's population and constituted 98.7% of the world's GDP). The framework is reviewed every year in a transparent exercise to improve how innovation is measured (Saharneau, 2019).

As can be seen in Table 1 .Switzerland and the USA are the innovative leaders of the high-income countries group, occupying the first and second places. Surprisingly, Bulgaria occupies the second place as an innovative leader of the upper middle-income countries group, alongside China and Malaysia, Romania placing on the 8th rank in this group.

**Table 1. Innovation leaders by income group according to GII 2022**

High-income		Upper middle-income		Lower middle-income		Low-income	
Switzerland	64.6	China	55.9	India	36.6	Rwanda	18.7
USA	61.8	Bulgaria	39.5	Vietnam	34.2	Madagascar	18.6
Sweden	61.6	Malaysia	38.7	Iran	32.9	Ethiopia	16.3

*Source:* Own processing based on the Global Innovation Index 2022

In 2022, Romania occupied the 49th place among the 132 economies included in the GII 2022. It should be noted that the availability of data and the changes made in the GII methodology influence comparisons from one year to another. The statistical confidence interval for Romania's GII 2022 ranking is between 48th and 52nd places. As it can be observed in the Table 2, in 2022 the general position of the Romania descended with one place comparing with 2021 and three places comparing with 2020. However the position occupied in 2022 was superior to the position occupied in 2019.

**Table 2. Romania's position in the Global Innovation Index (2019-2022)**

Description	Position			
	2019	2020	2021	2022
Innovation input sub-index	53	46	50	56
Innovation output sub-index	54	51	54	43
Global Innovation Index	50	46	48	49

*Source:* Own processing based on the Global Innovation Index 2019-2022

In 2022, Romania obtained better results in terms of innovation outputs than innovation inputs. It ranks 43th place in terms of innovation outputs, occupying a better place comparing with the previous years. In terms of innovation inputs, Romania ranks 56th place, this position being lower than the previous years. At the same time, Romania ranks 40th among the 51 economies with high incomes and 31st among the 39 economies in Europe.

**Table 3. Romania's position within the GII pillars (2019-2022)**

Description	Position			
	2019	2020	2021	2022
Institutions	50	53	53	75
Human capital and research	69	76	76	74
Infrastructure	35	37	36	33
Market sophistication	92	83	76	63
Business sophistication	51	53	54	51
Knowledge and technology outputs	41	28	35	31
Creative outputs	71	67	72	57

*Source:* Own processing based on the Global Innovation Index 2019-2022

In the analysis period 2019-2022, the best positions occupied by Romania are within the pillars Infrastructure and Knowledge and technology outputs. Thus, in the 2022 ranking, within the Knowledge and technology outputs pillar Romania occupied the 31st place (inferior compared to 2021 when it occupied the 34th position, but superior to 2020 when it occupied the 28th position). Within the Infrastructure pillar Romania occupied in 2022 the 33rd place (superior to the previous years- 2019, 2020, and 2021- when it occupied the 35th, 37th and 36th position). The weakest performance recorded by Romania was registered at human capital and institutions pillar, where it occupied the 74th and 75th place.

Closely related to the human capital dimension, it is important to mention that Romania has the lowest number of researchers in the EU 27. As can be seen in table 4, the total research and development staff has decreased substantially since 1993 from over 73,611 to 33,892 in 2000. Since then the number of researchers has stabilized around 30,000, reaching 33,189 in 2020. However, the number of research and development staff in higher education has increased over the past two decades from 3,780 in 2000 to 8,862 in 2020, peaking at 9,000 in 2015.

**Table 4. The evolution of the researchers number**

	1993	2000	2007	2014	2015	2016	2017	2018	2019	2020
RDI	73.61	33.89	28.97	31.39	31.33	32.23	32.58	31.93	31.66	33.18
staff	1	2	7	1	1	2	6	3	5	9

*Source:* EC, 2021, PSF review of the Romanian R&I System, available online at <https://op.europa.eu/en/publication-detail/-/publication/8a4a2522-eac3-11ec-a534-01aa75ed71a1/language-en/format-PDF/source-259353375>

The low attractiveness of the research system in Romania is also determined by the small number of foreign PhD students. According to the Report on the state of higher education in Romania in the academic year 2020-2021, a number of 34,447 students studied, and of these only 3%, respectively 970, followed doctoral study programs (Ministry of Education, 2022)

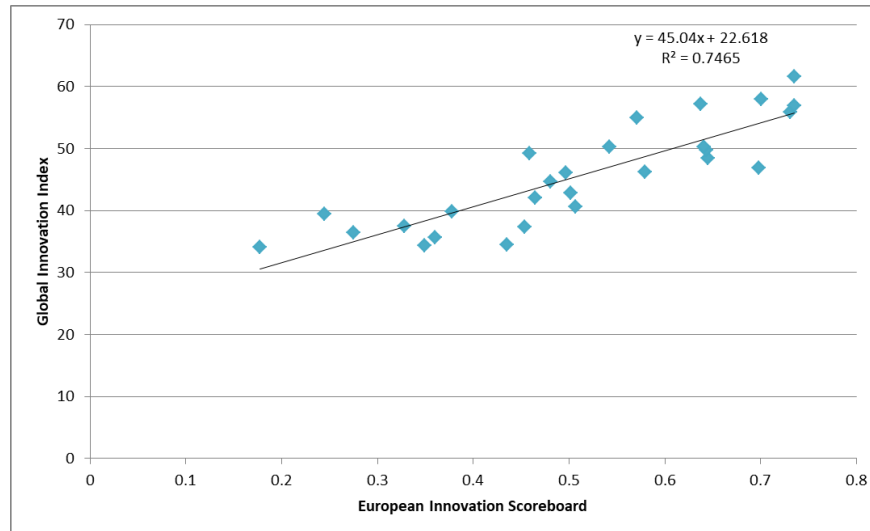
The sub-pillars that positively influenced Romania's position were the Knowledge Impact and Knowledge diffusion. The indicators that positively influenced Knowledge Impact sub-pillar were Labour productivity growth and ISO 9001 quality certificates. The indicators that positively influenced Knowledge diffusion sub-pillar were ICT services exports (% total trade) and production and export complexity. The Infrastructure pillar was favourably influenced by the ecological sustainability sub-pillar. The indicator that positively influenced ecological sustainability sub-pillar was ISO 14001 environmental certificates

**Table 5. Romania's Strengths and Weaknesses**

Strengths	Position in GII 2022	Weaknesses	Position in GII 2022
1.2.3 Cost of redundancy dismissal	1	1.1.2 Government effectiveness*	84
3.3.3 ISO 14001 environmental certificates	10	1.3.1 Policies for doing business	114
3.3.1 GDP/unit of energy use	19	2.2.1 Expenditure on education, % GDP	99
4.1.3 Loans from microfinance institutions, % GDP	9	2.3.2 Gross expenditure on R&D, % GDP	64
4.3.1 Applied tariff rate, weighted avg., %	20	2.3.4 QS university ranking, top 3*	72
5.1.4 GERD financed by business, %	21	4.1.2 Domestic credit to private sector, % GDP	105
5.3.3 ICT services imports, % total trade	14	4.2.1 Market capitalization, % GDP	74
6.2.1 Labor productivity growth, %	4	4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	81
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	17	4.2.4 Venture capital received, value, % GDP	95
6.2.5 High-tech manufacturing, %	23	5.2.1 University-industry R&D collaboration†	82
6.3.4 ICT services exports, % total trade	11	5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	93
7.2.1 Cultural and creative services exports, % total trade	15	6.1.2 PCT patents by origin/bn PPP\$ GDP	79

*Source:* Own processing based on the Global Innovation Index 2022

The positions occupied by the European countries, including Romania, at the global level in Global Innovation Index are correlated with the positions occupied at the European level in the European Innovation Scoreboard.



**Figure 1. The relationship between the European Innovation Scoreboard and Global Innovation Index 2022**

Source: Own processing based on Global Innovation Index and European Innovation Scoreboard 2022

Based on the calculations, was obtained a coefficient of 0.74, which indicates a correlation between the European Innovation Scoreboard and the Global Innovation Index. This positive relationship is determined by the use of common indicators within the EIS and GII, as well as by the common purpose of the two tools to analyse innovation performance.

### 3. Conclusions

Romania is an emerging innovative country, with an innovation performance well below the EU average. The existing research-development-innovation system in Romania is not able to ensure overcoming the condition of a modest innovator, due to some of its weaknesses, among which the most important are: extremely low research and development expenses, under-financing, decreasing of the researchers number, the excessive priority given to fundamental research to the detriment of applied research, the lack of adequate incentives in favour of research and development, the lack of a periodic analysis of the real correlation between the needs of Romanian society and the priority programs as research direction within the national programs.

The position occupied by Romania in the Global Innovation Index is complemented by the position occupied in other world and European rankings, as follows:

- Romania ranks 19/133 in the list of the most complex countries in the world in the Economic Complexity Index ranking (Harvard, 2020).
- The 2019 Global Competitiveness Index of the World Economic Forum places Romania in 51st place out of 141 countries. The country ranks best in ICT adoption (32nd) and market size (41st), and worst in financial systems (86th), health (83rd), skills (72nd) and business dynamism (World Bank, 2020).
- Romania ranks 55th in the World Bank's Doing Business ranking, which evaluates the ease of doing business in 190 countries around the world. The country has gone through many reforms to make it easier to do business and is now closer to other EU member states in terms of scores for starting a business (EBRD, 2019).
- Romania has a below-average performance on all dimensions of the eco-innovation index (it ranks 25th out of the 27 member states). Eco-innovative

outputs and activities are relatively at half of the EU average; the country is closer to the EU average in socio-economic outcomes (93%) and resource efficiency outcomes (81%) (European Commission, 2019).

- Romania ranks 26th out of 28 countries in the Digital Economy and Society Index (DESI) 2021. The country scores best in the Connectivity dimension and is well positioned in terms of ICT graduates (Human Capital), but digitization the economy lags far behind. Regarding digital public services and the use of internet services, Romania has the worst performance in the EU (European Commission, 2021).

### References:

1. Cristina, I., 2020. *Care sunt cele mai inovatoare economii și cum inovează aceste țări?* [online] Available at: <<https://urbanizehub.ro/care-sunt-cele-mai-inovatoare-economii-si-cum-inoveaza-aceste-tari/>> [Accessed 15 March 2023].
2. EBRD, 2019. *Knowledge Economy Index*. [online] Available at: <<https://www.ebrd.com/news/publications/brochures/ebrd-knowledge-economy-index.html>> [Accessed 15 March 2023].
3. European Commission, 2019. *Eco-innovation Index, Country profiles: Romania*. [online] Available at: <[https://ec.europa.eu/environment/ecoap/romania\\_en](https://ec.europa.eu/environment/ecoap/romania_en)> [Accessed 15 March 2023].
4. European Commission, 2021. *Indicele economiei și societății digitale (DESI) 2021*. [online] Available at: <<https://ec.europa.eu/newsroom/dae/redirection/document/80598>> [Accessed 15 March 2023].
5. European Commission, 2021. *PSF review of the Romanian R&I System*. [online] Available at: <<https://op.europa.eu/en/publication-detail/-/publication/8a4a2522-eac3-11ec-a534-01aa75ed71a1/language-en/format-PDF/source-259353375>> [Accessed 15 March 2023].
6. Harvard's Growth Lab, 2020. *Atlas of Economic Complexity. Country profile: Romania*. [online] Available at: <<https://atlas.cid.harvard.edu/countries/185/summary>> [Accessed 15 March 2023].
7. Maier, L., 2014. The implementation of innovations in business in the Republic of Moldova. *Theoretical and Scientific Journal*, no. 3/2014. [pdf] Available at: <[https://ibn.idsi.md/sites/default/files/imag\\_file/Implementarea%20inovatiilor%20in%20afaceri%20in%20RM.pdf](https://ibn.idsi.md/sites/default/files/imag_file/Implementarea%20inovatiilor%20in%20afaceri%20in%20RM.pdf)> [Accessed 15 March 2023].
8. Ministerul Educației, 2022. *Raport privind starea învățământului superior din România 2020-2021*. [pdf] Available at: <[https://www.edu.ro/sites/default/files/\\_fi%C8%99iere/Minister/2021/Transparenta/S\\_tare%20invatamant/Raport\\_stare\\_invatamant\\_superior\\_RO\\_2020\\_2021.pdf](https://www.edu.ro/sites/default/files/_fi%C8%99iere/Minister/2021/Transparenta/S_tare%20invatamant/Raport_stare_invatamant_superior_RO_2020_2021.pdf)> [Accessed 15 March 2023].
9. Saharnea, L., 2019. Imaginea inovațională: metodologii internaționale de cercetare a activității inovatoare a Republicii Moldova. *Studia Universitatis Moldaviae*, 2(122). [online] Available at: <<https://oaji.net/articles/2019/2054-1565859504.pdf>> [Accessed 15 March 2023].

10. WIPO, 2022. *Global Innovation Index 2022- What is the future of innovation-driven growth*. [online] Available at: <<https://www.globalinnovationindex.org/gii-2022-report#>> [Accessed 15 March 2023].
11. World Bank, 2020. *Ease of doing business in Romania*. [online] Available at: <<https://www.doingbusiness.org/en/data/exploreconomies/romania>> [Accessed 15 March 2023].



## PREDICTIONS OF THE SOCIAL AND ECONOMIC IMPACT OF GLOBAL TRENDS

**Associate Professor Ph.D., Lucian IVAN**

The Academy of Economic Studies of Bucharest, Romania

E-mail: lucian.ivan@amp.ase.ro

**Ph.D. Student, Irena (ARĂDĂVOAICEI) APOLZAN**

The Academy of Economic Studies of Bucharest, Romania

**Ph.D. Student, Cosmin Sandu BĂDELE**

"Valahia" University of Targoviste, Romania

**Abstract:** *The geopolitical situation is characterized by the multiplication and overlapping of major crises that also impact on the economic and social level. The effects of the military conflict provoked by the Russian Federation in Ukraine and its impact on the economy of EU Member States, including Romania, are explained in detail in this paper. At the same time, the paper aims to explain how this "storm of crises" may affect European societies in social terms, namely the risk of triggering protest demonstrations, including violent ones, amid the population's dissatisfaction with rising inflation and falling purchasing power. The paper also aims to explain how the current poles of power are influencing the world economy and what possible structural changes may occur, with an impact on the European economy, including to Romania. A relevant development can be observed at the social level, where there is a risk of the rise to power of far-right ideological formations that will exploit the discontent in Western societies. In this context, pro-active measures are needed to avoid a potential deep economic crisis, while raising the standard of living of the population in European countries.*

**Keywords:** *economy, major crises, protests, resource scarcity, energy resources.*

**JEL classification:** *H12, H68.*

### 1. Introduction

The global geopolitical situation is characterised by the overlapping of major crises, namely the security crisis, the economic crisis and the migration crisis, which reinforce each other and have direct social effects. Today, humanity is facing the beginning of a new era that addresses both challenges and opportunities. The state of conflict accentuated by the war in Ukraine has direct economic effects. In this context, the effects of the military conflict are negative for most industrial sectors, including the European energy sector, which has had to reorientate itself towards other, more expensive energy sources. On the other hand, the global defence industry has managed during the conflict in Ukraine to increase turnover and thus sales of modern arms and ammunition both in the countries where arms companies are based and on the international arms market.

The main trends facing contemporary global society include: global fragmentation, polarisation, digitalisation, climate and environmental change, evolving economic patterns, demographic imbalances and changing politics. Against these global trends, the Russian Federation's war against Ukraine continues to be a major challenge for EU countries, but not the only one:

- *Resource scarcity:* the impact of shortages of food, energy and other essentials, combined with economic and budgetary pressure on governments and populations;
- *Societal pressures:* the increasing difficulty of existing political systems to meet people's expectations of long-term prosperity, security and stability;
- *"Weaponisation":* the hostile use by competing powers of the tools and consequences of interdependence to exert pressure in pursuit of political objectives;
- *use of instruments of coercion/instrumentation.*

The foresight documents developed at European level show that "*crisis management should not be addressed in the short term. Decisions need to take into account the wider*

*European and global context as well as Europe's key long-term objectives.*" (Council of the European Union, 2023).

## **2. Analysing the impact of the war in Ukraine from the perspective of global trends**

The invasion of the Russian Federation from Ukraine was the most important event with a global geopolitical impact in 2022 and had a major impact on all seven trends described above. The military conflict in Ukraine has heightened global tensions between Euro-Atlantic states and the Russian Federation, supported by BRICS states.

Global fragmentation and competition between different political models have been accelerated in the context of the military conflict in Ukraine. This context has favoured the shift of policies dictated by Moscow even closer to Beijing's zone of influence, a situation that has also benefited some states that have used non-alignment as a bargaining chip. For example, a direct economic effect of the military conflict in Ukraine has been the energy crisis in Europe following the imposition of restrictions on the purchase of hydrocarbons from the Russian market. This energy crisis was resolved by European countries by diversifying energy sources and identifying other suppliers, but the cost of energy resources has risen, reflected in higher prices for manufactured products and a negative impact on inflation.

The Russian Federation has also had to identify new recipients of excess energy resources, the main customers being China and India, which have a large market, and these countries are able to import hydrocarbons from Russia at very good prices. India and, in particular, China have benefited from this resource shift, keeping the prices of manufactured products at a very competitive level. Another aspect of China's policy has been to take a neutral stance on the conflict in Ukraine by not offering military equipment to the Russian Federation. This moderate policy is due to China's intention not to affect trade relations with the US and EU member states, which Beijing considers essential. Unlike China, the Islamic Republic of Iran has chosen to directly support the Russian Federation in the military conflict in Ukraine by supplying military equipment, in particular military drones, to the authorities in Moscow. This has led the international community to impose military and economic sanctions against the Islamic Republic of Iran.

The different responses to the war and the COVID pandemic have together increased the already growing conflict between the gap between democracies and the autocracies of undemocratic powers, and the effect of pressures on energy and food has widened the gap between the world's richest and poorest countries. In fact, the grain crisis triggered by the Russian Federation's initial stance of not allowing Ukraine to export large stocks of grain has increased its price on the international market. Once this process was unblocked, the price of grain on the international market stabilised and grain exports are now taking place under normal conditions. However, against the background of the European Commission's decision to exempt Ukraine from paying duties on cereals, Ukrainian traders have taken the opportunity to put large quantities of cereals on the European market at prices that have disadvantaged local producers. This has led to protests from cereal producers in the EU Member States affected by these decisions, prompting the European Commission to take action to resolve the situation.

At the same time, digitisation and the technology race tends to play an increasingly important role in the competition between global powers. In this context, US restrictive measures on the export of semiconductor technology to China are seen by the Beijing authorities as a declaration of economic war and tend to widen the global technology gap. This global situation also affects the EU's objectives in the digitisation process. Thus, we are

already witnessing a disruption in the supply chain of high-tech products and increasing pressure on access to essential raw materials. Against this background, this crisis is also affecting other industries. For example, the lack of certain semiconductors on the international market has created difficulties in the automotive market which is directly dependent on these electronic components.

In conclusion, we can say that this conflict in Ukraine, as well as the tense situation in the vicinity of Taiwan, has a direct economic impact and its effects are felt globally. One direct effect is an unprecedented rise in the inflation rate, with effects in terms of rising consumer prices, including food prices, and a fall in the purchasing power of the population. Thus, the impoverishment of the population can lead to social effects through increased tensions and violent protests. There are also difficulties in the sustainability of social systems which can no longer cope with the pressure on their budgets. A very good example is France, which has taken steps to change the retirement age from 62 to 64, which has created discontent in French society and led to violent street clashes between the discontented population and the police.

At the same time, the military conflict in Ukraine has led to an intensification of competition between different economies and economic models, leaving the EU with no choice but to move away from a strategy based on the continuation of cheap energy from Russia. The war has dealt a major blow to global growth, but the EU tends to be among the biggest losers, with a further drop in global GDP. This trend in the EU may become chronic, leading to justified discontent among the population in EU Member States, with direct social effects and the rise of Eurosceptic currents and the rise of far-right parties.

Inflation, driven largely by rising energy and food prices, has reached levels not seen for decades and is eroding people's purchasing power, which can directly affect rising societal tensions and potentially violent public demonstrations.

Economic disparities in turn tend to lead to increased polarisation in society, which in turn leads to increased societal discontent. After a decline in this trend in 2020 and 2021, populism and populist movements are gaining ground again across Europe, leading to conditions for a further division of society.

The economic repercussions of the war have added to those generated by the COVID-19 pandemic, including in terms of demographic imbalances and an ageing population. The ageing of the population in the EU area will lead to an increase in the migration phenomenon, which will lead to the gradual replacement of the labour force by nationals of the source countries of migration.

These challenges are compounded by the challenges of addressing climate change at European level. The intensity and frequency of extreme weather events have had a serious impact on agriculture, food and energy supplies, which were already under pressure from the war in Ukraine.

### **3. Analysis of the risks generated by the interconnection of challenges at European level from the perspective of the impact on member states, including Romania**

#### **3.1. Resource Shortages**

A combination of factors exacerbated by the conflict in Ukraine, supply chain disruptions caused by pandemics and an increase in extreme weather events point to the end of an era of relative abundance for Europe. In this context, European countries will need to identify new alternative sources of energy, as well as normalising production chains through strong partnerships with the US and other countries with advanced technologies.

This era has been based on cheap energy resources from Russia, cheap imports

from China, easy availability of natural resources and low or no direct costs of climate change impacts. As new global political relationships are forged, there is a need for stable economic relationships characterised by a high degree of diversification of energy sources and other products on which EU Member States depend. A constant in political and economic relations for European states is the US, which can support them by increasing trade and normalising markets. In this context, strengthening the transatlantic economic relationship is a prerequisite for the sustainable development of EU Member States.

Romania has one of the lowest energy dependency rates among EU Member States, which is a major competitive advantage. However, the price of electricity and natural gas has risen, requiring government intervention to subsidise their prices to make the costs bearable for the population. From an energy point of view, Romania needs to take the necessary measures to complete certain strategic projects (e.g. completion of Units 3 and 4 of the Cernavodă Nuclear Power Plant), as well as to start work on the exploitation of natural gas from the Black Sea continental shelf. In this context, Romania can become fully energy independent or even an energy exporter, but this is only possible if the above-mentioned projects are completed.

#### ***Effects with social impact***

The shortage of food and raw materials facing Europe will most likely generate new approaches to how people live and work, but this will be reflected in the economic downturn of the European area. These changes will implicitly generate new challenges to society, to the European industrial model, imposing increased political and financial pressure on the EU and Member States.

While renewables are expected to free Europe from its dependence on Russian gas, building the necessary infrastructure will take time and risks bringing new dependencies, especially on China. In this context, a balanced policy between the US and China is needed, as European countries are currently dependent on the world's two largest economies.

Energy and food prices are expected to continue to rise throughout 2023, which will require active measures to protect the population, especially the economically and socially vulnerable. At EU level, action must also be taken to increase food production by Member States, which requires more dedicated support from European bodies through increased subsidies to farmers and pragmatic solutions to diversify markets. In terms of energy prices, the EU needs to balance the energy mix, while diversifying energy resources and taking measures to switch to green energy.

International food commodity prices are projected to be 24% above baseline in the first quarter of 2023 and 33% higher in 2024. In the absence of social measures, the population will directly feel these effects with social implications, including violent protests.

Inflation and high interest rates will reduce access to finance and investment, leading to lower growth and difficulties in some industries.

The materialisation of such a scenario is likely to lead to increased difficulties for the population in accessing basic services, e.g. affordable services, affordable housing (reduced borrowing capacity), education (lack of teachers) and health (lack of medicines, lack of accessibility of certain medicines, lack of medical staff).

Another risk in terms of public order is the lack of specialised staff in the national public order and security system, which is caused by the lack of career predictability and the low attractiveness of the system. This is also reflected in the decreasing competition for admission to the Ministry of Internal Affairs' schools, which

demonstrates the lack of attractiveness of the Public Order and Security System.

### 3.2. Societal pressures

The pressures on the cost of living of European citizens caused by the war in Ukraine add to those caused by the disruptive effects of the two-year COVID-19 pandemic. The dynamics of these changes challenge the ability of states to adapt to the political changes already in place in terms of people's expectations of long-term prosperity, security and stability. In this context, it is necessary for European states, including Romania, to take measures to increase their economic resilience and especially their energy resilience. Active measures are also needed to strengthen the European defence industry through better cooperation between major defence companies, including the involvement in certain projects of companies from countries on NATO's eastern flank.

#### *Effects with social impact*

In 2023 we are likely to see increased pressure on political leaders to come up with rapid responses on how to mitigate the domestic effects of the war in Ukraine. Populist political forces could exploit these pressures and public discontent, which could lead to an exacerbation of the increased migration flows with an impact on European security. Prior to the outbreak of the military conflict in Ukraine in 2021, Belarus took hybrid measures to increase migration pressure on the Baltic States and Poland, which required extreme measures to prevent the effects of this phenomenon, i.e. the construction of border fences with Belarus.

At EU level, societies that have barely managed a partial recovery from the impact of COVID-19 are now facing additional pressures from rising food and energy prices. These will continue throughout 2023. But the impact is uneven, with some parts of society more vulnerable than others. In this context, measures are needed to ensure the protection of the most vulnerable sections of society, i.e. the economically more vulnerable EU Member States. Increasing economic resilience is also a very important issue, while taking measures to avoid economic recession in EU Member States.

The increased cost of borrowing will lead to reduced access to mortgage finance, which in turn will mean that young people will end up postponing important home-buying decisions. In the long run, this could lead to a downturn in construction and thus lower economic growth. This trend may also be seen in Romania, where banks, in addition to increasing the cost of credit, have taken measures to increase the deposit payable by people intending to buy homes with a mortgage loan. The downturn in the construction sector leads to a corresponding fall in GDP, i.e. in the horizontal building materials industry.

Also, the decrease in purchasing power of the population, amid rising inflation, may lead to an increase in poverty in society and the negative social effects will increase. In this context, the increasing polarisation of society can be expected, with growing societal discontent with the potential for violent protests. Together with the simmering discontent over what the population sees as an insufficient response to the approach to climate change, youth discontent could turn into more protest movements.

The impact of the economic crisis unfolding at European level will vary depending on the specific situation faced by each Member State, with Central and Eastern European countries most likely to be more affected, given their greater economic vulnerabilities.

Companies in Europe, already affected by the COVID-19 pandemic, will face increased energy costs, which will lead to a risk of staff redundancies with direct social effects.

At the same time, other challenges related to food security and climate change are

expected in some source countries of migration, which could lead to an increase in migration flows to the EU. In this context, the social systems of EU Member States may not be able to cope with a massive influx of migrants and the costs involved. In addition, there is also the problem of Ukrainian refugees who have moved to EU Member States and receive substantial funds to support themselves, and as the conflict in Ukraine drags on, these costs will multiply, with direct economic and social effects. Another phenomenon that may occur in the societies of the EU Member States is the refusal to bear the costs of Ukrainian refugees, which will be reinforced by the vehement reaction of far-right or sovereigntist ideological formations.

The continuing high cost of energy will affect the replenishment of gas storage facilities in Europe before next winter. This could lead to new economic pressures towards the end of 2023, with direct effects on energy prices, which will be felt directly by the population. At the same time, higher energy prices will implicitly lead to higher prices for products and services supplied to the population, which will lead to lower purchasing power. In this context, there is a risk that these effects will generate public discontent and even protests, which will jeopardise the stability of the political and social system as a whole.

### **3.3. The use of instruments of coercion/ instrumentalisation / ("weaponisation")**

While by no means a new phenomenon, there are several reasons to believe that weaponisation is and will become even more prominent in the immediate future. First, the year 2023 is expected to continue to be characterised by heightened geopolitical tensions, particularly along two main axes: Russia vs. the West and the US vs. China. Secondly, societal pressures resulting from increased polarisation, the phenomenon of illegal migration, economic recession, etc. create leverage that can be exploited and weaponised by hostile actors.

At the same time, it can be seen that the pursuit of greater autonomy and resilience by each of the major powers generates pressures on states, which can be perceived as a protectionist or even hostile approach, and can even lead to increased societal disruption.

Increasing economic pressures from embargoes, restrictive measures and oil price caps, coupled with the prospect of presidential elections in early 2024, could prompt the Kremlin authorities to take further hostile action against the West.

These are likely to target energy supplies (possibly through the use of intermittent outages in a way to try to divide EU member states and protect revenues), along with further disinformation and propaganda campaigns to maximise discontent and polarisation among European citizens, particularly in the context of elections in several EU member states to be held in 2023.

Turkey, where general elections are scheduled for 18 June 2023, could also continue to take advantage of its role as a mediator between Russia and Ukraine to protect itself from Western criticism of its authoritarian policies by using migration as a tool of coercion and pressure.

#### ***Effects with social impact***

Russia could take advantage of rising tensions within the EU over migration to threaten measures that could worsen the situation by deliberately disrupting global food supplies.

At the same time, other regional actors could resort to measures to weaponise migration, as Belarus, Libya and Turkey have done in the past.

#### 4. Conclusions

The global economic situation is influenced by the geopolitical and security situation, and these influences are particularly important. In this context, the military conflict in Ukraine is indirectly affecting the economic situation in Europe, through a sharp rise in inflation and, consequently, a fall in purchasing power among the population, especially the vulnerable.

The fall in living standards leads to potentially violent protests and the rise of extremist-nationalist currents. In this context, the authorities need to explain to the population the effects of the military conflict in Ukraine and what measures are being taken by governments and the European Commission to mitigate the negative impact of the economic crisis. In fact, the looming economic crisis is due not necessarily to the military conflict in Ukraine but also to the economic imbalances caused previously by the pandemic crisis generated by COVID-19. It can be seen that there has been a 'cascade' of crises, i.e. the pandemic crisis followed immediately by the security crisis generated by the Russian Federation's military intervention in Ukraine.

At European level, there was also an energy crisis caused by the sanctions imposed on the Russian Federation by EU bodies, which was reflected in the sharp rise in hydrocarbon prices. This has led to difficulties for European companies, which have had to increase the prices of products and services offered to the public proportionately.

Romania's main economic partners to which it exports products are EU Member States, and the decline in the economies of these countries will lead to negative effects on national industry, while the profitability of these economic entities will decrease, at the same time as taxes to the state will fall. In this context, in order to avoid entering a deep economic crisis, it is necessary to examine the opportunities for the domestic industry to diversify export markets, while at the same time reducing government spending accordingly. It should be noted that extreme austerity measures at government level alone will not lead to the desired effects, but to a reduction in people's purchasing power and negative economic effects. What government authorities need to do is to optimise public spending by cutting back on certain operations that do not bring benefits to society, while at the same time speeding up the process of digitising public authorities and the public services provided to citizens.

#### References

1. Celi, G., Guarascio, D., Reljic, J., Simonazzi, A. and Zezza, F., 2022. The Asymmetric Impact of War: Resilience, Vulnerability and Implications for EU Policy. *Intereconomics*, 57(3), pp. 143-145.
2. Claey's, G., Guetta-Jeanrenaud, L., McCaffrey, C., Welslau, L., 2022. *Inflation inequality in the European Union and its drivers*. Bruegel.
3. Constantini, A.J., 2022. Understanding Europe's shift to the right. *Politico*, 30 September 2022.
4. Council of the European Union, 2023. *Forward Look 2023*. [pdf] Available at: <forward-look-2023-external\_final.pdf (europa.eu)> [Accessed 2 March 2023].
5. Dadush, U. and Weil, P., 2022. Will Ukraine's refugees go home? *Policy Contribution*, 16/2022, Bruegel.
6. Dobbs, K., 2022. *IEA Adds Another Warning to World About Europe's Long-Term Natural Gas Supply Woes*. Natural Gas Intelligence. [online] Available at: <https://www.naturalgasintel.com/iea-adds-another-warning-to-world-about-europes-long-term-natural-gas-supply-woes/> [Accessed 2 March 2023].

7. Economist Intelligence Unit, 2022. *Europe chart of the week: looming migrant crisis*. [online] Available at: <<https://country.eiu.com/article.aspx?articleid=1302602713>> [Accessed 2 March 2023].
8. Eurofound, 2022. Energy poverty looms as cost of living increases: Data behind the difficulties. *Eurofound Blog*, 03 August 2022.
9. European Central Bank, 2022. *ECB staff macroeconomic projections for the euro area*. [online] Available at: <[https://www.ecb.europa.eu/pub/projections/html/ecb.projections202209\\_ecbstaff~3eafaaee1a.en.html](https://www.ecb.europa.eu/pub/projections/html/ecb.projections202209_ecbstaff~3eafaaee1a.en.html)> [Accessed 2 March 2023].
10. European Commission, 2022. *European Economic Forecast, Autumn 2022*. [online] Available at: <[https://economy-finance.ec.europa.eu/publications/european-economic-forecast-autumn-2022\\_en](https://economy-finance.ec.europa.eu/publications/european-economic-forecast-autumn-2022_en)> [Accessed 2 March 2023].
11. European Investment Bank, 2022. *How bad is the Ukraine war for the European recovery?* [online] Available at: <<https://www.eib.org/en/publications/how-bad-is-the-ukraine-war-for-the-european-recovery>> [Accessed 2 March 2023].
12. Gabuev, A., 2022. China's new vassal: how the war in Ukraine turned Moscow into Beijing's junior partner. *Foreign Affairs*, 9 August 2022.
13. Gettleman, J., 2022. New Brand of Activist Takes Aim at Ukraine War and Climate Crisis, Together. *The New York Times*, 20 June 2022.
14. IPCC, 2022. *Sixth Assessment Report*, 4 April 2022. [online] Available at: <<https://www.ipcc.ch/assessment-report/ar6/>> [Accessed 2 March 2023].
15. Karasapan, O., 2022. Ukrainian refugees: Challenges in a welcoming Europe. *Brookings*, 14 October 2022.
16. Luce, E., 2022. Containing China is Biden's explicit goal. *Financial Times*, 19 October 2022.
17. Mathiesen, K., Oroschakoff, K., Coi, G. and Busquets Guàrdia, A., 2021. Droughts, fires and floods: How climate change will impact Europe. *Politico*, 2 July 2021.
18. Moazzem, K.G., 2022. Europe's dash for gas means blackouts for the Global South. *Euractiv*, 26 July 2022.
19. OECD, 2022. *Delivering for youth: How governments can put young people at the centre of the recovery*, 17 March 2022. [online] Available at: <<https://www.oecd.org/coronavirus/policy-responses/delivering-for-youth-how-governments-can-put-young-people-at-the-centre-of-the-recovery-92c9d060/>> [Accessed 2 March 2023].
20. Oxford Analytica, 2022. *Prospects for the EU in 2023*. [online] Available at: <<https://www.emerald.com/insight/content/doi/10.1108/OXAN-DB274147/full/html>> [Accessed 2 March 2023].
21. PwC, 2017. *The Long View. How will the global economic order change by 2050?* [pdf] Available at: <[pwc-the-world-in-2050-full-report-feb-2017.pdf](https://www.pwc.com/au/en/issues-and-ideas/publications/2017/02/the-long-view-how-will-the-global-economic-order-change-by-2050.pdf)> [Accessed 2 March 2023].
22. Redeker, N., 2022. *Same shock, different effects: EU Member States, exposure to the economic consequences of Putin's war*. Hertie School Jacques Delors Centre, 7 March 2022.
23. Sahay, T., 2022. Non-alignment: the BRICS' new bargaining chip. *GREEN: géopolitique, réseaux, énergie, environnement, nature*, 2(2), pp. 39-42.



# SUBSTANTIATING THE ROLE AND IMPORTANCE OF PUBLIC FINANCIAL AUDIT IN THE EFFICIENT MANAGEMENT OF PUBLIC FINANCIAL FUNDS THROUGH THE LENS OF PUBLIC SECTOR RISKS

**Ph.D. Student, Vasile SECRIERU**

Academy of Economic Studies of Moldova, Republic of Moldova

E-mail: secrieru.v85@mail.ru

**Abstract:** *In this article, the author starts from the observation that public financial management, including public financial control and audit, must take into account the problems and risks inherent in the public institution model itself, but also those specific to a country and its public sector at a certain time. Applying methods such as the method of scientific abstraction, the method of induction, the method of deduction, analysis and synthesis, the author comes to the conclusion that the safest public sectors, implicitly public institutions, are those from countries with developed democracies, namely - Denmark, Finland and Norway, followed by those from Germany and Canada. The following, according to the level of risks, are some post-socialist countries: Estonia, Slovakia, Slovenia, Lithuania, Latvia, Poland. Hungary, Romania and Bulgaria represent countries with public sectors facing high risks related to corruption and government effectiveness. Armenia and the Republic of Moldova face high risks at the level of the sector and public institutions. This finding suggests the conclusion about the lack of efficiency and effectiveness of the internal and external public financial audit activity.*

**Key words:** *financial audit, macroeconomic indicators, risks, public sector.*

**JEL Classification:** *H5, H6, H83.*

## 1. Introduction

Internal and external financial audit activities have been expanded worldwide to protect public institutions, including those at the local level. Although numerous studies examine internal financial audit in public institutions and external financial audit of public institutions, providing further development in these areas, none of them dealt with the development and introduction of a specific methodology for identifying and assessing risks in the public sector and public institutions.

A public financial management regime, including adequate public financial control and audit, must take into account the following two categories of problems and risks:

- a) inherent in the public institution model itself, but also
- b) those specific to a country and its public sector at a given time.

## 2. The inherent risks of the public institution

Referring to the inherent risks in the public institution model itself (category a), the author considers the following to be the main ones:

- public institutions can use public money for purposes other than those provided by the legislative authority (Parliament, local council, etc.) and the executive authority (Government, town hall, etc.);
- public institutions can convert the national wealth into uses other than those provided by the legislative authority (Parliament, local council, etc.) and the executive authority (Government, town hall, etc.);
- public institutions can, directly or indirectly, increase the public loan beyond the limits approved by the legislative authority (Parliament, local council, etc.) and the executive authority (Government, town hall, etc.);
- public institutions may engage in corrupt practices for the illicit enrichment of ministers, officials or favored friends or complicate the application of anti-corruption rules;

- public institutions can serve as vehicles for the circumvention of financial and administrative rules by line ministries or other parties;
- it is possible that the finances of the public institution are not properly consolidated in the financial reports of the executive authority (Government, town hall, etc.);
- accountability provisions such as transparency, performance reporting, financial reporting, control and auditing may be weak or non-existent;
- the rights of citizens to appeal against the decisions of the public institution may be compromised;
- the executive branch may not have sufficient powers to impose remedies or sanctions when public institutions fail to meet their responsibilities.

It is important to note the following risky situation which, if it exists in a given country, must be fully integrated into a public institution reform strategy:

- qualified personnel, IT systems or public financial funds may not be available in sufficient quantity to achieve the concepts of public financial control, public audit and governance expressed in legislation; even if the legislation incorporates the type of safeguards required, not applying them represents an invitation to failure.

### **3. Public sector risks from the perspective of public financial audit**

In order to argue and evaluate the risks faced by a country and its public sector (category *b* of problems and risks) from the perspective of substantiating the role and importance of financial audit in the effective management of public financial funds, the author developed and applied the following algorithm:

- a) at the first stage, indicators were selected that capture the risks and vulnerabilities of the public sector and implicitly of public institutions and that can be mitigated or removed through an effective internal and external financial audit activity;
- b) the information sources for the selected indicators were identified;
- c) the variation thresholds of the values of these indicators were identified;
- d) countries were selected which, in addition to the identified variation thresholds, will serve as benchmarks in the analysis process. We mention, in this context, that countries from the category of developed democracies were selected; EU countries, but with a post-socialist past; CIS countries and countries with poorly developed democracies;
- e) the values of the selected indicators were determined for the countries included in the analysis, including the Republic of Moldova;
- f) for the selected indicators and the selected countries, the matrix of risks faced by public institutions in these countries was developed and quantified, and the position of the Republic of Moldova among them was identified.

Table 1 presents the indicators identified by the author with their characteristics.

Thus, for the perception and evaluation of the legal risk (related to the legislation) the following are used:

- Rule of Law Index. The Index is designed and monitored by the World Justice Project® (WJP) - an independent, multidisciplinary organization working to promote the rule of law around the world; and
- Regulation Quality Index. The index is designed and monitored by the World Bank Group.

For the perception and assessment of the risk of failure of the government's activity, the following are used:

- Government Effectiveness Index. The Government Effectiveness Index is an index developed by the World Bank Group;
- Shadow economy as a percentage of GDP.

- For the perception and evaluation of the risk of corruption, the following are used:
- Corruption Control Index. The Corruption Control Index is constructed by the World Bank Group;
  - Corruption Perceptions Index. This index is developed and monitored by the non-governmental organization Transparency International.

**Table no. 1. Risk assessment indicators related to public institutions**

Name of the indicator	Indicator definition	Variation limit
Rule of law index	The Rule of Law Index captures perceptions of the extent to which agents trust and respect the rules of society and, in particular, the quality of contract enforcement, property rights, the police and courts, and the likelihood of crime and violence.	
Government effectiveness index	The Government Effectiveness Index captures perceptions of the quality of public services, the quality of the civil service and its degree of independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	
Control of corruption	The Control of Corruption Index captures perceptions of the extent to which public power is exercised for private gain, including petty and grand forms of corruption, as well as state capture by elites and private interests.	Min. -2,5: (weak level)
Regulatory quality index	The Regulatory Quality Index captures perceptions of the government's ability to formulate and implement sound policies and regulations that enable and promote private sector development.	Max. +2,5: (strong level)
Voice and accountability index	The Voice and Accountability Index captures perceptions of the extent to which citizens are able to participate in the election of their government, as well as freedom of speech, freedom of association and free media.	
Political stability index	The Political Stability and Absence of Violence/Terrorism Index measures the perception of the likelihood that the government will be destabilized or overthrown through unconstitutional or violent means, including politically motivated violence and terrorism. The index is an average of several indices, such as those from the Economist Intelligence Unit, World Economic Forum and Political Risk Services.	
Corruption Perceptions Index	The Corruption Perceptions Index is an indicator of perceptions of public sector corruption, i.e. administrative and political corruption. Indicator values are determined by using information from surveys and corruption assessments collected by a variety of reputable institutions.	100 = no corruption
Shadow economy, percent of GDP	Shadow economy as a percentage of total annual GDP. The detailed estimation methodology derives from the work of Medina and Schneider (2018).	

Source: developed by the author based on international statistics.

In the author's opinion, these risks are, on the one hand, important aspects that oblige the institutions responsible for the internal and external public financial audit to immediate detection and management activities, and, on the other hand, the evolution of these indicators, determines the formulation of the necessary conclusions - vis-à-vis the quality of the internal and external financial audit.

The results of the evaluation of these indicators are presented in table 2.

**Table no. 2. The matrix of risks faced by public institutions, 2021**

Name of the indicator	Finland	Norway	Denmark	Canada	Germany	Estonia	Lithuania	Slovenia	Latvia	Israel	Slovakia	Hungary	Poland	Romania	Georgia	Bulgaria	Armenia	Moldova	Kazakhstan	Azerbaijan	Ukraine	Russia	Belarus	Venezuela		
Rule of Law Index	Low risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	Critical risk	Critical risk	
Government Effectiveness Index	Low risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	Critical risk	Critical risk
Corruption Control Index	Low risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	Critical risk	Critical risk
Corruption Perception Index	Low risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	Critical risk	Critical risk
Regulation Quality Index	Low risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	Critical risk	Critical risk
Index Opinions and responsibility	Low risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	Critical risk	Critical risk
Political Stability Index	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Critical risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	Critical risk	Critical risk
Shadow economy as a percentage of GDP	Low risk	Moderate risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	Low risk	Moderate risk	Moderate risk	Moderate risk	Moderate risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	High risk	Critical risk	Critical risk

**Note:** The level of risk is established by comparison with the range of variation

Critical risk	Critical risk
High risk	High risk
Moderate risk	Moderate risk
Low risk	Low risk
Acceptable risk	Acceptable risk

**Source:** developed by the author according to the Global Economy International Database.

Depending on the recorded values and the limits related to the indicators considered in this analysis, the author established the following risk categories: critical risk - represented in red, high risk - represented in pink, moderate risk - represented in beige; low risk – represented in light green and acceptable risk – represented in dark green.

From the data reflected in these two tables, it follows that the safest public sectors, implicitly public institutions, are those in countries with developed democracies, namely - Denmark, Finland and Norway, followed by those in Germany and Canada. This finding indicates the existence of one of the following situations regarding the financial audit: - either the political, economic and social environment, being relatively safe, facing acceptable or low level risks, determines the specificity of financial audit activities (the audit has a rather reactive role); - either it is of such a nature, including as a result of internal and external audit activities (audit has a proactive role); - either both situations occur at the same time.

The following, according to the level of risks, are some post-socialist countries, including countries from the former USSR: first of all, Estonia, Slovakia, Slovenia, Lithuania, Latvia, Poland. In this case, the risks faced by these countries are predominantly of a moderate level. This finding suggests the need to intensify and streamline financial audits at the level of public institutions in these countries.

Hungary, Romania and Bulgaria represent countries with public sectors facing high risks related to corruption and government effectiveness. Obviously, these conclusions must be found in the redirection of financial audit activities to eliminate these risks.

The situation of Armenia and the Republic of Moldova is a complicated one in this regard. Both countries face high risks at the level of the sector and public institutions. This finding suggests the conclusion about the lack of efficiency and effectiveness of the internal and external public financial audit activity.

At the same time, countries such as Russia, Belarus, Ukraine, Kazakhstan, Azerbaijan have public sectors and public institutions that face critical risks in certain segments.

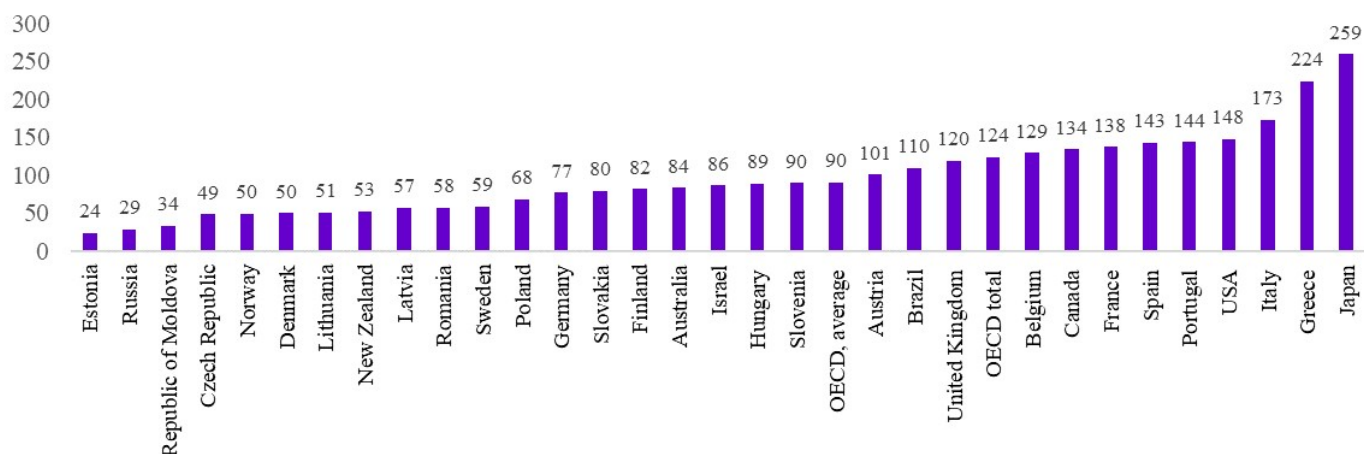
We mention in this context that according to the International Standards of Supreme Auditing Institutions, ISSAI, issued by the International Organization of Auditing Institutions, INTOSAI, public financial audit services are intended to provide assurances regarding the financial information prepared by authorities or public sector entities regarding to their use and management of public funds and assets (ISSAI, 2020). The result of public financial audit services, presented in the form of audit opinions and/or reports, can serve as a basis for holding responsible persons accountable. As such, financial auditing is an important part of the accountability process for public finances.

#### **4. Arguing the role of audit in the public sector of the Republic of Moldova through the unfavorable evolution of macroeconomic indicators.**

Considering the conclusion of the OECD (2022) which is based on the finding that 11 out of 35 of its member countries have debts of more than 100% of GDP, and the consequences of the Covid-19 pandemic and the military conflict in Ukraine are increasing government spending, good public debt management is essential.

Figure 1 shows the level of public debt to GDP in a range of countries in 2021.

Public sector auditing, including internal and external financial auditing, is required for government accountability, and forecasts suggest these demands will increase. The predictions are based on the reality that resources are limited in the public sector as citizens demand more services, better infrastructure and joint responses to crises (such as the Covid-19 pandemic and the war in Ukraine). Citizens also contribute to governments' limited revenues. To meet the needs of citizens, governments frequently resort to debt instruments, with public debt rising globally; to the request for foreign financing through grants, the expansion of the inflationary phenomenon.



**Figure no. 1. Public debt in % of GDP in some countries, 2021**

Source: developed by the author based on OECD information (2022).

The problem of public debt, although it is at a low level compared to the countries included in the analysis represented in figure 1, is also amplified for the case of the Republic of Moldova (table 3).

**Table no. 3. Evolution of public sector debt in the Republic of Moldova**

	2018	2019	2020	2021	2022
Public sector debt, million lei	57,881.3	57,932.5	72,639.4	81,828.3	98,480.9
GDP, million lei	192,508.6	210,378.1	199,734.0	241,871.0	272,555.9
Public sector debt in % of GDP	30.1	27.5	36.4	33.8	36.1

Source: developed by the author on the basis of MF, 2022a.

Table 4 reflects the increase in the budget deficit in the Republic of Moldova, in particular, under the impact of the COVID-19 pandemic (in 2020 it recorded over 5% of GDP) and the war started by Russia in Ukraine (in 2022 it recorded over 3% of GDP).

**Table no. 4. The evolution of budget aggregates in the Republic of Moldova**

	2018	2019	2020	2021	2022
Expenses and non-financial assets of BPN, million lei	59,608.9	65,975.6	73,269.8	82,013.5	100,374.0
BPN revenues, million lei	57,995.9	62,949.2	62,650.0	77,373.0	91,505.4
incl. grants received in BPN, million lei	387.4	1,602.6	649.6	2,447.4	4,539.4
Budget deficit at the BPN level	-1,613.0	-3,026.4	-10,619.8	-4,640.5	-8,868.6
GDP, million lei	192,508.6	210,378.1	199,734.0	241,871.0	272,555.9
The share of the budget deficit in GDP, %	-0.84	-1.44	-5.32	-1.92	-3.25
Share of grants in total BPN revenues, %	0.7	2.5	1.0	3.2	5.0
Share of budget grants in GDP, %	0.2	0.8	0.3	1.0	1.7

Source: developed by the author on the basis of MF, 2022b.

Partially, as can be seen from table 4, the budget deficit is financed by increasing the public debt, but, for the most part, the grants obtained from the development partners of the Republic of Moldova cover the negative difference between BPN's revenues and expenses. Thus, although under the impact of the pandemic, the share of foreign grants in the total BPN was reduced in 2020 compared to 2019 by 1.5 p.p., in 2022 this indicator reached 5% or 1.7% of GDP.

At the same time, the amplification of the inflationary phenomenon has a considerable contribution to the financing of the budget deficit, which can be seen from the content of table 5.

**Table no. 5. The evolution of the inflationary phenomenon in the Republic of Moldova**

	2018	2019	2020	2021	2022
Consumer price indices (CPI), previous year=100	103.05	104.84	103.77	105.11	128.74

**Source:** developed by the author based on information from the National Bureau of Statistics of the Republic of Moldova.

Available at:  
[https://statbank.statistica.md/PxWeb/pxweb/ro/40%20Statistica%20economica/40%20Statistica%20economica\\_05%20PRE\\_PRE010\\_serii%20anuale/PRE010100.px/?rxid=8e69070f-3ac5-4b22-ab66-eab8ee8cc25a](https://statbank.statistica.md/PxWeb/pxweb/ro/40%20Statistica%20economica/40%20Statistica%20economica_05%20PRE_PRE010_serii%20anuale/PRE010100.px/?rxid=8e69070f-3ac5-4b22-ab66-eab8ee8cc25a)

In terms of economic trends, the European Commission (2012) and the Mowat Center (2014) highlight resource scarcity as an important trend that future governments will face towards the 2050s and 2030s respectively. Amplifying these conclusions that were formulated well before the COVID-19 pandemic and the war in Ukraine, it logically follows that the Covid-19 pandemic crisis will likely lead to a recession and increase in public debt, making financial resource constraints a major feature for the future of the public sector, despite governments' desires to increase economic growth rates, post-pandemic. Citizens need accountability for any government support given to private sector organisations, as well as any increase in public debt.

Governments are therefore challenged to undertake “a paradigm shift”, “innovation” and “inclusive strategies” (European Commission, 2012), especially since, in addition to the consequences of the COVID-19 pandemic crisis and Russia's military aggressions in Ukraine, natural disasters are also expected to increase (National Intelligence Council, 2012).

## 5. Conclusions

The conclusion that emerges from these analyses, is that the public audit, especially the financial audit, both internal and external, must be streamlined to such an extent that it ensures, through all the techniques and tools at its disposal, rational use of public financial means. Moreover, it is quite possible that current and future macroeconomic developments will require several cooperative audits (i.e. joint, coordinated or parallel audits).

## References:

1. BNS, 2022. *Information on price indices, by sector of the economy on average per year*. [online] Available at:  
<[https://statbank.statistica.md/PxWeb/pxweb/ro/40%20Statistica%20economica/40%20Statistica%20economica\\_05%20PRE\\_PRE010\\_serii%20anuale/PRE010100.px/?rxid=8e69070f-3ac5-4b22-ab66-eab8ee8cc25a](https://statbank.statistica.md/PxWeb/pxweb/ro/40%20Statistica%20economica/40%20Statistica%20economica_05%20PRE_PRE010_serii%20anuale/PRE010100.px/?rxid=8e69070f-3ac5-4b22-ab66-eab8ee8cc25a)> [Accessed 12 March 2023].
2. European Commission, 2012. *Global Europe 2050*. Luxembourg: Publications Office of the European Union. [online] Available at:

- <[https://espas.secure.europarl.europa.eu/orbis/sites/default/files/generated/document/en/KINA25252ENC\\_002%20%281%29.pdf](https://espas.secure.europarl.europa.eu/orbis/sites/default/files/generated/document/en/KINA25252ENC_002%20%281%29.pdf)> [Accessed 12 March 2023].
3. ISSAI, 2020. *Principes de l'audit financier*. INTOSAI. [online] Available at: <<https://www.issai.org/wp-content/uploads/2020/12/ISSAI-200-Principes-de-laudit.pdf>> [Accessed 12 March 2023].
  4. Medina, L. and Schneider, F. 2018. *Shadow Economies Around the World: What Did We Learn Over the Last 20 Years?* International Monetary Fund. [online] Available at: <<https://www.imf.org/en/Publications/WP/Issues/2018/01/25/Shadow-Economies-Around-the-World-What-Did-We-Learn-Over-the-Last-20-Years-45583>> [Accessed 12 March 2023].
  5. MF, 2022a. *The reports of the Ministry of Finance of the Republic of Moldova regarding the situation in the field of public sector debt, state guarantees and state recrediting*. [online] Available at: <<https://mf.gov.md/ro/datoria-sectorului-public/rapoarte/datoria>> [Accessed 12 March 2023].
  6. MF, 2022b. *The reports of the Ministry of Finance of the Republic of Moldova regarding the execution of the budget*. [online] Available at: <<https://mf.gov.md/ro/trezorerie/rapoarte-privind-executarea-bugetului/rapoarte-anuale>> [Accessed 12 March 2023].
  7. Mowat Centre, 2014. *Future State 2030: The global megatrends shaping governments*. [online] Available at: <<https://assets.kpmg.com/content/dam/kpmg/pdf/2014/02/future-state-2030-v3.pdf>> [Accessed 12 March 2023].
  8. National Intelligence Council, 2012. *Global trends 2030: Alternative worlds*. [online] Available at: <[https://www.dni.gov/files/documents/GlobalTrends\\_2030.pdf](https://www.dni.gov/files/documents/GlobalTrends_2030.pdf)> [Accessed 12 March 2023].
  9. OCDE, 2022. General government debt statistics Available at: <[https://www.oecd-ilibrary.org/governance/general-government-debt/indicator/english\\_a0528cc2-en](https://www.oecd-ilibrary.org/governance/general-government-debt/indicator/english_a0528cc2-en)>.
  10. The Global Economy Data Base. [online] Available at: <[https://www.theglobaleconomy.com/rankings/wb\\_ruleoflaw/](https://www.theglobaleconomy.com/rankings/wb_ruleoflaw/)> [Accessed 12 March 2023].



## DETERMINANTS OF DEPOSIT MONEY BANKS' CREDIT TO MANUFACTURING SECTOR IN NIGERIA

**Abimbola Oluwaseyi ADEMOLA**

Department of Banking and Finance, Osun State University,  
Osogbo, Osun State, Nigeria  
E-mail:

**Abstract:** *The study investigated the determinants of Deposit Money Banks (DMBs) credit to manufacturing sector in Nigeria. Specifically, the effect of macroeconomic factors proxied by inflation rate (INF), liquidity ratio (LQD), loan to deposit ratio (LTD) and prime lending rate (PLR) on DMBs' credit was evaluated. Annual data on selected DMBs were taken from the CBN statistical bulletin from 1986 – 2021. Augmented Dickey-Fuller test (ADF) and Autoregressive Distributed Lag (ARDL) estimation techniques were employed. Results revealed that INF and PLR have positive but insignificant effect on DMBs' credit in the long run. Also LTD ratio has positive significant effect in the short run, while LQD affects banks' credit negatively both in the short and long run. Moreover, results showed short run causality from explanatory variables to deposit money banks' credit. The study concluded that INF, LTD, LQR and PLR are critical factors that influence DMBs' credit to manufacturing sectors. Therefore, the study recommends that Central Bank of Nigeria should implement favorable monetary and macroeconomic policies so as to facilitate banks' lending to Nigerian manufacturing firms thereby enhancing economic growth.*

**Keywords:** *Banks' credit, determinants, economic growth, financial intermediation.*

**JEL Classification:** *E2, E5, G2.*

### 1. Introduction

The growth of the Nigerian economy is substantially driven by the manufacturing sector. The sector is in charge of turning raw materials into final products. In addition to diversifying the economy and generating jobs, it also helps the country's foreign exchange profits. According to Gbadebo et al. (2017), the sector serves as a catalyst that quickens the structural transformation and economic diversification process, allowing a nation to fully exploit its factor endowment for sustainable economic growth. In addition, the manufacturing sector dominates and has surpassed the service sector in a number of Organization for Economic Co-operation and Development (OECD) countries in terms of its contribution to the Gross Domestic Product (GDP) (Anyanwu, 2010).

Regrettably, Nigeria has been a pitiful case despite having tremendous natural resources as the manufacturing sector still makes up a relatively small portion of the country's GDP. Additionally, government's attempts to promote industrialization through raising the output of manufacturing companies have failed. Even as the country strives to become a global economic leader, this is cause for concern (Omankhanlen and Owonibi, 2012). According to Omankhanlen and Owonibi (2012), this industry faces a wide range of difficulties, including weak capital mix, inadequate lending opportunities, budget deficits, and macroeconomic instability. However, the author stressed that despite the sector being designated as a priority sector by the monetary authorities, it faces significant difficulties due to suffocatingly high interest rates and banks' reluctance to lend to it. Nigerian manufacturing firms are still experiencing declining growth, according to Abubakar & Gani (2013), since it is difficult to get financial resources, particularly from the banks, who control roughly 90% of the financial sector's assets and focus their loans on the oil and gas sectors

This demonstrated how important Deposit Money Banks' (DMBs') credits are to the manufacturing sector's efficient performance. Its accessibility is essential for fostering economic growth, particularly in developing and emerging markets (Imran & Nishat, 2013). The performance of manufacturing sector has greatly improved as a result of accessibility to DMBs credits, which also help banks meet their performance goals (Casolaro et al, 2002).

Unfortunately, despite ongoing policy strategy to attract credits to the manufacturing sector, the Nigerian manufacturing companies have proven to be unappealing for DMBs credits at low lending rates (Ogar, Nkamare, & Effiong 2014). As the central bank of Nigeria (CBN report, 2009) noted, commercial bank loans and advances to the manufacturing sector practically continuously departed from required minima during the regulatory regime. In addition, bank lending marginally declined in 2017 and 2018, with movements of (-2.3%) and (-3.9%), respectively (CBN, 2021).

Observing the trend of DMBs credit to the manufacturing sector shows that DMBs willingness to provide credit to the manufacturing sector is contingent upon several factors. These factors are thought to be crucial in the industrialization process, as such governments over the years have attempted to mitigate the adverse business climate that is currently prevalent in the manufacturing sector. It is believed that investing in the manufacturing sector to boost industrial capacity and technological innovation is the quickest way for transition from having a primarily traditional industry to a contemporary manufacturing sector. Therefore, the purpose of this study is to investigate the factors that influence DMBs' lending to Nigeria's manufacturing sector.

### **Research Hypotheses**

The study hypotheses were stated in null form.

- Ho<sub>1</sub>: Inflation rates have no effect on DMBs credit to manufacturing sector in Nigeria.
- Ho<sub>2</sub>: Liquidity ratio does not affect DMBs credit to manufacturing sector in Nigeria.
- Ho<sub>3</sub>: Loan to deposit ratio does not affect DMBs credit to manufacturing sector in Nigeria.
- Ho<sub>4</sub>: Prime lending rates have no significant effect on DMBs credit to manufacturing sector in Nigeria.

## **2. Literature Review**

### **2.1 Conceptual Review**

#### **2.1.1 Banks' Credit**

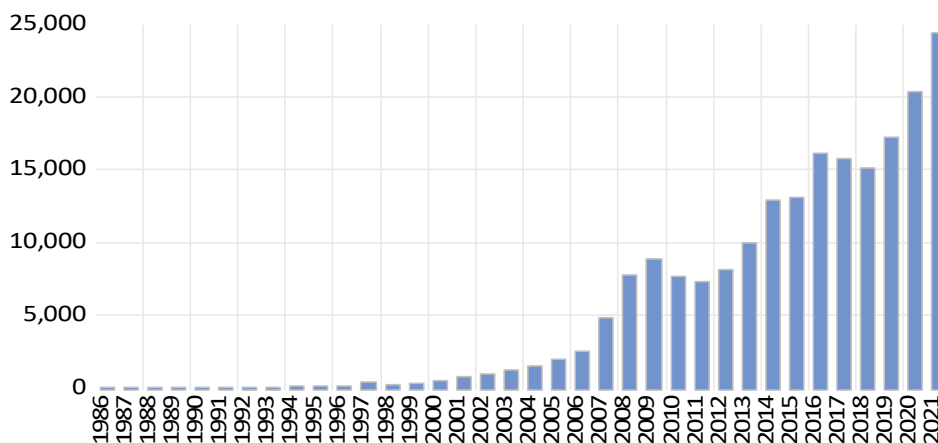
The term banks' credit refers to the amount of money made accessible to an individual, business or corporate borrower from a banks as loans and advances. In other words, it is the total amount of money made accessible to a group of businesses in the same or different sectors of an economy from a bank in order to accelerate economic growth. CBN (2003) defines bank credit as the sum of loans and advances given by the banks to different economic players. Similarly, Nigerian Deposit Insurance Corporation (NDIC) Prudential Guidelines (1990) describes bank credit as the sum of all loans, advances, guarantee, overdraft, lease, commercial papers, bills discounted and banker acceptance. Credit from banks can either be short, medium or long-term. While working capital can be financed by short-term credit, long and medium term credit are mostly utilized to finance long-term investments for productive purposes (Akindutire, 2021). Ndifong and Ubana (2014) explained that DMBs being a generic name for commercial and merchant banks operating in the nation since the start of universal banking in 2001 hence DMBs credit is the borrowing capacity of these universal banks to offer loans to individual, government, or organization. Nwanyanwu (2010) asserted that credit is money that a lender lends to a borrower. Credits and banks are interdependent financial twins.

Therefore, banks serve as a conduit for money from surplus parts of the economy to economically deficient ones that offer profitable investments. Credit allocation was described by Agbanike et al. (2016) as the conduit via which resources are allocated for financially sound investment activities that increase the production of several high-priority economic sectors.

#### **2.1.2 Trend of Banks' Credit in Nigeria**

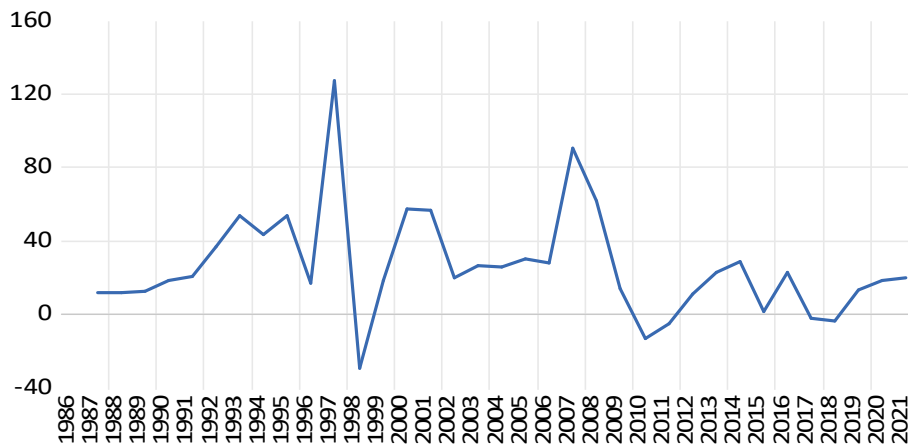
Banking sector in Nigeria has undergone several eras namely; the free banking era (1892–1952); regulation era (1952–1986); deregulation era (1986–2004); consolidation era (2004–2005); and post-consolidation era (2006 to date). Over the last two decades Nigerian banking sector had experienced a number of major changes caused by restructuring and liberalisation of the financial sector as well as technological progress (Odeleye, 2014). However, among the different phases mentioned the most significant is consolidation era. The aggregate loans and advances data of Nigerian DMBs from deregulation era to date are illustrated figures below.

**Fig 1**  
 Aggregate Loans and Advances of  
 DMBs in Nigeria, 1986 – 2021 (#'B).



*Source: Author's compilation from CBN Statistical Bulletin, 2021.*

**Fig 2.**  
 % Change (Annual Rate) of Aggregate Loans and Advances of  
 DMBs in Nigeria, 1986 – 2021.



*Source: Author's compilation from CBN Statistical Bulletin, 2021.*

As shown in Figures 1 and 2 respectively, aggregate DMBs credit to economic sectors has been increasing with significant % change on a year-on-year basis. At the end of 1986 the aggregate credit was 15.70billion and continued to increase year-on-year until 1998 when there was a negative fall of (-29.2%) from 385.55billion in 2017 to 272.90billion in 1998 thus the trend continued to grow from then on. In 2004 the aggregate credit stood at 1,519.24billion and increased to 1,976.71billion in 2005 and 2,524.30billion in 2006 approximately (30.1%) and (27.7%) changes respectively. The trend subsequently witnessed significant growth in 2007(90.7%) and 2008(62%). The increase trend could be attributed to effect of banks consolidation which raised the minimum capital base of banks to N25 billion. However, the minimum capital requirements for banks was N2 billion before the era of consolidation. The aggregate credit kept increasing up to 2009 when there was a fall in annual growth of aggregate credit of about (14.3%) with subsequent negative decrease in 2010 and 2011 approximately (-13.5%) and (-5.1%) changes respectively which reflecting the aftermath of the 2007–2008 financial crisis.

The intensity of the financial meltdown triggered a worldwide credit crunch and the contraction of bank lending in Nigeria between 2009. Nevertheless, the Nigerian banking sector would have faced systemic risk during the 2007–2008 financial crisis, but for the earlier preemptive capital base requirement by the monetary authority. Furthermore, following the financial crisis' recovery, bank lending in Nigeria began to rise in 2012 and continued to do so through 2016. As a result, bank lending had minor negative declines in 2017 and 2008, with movements of (-2.3%) and (-3.9%) correspondingly.

## **2.2. Theoretical Review**

### **The Bank Lending Channel Theory**

The key work of Bernanke and Blinder (1988), which relies on the research of Tobin (1969) and Brunner and Meltzer, was an earlier proponent of the bank lending channel (1972). The hypothesis postulates that changes in monetary policy will influence the availability of intermediate loans, namely loans provided by DMBs. According to the theory, changes in monetary policy will have an impact on the loans that banks can offer (i.e., their liabilities), which would then have an impact on the total number of loans they can make (i.e. assets of the banks).

According to Bernanke and Blinder's (1988) model, there are three requirements that must be met in order for a distinct bank lending channel of monetary policy transmission to exist. These requirements are (i) monetary authorities should be able to affect the supply of intermediated loans by changing the amount of reserves in the banking system; (ii) open-market bonds and intermediated loans must not be perfect substitutes; and (iii) there must be imperfect price adjustment that inhibits the neutrality of any monetary policy shock.

According to Grodzicki et al. (2000), the existence of a bank lending channel is predicated on two key tenets: monetary policy decisions have an impact on banks' liquidity positions, and changes in the supply of bank loans have an impact on borrowers because they have limited access to alternative sources of funding. Oyebowale (2020) also proposed that monetary authorities implement monetary policies inside an economy through the bank lending channel. As an illustration, an expansionary monetary policy through the bank lending channel enhances bank deposits and reserves, result in a rise in the supply of bank loans, which in turn increases the availability of bank loans to boost investment and consumer spending.

### 2.3 Empirical Review

Akindutire (2021) investigated factors that affect DMBs lending behaviour to private sector of Nigerian economy using annual time series data spanning from 1986 to 2017. The study used secondary data sourced from CBN Statistical Bulletin while the estimation techniques used for the study were the Augmented Dickey-Fuller test and autoregressive distributed lag (ARDL). Findings demonstrated a substantial correlation between bank lending practices and the determined factors. Additionally, it was discovered that factors do indeed change over time. However, among the relevant variables, deposit volume and M2G impact bank lending behavior both immediately and over time, whereas RSR, INF, and LDR slow down lending to the private sector

The study of Oyebowale (2020) evaluated the factors influencing bank lending in Nigeria using annual data from 1961 to 2016. The study adopted autoregressive distributed lag (ARDL), bounds testing approach and Granger causality tests. The study model looked at how changes in the loan-to-deposit ratio, inflation, broad money, and bank capital affected changes in bank lending. The results of the Granger causality tests indicated that, in contrast to other explanatory variables, there was no causal relationship between growth in bank lending and broad money growth in Nigeria. The findings also showed that rising bank lending Granger-causes rising loan-to-deposit ratio and rising inflation in Nigeria.

Bustamante et al. (2019) looked into the factors that influence credit growth and the banks' role in lending in Peru.

Bustamante *et al.* (2019) looked into factors influencing credit growth and the bank lending channel in Peru. Regression analysis was utilized to estimate bank-specific variables, which included bank size, liquidity, capitalization, funding, revenue, and profitability. Findings showed that banks with better capitalization, higher liquidity, lower risk, and higher profits tended to extend more credit, particularly in local currencies. The study also discovered proof that reserve restrictions, both in local and foreign currency, are successful in reducing Peru's domestic.

Adzis et al. (2018) evaluated macroeconomic and bank-specific factors influencing lending by commercial banks in Malaysia from 2005 to 2014. The estimating method used was panel regression. Findings indicate that while liquidity has a negative impact on lending activities in Malaysia, bank size and deposit volume have a favorable impact on commercial bank lending. However, the study did not find strong evidence to support the idea that Malaysia's gross domestic product (GDP), lending rate, or cash reserve requirement have any impact on the country's commercial bank lending activities.

Akani and Oparaordu (2018) used time series data from the Central Bank of Nigeria Statistical Bulletin to study the factors that determine commercial banks' lending to the country's domestic economy. The study used the Augmented Dickey Fuller test, co-integration test, ordinary least square test, and Granger causality test. The results showed that while deposit rates, the number of commercial bank branches, and the openness of the economy have negative effects on total loans and advances, deposit liabilities, and the liquidity ratio have favorable effects. Additionally, it was discovered that while governmental spending and the economy's openness have a negative impact on total commercial bank loans and advances, the exchange rate, inflation rate, and real gross domestic product had a favorable impact.

Similar to this, Baoko et al. (2017) used annual time series data spanning the years 1970 to 2011 to investigate the variables impacting bank credit allocation to the private sector in the Ghanaian economy. The Autoregressive Distributed Lag (ARDL) framework was used in the investigation. The study discovered that the broad money supply, bank assets, real lending rate, and bank deposits are important short- and long-term determinants of bank

credit. The findings also showed that inflation had a notable, positive effect, but only in the near term. The results also showed that rising bank deposit mobilization does not always result into increased private sector loan availability.

Using the Cochrane-Orcutt technique, Ebere and Iorember (2016) investigated the impact of commercial bank loan on Nigeria's manufacturing sector output from 1980 to 2015. According to the study, Nigeria's manufacturing sector output is positively impacted by loans, advances, and a large money supply, while the country's inflation rate and interest rate are negatively impacted.

Olanrewaju et al. (2015) used the Cointegration analysis and error correction model to examine the impact of banking sector reforms on the manufacturing sector's production in the Nigerian economy between 1970 and 2011. (ECM). The results showed that whereas financial deepening and interest rates had negative and insignificant effects on manufacturing production, bank assets, lending rates, exchange rates (EXR), and real interest rates had strong and positive effects on manufacturing output

Akinlo and Oni (2015) used time series data spanning the years 1980 to 2010 to explore the factors influencing bank loans to the private sector in Nigeria. The findings demonstrated that credit to the private sector is generally increased by broad money, cyclical risk premium, and liquidity ratio. However, prime lending rate and reserve ratio lead to a decrease in credit to the private sector. It was also revealed from the results that private credit increases with inflation, but not one to one, meaning that inflation appear to reduce bank credit to the private sector.

Ogar et al. (2014) used time series data for a sample period of 1992–2011 to assess how commercial bank lending can affect Nigeria's manufacturing sector. The study used ordinary least square regression analysis and found that the manufacturing sector in Nigeria was significantly impacted by commercial bank loans. From 1981 to 2010, banks' contributions to Nigeria's manufacturing and agricultural sectors' funding were examined by Adolphus and Deborah (2014). Multiple regression analysis was utilized with descriptive statistics in the study. The results showed that there is a considerably negative association between merchant bank lending and agricultural contribution to GDP and a very weak correlation between commercial bank lending and the contribution of agriculture to GDP.

#### **2.4. Gap in the Literature**

In Nigeria, only few studies incorporated variables such as prime lending rate and loan to deposit ratio as factors responsible for credit behavior of DMBs to manufacturing sectors in Nigeria. As a result of this, there is a gap, thus necessitating further research effort on these factors. Also unlike past studies, this study covers a longer period (1986 – 2021) in order to examine the factors that influence banks' credit allocation to manufacturing sectors in Nigeria.

### **3. Research Methodology**

Causal research design is used in this study Annual data on selected DMBs were taken from the CBN statistical bulletin from 1986 –2021 . In order to estimate the model's long and short-run parameters, the study used autoregressive distributed lag (ARDL) technique, while Augmented Dickey-Fuller (ADF) is used to assess the stationarity of the variables..

### 3.1. Measurement of Research Variables

Variables	Definition	Measurement
DMBC	Deposit Money Banks Credit	Aggregate of total DMBCs loan and advances to individuals, corporate bodies and governments from banking system.
INF	Inflation Rate	This is general increase in prices and fall in the purchasing value of money.
LQD	Liquidity Ratio	Liquidity ratio is the ratio between the liquid asset and the liabilities of a bank or other institution.
LTD	Loan to Deposit Ratio	It is the ratio between a bank's total loans and its total deposit
PLR	Prime Lending Rate	This the rate of interest charged by DMBCs for lending money.

### 3.2. Model Specification

The study used a model from Akindutire (2021). The model read as follows:

$$PSC_t = 0 + 1 VD_t + 2 LDR_t + 3 Rsr + 4 M2G_t + 5 Inf + t$$

In this scenario, the explained variable is credit to the private sector (PSC), while the explanatory variables are deposit volume (VD), lending rate (LDR), reserve requirement (RSR), money supply to GDP (M2G), inflation rate (INF), and disturbance term (). However, this model was adopted and modified by adding regulation intervention, namely, prime liquidity and loan to deposit ratio, and by deleting deposit volume, reserve requirement, and money supply to GDP (M2G).

Thus, the modified model is expressed in functional form as

The study used a model from the work of Akindutire (2021). The model is stated as thus:

$$PSC_t = \beta_0 + \beta_1 VD_t + \beta_2 LDR_t + \beta_3 RSR_t + \beta_4 M2G_t + \beta_5 INF + \mu_t$$

Where credit to the private sector (PSC) is the independent variable while the explanatory variables are volume of deposit (VD), lending rate (LDR), reserve requirement (RSR), money supply to GDP (M2G), Inflation rate (INF), and ( $\mu$ ) is the disturbance term . However, this model was adopted and adapted by incorporating regulation intervention that is, prime liquidity and loan to deposit ratio and by removing volume of deposit, reserve requirement and money supply to GDP (M2G).

The adapted model is stated thus in a functional form as:

$$DMBC = f(INF, LQD, LTD, PLR) \dots \dots \dots (1)$$

The estimable econometric model is formulated as:

$$DMBC_t = \beta_0 + \beta_1 INF_t + \beta_2 LQD_t + \beta_3 LTD_t + \beta_4 PLR_t + \mu_t$$

Where:

DMBC= Deposit Money Banks' Credit

INF = Inflation rate.

LQD = Liquidity ratio

LTD = Loan to deposit ratio

PLR = Prime lending rate

t = time period

$\beta_0$  = Constant Term.

$\beta_1 - \beta_4$  = Parameter to be estimated.

$\mu$  = Error term

#### 4. Results and Discussion

**Table 1: Descriptive Statistics**

	DMBC	INF	LTD	LQD	PLR
Mean	5575.729	19.7383	65.97472	48.55694	18.33250
Median	1364.635	12.10000	66.06500	46.09000	17.77000
Maximum	24378.19	76.80000	96.82000	104.2000	29.80000
Minimum	15.70000	0.200000	37.56000	26.39000	10.50000
Std. Dev.	7007.423	18.19149	13.52366	14.99440	3.927990
Skewness	1.068278	1.798272	-0.047125	1.616740	0.772914
Kurtosis	2.975542	5.115482	2.699231	6.851673	4.323483
Jarque-Bera	6.848208	26.11560	0.149018	37.93617	6.211785
Probability	0.032578	0.000002	0.928199	0.000000	0.044785
Sum	200726.2	710.3100	2375.090	1748.050	659.9700
Sum Sq. Dev.	1.72E+09	11582.56	6401.131	7869.121	540.0187
Observation	36	36	36	36	36

*Source: Author's computation, 2022*

The descriptive analysis are highlighted in Table 1. It displayed the mean, median, standard deviation, and metrics of the distribution's symmetry and normality. It is observed that the mean values are all positive. Standard deviation values are approximately 18.19, 13.52, 14.99 and 3.93 for INF, LTD, LQD and PLR respectively. It shows that among the independent variables inflation rate (INF) has the highest value for standard deviation. This implies that INF is the most volatile variable, it can change easily. While the standard deviation value of banks' credit to manufacturing sector (dependent variable) is 7007.423 billion. This suggests that there is variation in banks credit allocation over the years.

Skewness is positive for all the variables except LTD. All the variables demonstrate positive kurtosis values. All the variables except DMBC and LTD are platykurtic. Also, the probability values of the Jarque-Bera for DMBC, INF, LQD and PLR shows that the series of the variables is normally distributed with exception to LTD whose value is lower than 5% significance level.

**Table 2: Result of Augmented Dickey-Fuller Stationarity Test**

Variable	ADF Sta	Critical Values		P-value	Order of Integration
DMBC	-5.083793	-4.284580	1%	0.0014	I(1)
		-3.562882	5%		
		-3.215267	10%		
INF	-5.609067	-3.639407	1%	0.0000	I(1)
		-2.951125	5%		
		-2.614300	10%		
LTD	-5.329910	-3.653730	1%	0.0001	I(0)
		-2.957110	5%		
		-2.617434	10%		
LQD	-3.213704	-3.632900	1%	0.0276	I(0)
		-2.948404	5%		
		-2.612874	10%		
PLR	-4.047168	-3.632900	1%	0.0034	I(0)
		-2.948404	5%		
		-2.612874	10%		

*Source: Author's computation, 2022*



The unit root test using the Augmented Dickey-Fuller criterion is presented in Table 2. Findings showed that DMBC and INF are stationary at first difference while LTD, LQR and PLR are stationary at level. As a result, there is clear evidence of mix integration thus the study adopted ARDL co- integration since tested variables are combination of I(1) and I(0).

**Table 3: ARDL Bound Cointegration Test**

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
Asymptotic: n=1000				
F-statistic	5.565461	10%	2.2	3.09
k	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37
Finite Sample: n=35				
Actual Sample Size	32	10%	2.46	3.46
		5%	2.947	4.088
		1%	4.093	5.532
Finite Sample: n=30				
		10%	2.525	3.56
		5%	3.058	4.223
		1%	4.28	5.84

*Source: Author's computation, 2022*

It can be seen from table 3 that F-statistic value is higher than critical values in the upper bound I(1) and lower bound I(0) at all levels of significance that for the asymptotic sample and when both the finite sample n is 35 and 30 respectively.

As a result, there is compelling evidence that in Nigeria, the prime lending rate, the rate of inflation, the loan to deposit ratio, and the loan to liquidity ratio are all related over the long term. In this way, the research disproves the null hypothesis and calculates the long-term model.

**Table 4: Long Run Estimation**

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
INF	45.67027	105.1192	0.434462	0.6694
LQD	-73.67156	138.6122	-0.531494	0.6020
LTD	-149.9686	107.0010	-1.401563	0.1790
PLR	431.3977	468.4203	0.920963	0.3700
C	1022.866	11604.30	0.088145	0.9308

EC = DMBC - (45.6703\*INF -73.6716\*LQD -149.9686\*LTD + 431.3977\*PLR + 1022.8661)

*Source: Author's computation, 2022*

From Table 4, findings show that INF and PLR have favourable but insignificant influence on banks credit to manufacturing sectors. This means that when inflation rate and PLR are increasing, in the long run they will have positive but insignificant effect on banks' credit. Also, LQD and LTD have negative and insignificant influence on banks' credit. That is, an increase in LQD and LTD will lead to marginal reduction in banks' credit.

The effect of inflation rate, loan to deposit ratio, liquidity ratio and prime lending rate on banks' credit seen in the long run is further tested in the short run below.

**Table 5: Short Run Estimation**

ARDL Error Correction Regression

Dependent Variable: D(DMBC)

Selected Model: ARDL(3, 4, 2, 1, 0)

Case 2: Restricted Constant and No Trend

Date: 08/18/22 Time: 15:06

Sample: 1986 2021

Included observations: 32

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DMBC(-1))	-0.441534	0.201406	-2.192253	0.0426
D(DMBC(-2))	-0.412344	0.162307	-2.540525	0.0211
D(INF)	17.99067	11.54355	1.558504	0.1375
D(INF(-1))	-14.48593	12.14032	-1.193208	0.2492
D(INF(-2))	16.96282	9.540175	1.778040	0.0933
D(INF(-3))	-24.91144	10.44815	-2.384292	0.0290
D(LQD)	-43.26004	11.07926	-3.904595	0.0011
D(LQD(-1))	-39.57399	12.59872	-3.141112	0.0060
D(LTD)	61.76673	13.64336	4.527238	0.0003
CointEq(-1)*	0.148898	0.022650	6.573748	0.0000
R-squared	0.760959	Mean dependent var	761.1306	
Adjusted R-squared	0.663170	S.D. dependent var	1294.451	
S.E. of regression	751.2618	Akaike info criterion	16.33169	
Sum squared resid	12416674	Schwarz criterion	16.78973	
Log likelihood	-251.3071	Hannan-Quinn criter.	16.48352	
Durbin-Watson stat	2.204075			

*Source: Author's computation, 2022*

The short run dynamics is presented in Table 5. R-squared statistics indicate that the tested variables account for 76% of the variation in the model Inflation rate has a positive and insignificant effect on banks' credit in the short run, whereas LQD negatively but significantly affect banks credit. LTD positively and significantly affect banks' credit in the short term. The CoinEq(-1)\*, the error correction coefficient is positive and p-value is less than 0.05, which signifies presence of short run causality. The coefficient represents speed of adjustment of any equilibrium towards long run equilibrium state. Here the speed of adjustment is  $0.14 * 100 = 14\%$ .

**Post Estimation/Diagnostic Tests**

**Table 6: Wald Coefficient Test**

Wald Test:

Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	257.8902	(15, 17)	0.0000
Chi-square	3868.353	15	0.0000

*Source: Author's computation, 2022*

Diagnostic test was carried out in Table 6 to investigate the influence of the independent variables on the dependent variables in the short-term. Findings indicate that the p-value of the Chi-square statistics is less than the alpha value at 5%. So, the null hypothesis of no short-run dynamic influence from independent variables (INF, LQD, LTD, PLR) to dependent variable (DMBC) is rejected. Therefore, the study concludes that there is presence of shortrun causality.

**Table 7. Breusch-Godfrey Serial Correlation LM Test**

Breusch-Godfrey Serial Correlation LM Test:

Null hypothesis: No serial correlation at up to 2 lags

F-statistic	2.399962	Prob. F(2,15)	0.1247
Obs*R-squared	7.757484	Prob. Chi-Square(2)	0.0207

*Source: Author's computation, 2022*

The Breusch-Godfrey Serial Correlation LM test in Table 7 shows that p-value is less than 0.05 significance level. Thus, we reject the null hypothesis indicating that residuals are serially correlated.

**Table 8: Heteroskedasticity Test: Breusch-Pagan-Godfrey**

Heteroskedasticity Test: Breusch-Pagan-Godfrey

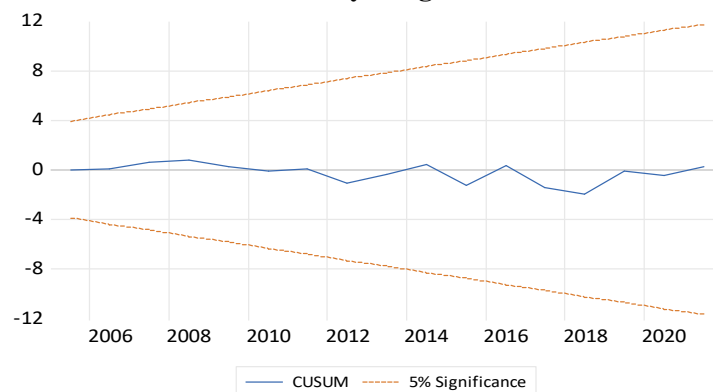
Null hypothesis: Homoskedasticity

F-statistic	0.665960	Prob. F(14,17)	0.7762
Obs*R-squared	11.33400	Prob. Chi-Square(14)	0.6596
Scaled explained SS	2.250292	Prob. Chi-Square(14)	0.9998

*Source: Author's computation, 2022*

The Heteroskedasticity test as presented in Table 8 indicated that p-value is 0.6596 which is higher than the critical level of significance at 0.05. Thus, the null hypothesis is accepted signifying that no arch effect exist in the model and that residuals are homoscedastic.

**Figure 3: Cusum Test: Stability Diagnostic**



*Source: Author's compilation, 2022*

The parameter stability test was conducted in order to verify if the specification for the study are correctly specified or not. From the figure above, the cumulative sum (CUSUM) of residuals lies completely in-between the two 5 percent significant transverse lines. This signifies long-term relationship and selected parameters are stable during the sample period.

### 5. Discussion of Findings

Findings indicated that both in the long and short run, inflation rate affect banks' lending to the manufacturing sector positively but marginally. This goes against the a priori assumption that INF is expected to result in reduced banks' credit. This outcome supports the findings of Ajayi & Atanda, 2012; Ebire & Ogunyinka, 2018 that INF has positive but minimal effect on bank lending. Additionally, Akinlo and Oni (2015) asserted that private credit rises with INF. However, the outcome is in contrast to Sharma and Gounder (2012) in which INF is negatively correlated with banks' credit; and that the demand for credit will likely decline as living standards and borrowing costs rise, and that INF could be harmful to credit supply. In Pakistan, Guo and Stepanyan's (2011) and Imran's (2011) also support this finding.

Additionally, the effect of LQD on bank loans was examined. It was discovered that while LQD negatively and insignificantly affects bank credit over the long term, it negatively and significantly affects bank credit over the short term. This result confirms the a priori assumption that increased LQD results in declining bank credit to manufacturing sectors. This is based on the observation that banks' capacity to create credit tends to be constrained by excessive liquidity. The outcome, however, is in contrast to Akinlo and Oni's (2005) discovery that LQD significantly boosts credit supply. Additionally, Akani and Oparaordu's (2018) found that LQD has a favorable effect on the amount of loans and advances. However, given that Nigerian banks have extra reserves due to the country's significant oil wealth, monetary policy measures like LQD may not negatively affect credit supply in the nation.

More so, the effect of loan to deposit ratio was examined. Findings revealed that in the long term LTD negatively and insignificantly affected banks' credit to manufacturing sectors. However, it has a favourable and substantial effect in the short run. This result is in line with a priori expectation that LTD is expected to enhance banks' credit to the manufacturing sectors in the short run. Also, the nature of the relationship suggests that when bank deposits rise, bank lending follows, increasing the LTD. This outcome is in line with Oyebowale (2020) that a substantial positive link exist between growth in loan to deposit ratio and growth in loan and advance though in the long run. The result differs from the study of Uyagu and Osuagwu (2015) that LTD negatively but significantly affect bank lending in Nigeria.

The study also looked at how the prime lending rate affected Nigerian banks' lending to the manufacturing sector. It was discovered that PLR had a long-term, beneficial but negligible impact on banks' credit. Additionally, PLR did not have any impact on banks' short-term credit. This outcome is consistent with the a priori hypothesis that PLR will lead to an increase in bank lending to the manufacturing sector; nevertheless, the result was not substantial in the short term. The cause could be that banks release massive amounts of loanable funds as lending rates rise in anticipation of larger returns from interest on loans. This result is in line with Assefa's (2014) finding that there is a positive relationship between bank credit and lending rate. Though, the result contradicts the findings of Enisan and Oluwafemi(2015) and Ayieyo (2016) that lending rate decreases the quantity of credit available to manufacturing sectors.

## 6. Conclusion and Recommendation

The study concluded that independent variables (INF, LQD, LTD and PLR) do not significantly affect banks credit allocation to manufacturing sector in the long run. All the variables demonstrated negative effect on DMBs credit except inflation rate which was positive. On the other hand, in the short run, LQD though negative, portend significant effect on DMBs credit and LTD positively and significantly affect banks' credit respectively. Moreover, INF exhibited positive but insignificant effect on banks' credit; however, PLR have no effect on banks' credit to manufacturing sector.

Summarily, banks' credit to manufacturing sectors increases with INF and LTD. However, LQD reduces banks' credit to manufacturing sector in Nigeria. More so, CoinEq (-1)\* which means error correction coefficient is positive and p-value is less than 0.05, which means there is presence of short run causality. It is recommended that there should be consultation between regulatory authorities and DMBs so that the effect of regulatory measure on banks will be taken into consideration at the stage of policy formulation and implementation.

### Contribution to Knowledge

The research significantly added to existing body of knowledge by incorporating variables such as prime lending rate and loan to deposit ratio as factors responsible for credit allocation of DMBs to manufacturing sectors in Nigeria. Also unlike past studies, this study covers a longer period (1986 – 2021). The timeframe was extended to 2021 in order to determine the current trend on credit allocation to manufacturing sectors in Nigeria.

### Suggestion for further studies

Further studies should be carried out on factors affecting banks credit to agricultural sector in Nigeria.

## References

1. Abdul Adzis, A., Sheng, L.E. and Abu Bakar, J., 2018. Bank lending determinants: Evidence from Malaysia commercial banks. *Journal of Banking and Finance Management*, 1(3), pp. 36-48.
2. Adenugba, A.A., 2015. Banking system credit as an instrument of economic growth in Nigeria (1983-2012). *European Journal of Business, Economics and Accountancy*, 3(7), pp. 1-23.
3. Adolphus, J.T., Deborah, B.P., 2014. Analysis of the role of banks in financing the agriculture and manufacturing sectors in Nigeria. *International Journal of Research in Business Management*, 2(2), pp. 9-22
4. Agbanike, T.F., Onwuka, K.O. and Eyoghasim, M., 2016. Bank lending and output growth in Nigeria. *Journal of Economics and Sustainable Development*, 7(7), pp. 30-37.
5. Akani, H.W. and Oparaordu, B., 2018. Determinants of commercial banks credit to the domestic economy in Nigeria: Examinations of dynamics principles. *Indian Journal of Finance and Banking*, 2(2), pp. 26-41.
6. Akinture, T., 2021. Determinants of deposit money banks lending behaviour to private sector of the economy in Nigeria (1986-2017). *Management & Economics Research Journal*, 3(1), pp. 76-94.
7. Akinlo, A.E. and Oni, I.O., 2015. Determinants of bank credit growth in Nigeria 1980-2010. *European Journal of sustainable development*, 4(1), pp. 23-23.
8. Akintola B.O., 2004. The Nigerian stock market: Behaviour and performance. *Arbitrage Studies in the Capital Market, Lagos: Arbitrage Consulting*.

9. Alkhezaleh, A.M.K., 2017. Factors may drive the commercial banks lending: evidence from Jordan. *Banks and Bank Systems*, 12(2), 31.
10. Asuquo, B. and Selem-Amachree, I., 2021. Sector-specific credit allocation by deposit money banks and real sector development in Nigeria. *African Journal of Business and Economic development*.
11. Ayodeji, E.A. and Ajala, R.B., 2018. Capital market performance and economic growth in Nigeria (1984-2016). *Journal of Advances in Social Science and Humanities*, 4 (11), pp. 362-378.
12. Ayieyo, J.O., 2016. Determinants of lending behavior in selected commercial banks in Kenya. *International Journal of Economics, Commerce and Management*, 14(9), pp. 767-782.
13. Baoko, G., Acheampong, I.A. and Ibrahim, M., 2017. Determinants of bank credit in Ghana: A bounds-testing cointegration approach. *African Review of Economics and Finance*, 9(1), pp. 33-61.
14. Bernanke, B. and Blinder, A., 1988. Credit, money and aggregate demand. *American Economic Review*, 78(2), pp. 435-439.
15. Brunner, K. and Meltzer, A., 1972. Money, debt and economic activity. *Journal of Political Economy*, 80(5), pp. 951-977.
16. Bustamante, J., Cuba, W. and Nivin, R., 2019. Determinants of credit growth and the bank-lending channel in Peru: A loan level analysis.
17. Central Bank of Nigeria, 2003. *CBN Briefs: Research Department*. Nigeria.
18. Central Bank of Nigeria, 2009. *CBN Briefs, 2008-2009 Edition*, Research Department, CBN: Abuja.
19. Chodecal, D., 2004. Impact of lending policy on banking industry in Nigeria. *Journal*, 7(4), pp. 12-22.
20. Ebire, K. and Ogunyinka, S., 2018. Bank lending channel of monetary policy transmission mechanism in Nigeria. *IIARD International Journal of Banking and Finance Research*, 4(2), pp. 51-64.
21. Ebere, E.J. and Iorembere, P.T., 2016. Commercial bank credit and manufacturing sector output in Nigeria. *Journal of Economics and Sustainable Development*, 7(16), pp. 189-196.
22. Gertler, M. and Gilchrist, S., 1994. Monetary policy, business cycles and the behaviour of small manufacturing firms. *The Quarterly Journal of Economics*, 109(2), pp. 309-340.
23. Gertler, M. and Gilchrist, S., 1994. Monetary policy, business cycles, and the behavior of small manufacturing firms. *The Quarterly Journal of Economics*, 109(2), pp. 309-340.
24. Grodzicki, M., Halaj, G. and Zochowski, D., 2000. *Commercial bank lending policy and loan supply*. Financial System Department, National Bank of Poland.
25. Grodzicki, M., Halaj, G. and Zochowski, D., 2009. Commercial bank lending policy and loan supply. *Journal of Economic Literature*.
26. Imran, K. and Nishat, M., 2013. Determinants of bank credit in Pakistan: A supply side approach. *Economic Modeling*, 35, pp. 384-390.
27. Levine, R., 2005. Finance and growth: Theory and evidence. In P. Aghion and S. Durlauf (Eds.) *Handbook of economic growth*, pp. 865-943. Elsevier.
28. Luper, I., 2012. Banking sector reforms and SMEs financing in Nigeria. *Global Journal of Management Science and Technology*, 1(3), pp. 5-12.

29. Mishkin, F., 1996. The channels of monetary transmission: Lessons for monetary policy. *Banque de France-Universite Conference*. National Bureau of Economic Research.
30. Ndifong, O.E. and Ubana, U.I., 2014. The impact of capital adequacy on deposit money banks' profitability in Nigeria. *Research Journal of Finance and Accounting*, 5(12), pp. 7 – 15.
31. Nwanyanwu, O.J., 2010. An analysis of bank credit on the Nigeria economic growth (1992 – 2008). *Journal of Economics*, 4, pp. 43 – 58.
32. Obamuyi, T., 2010. Firms' performance and lending constraints in Nigeria. *The Journal of Entrepreneurship*, 19(2), pp. 179–190.
33. Odeleye, A.T., 2014. Pre-consolidation and post-consolidation of Nigerian banking sector: A dynamic comparison. *International journal of economics and financial issues*, 4(1), pp. 27-34.
34. Ogar, A., Nkamere, S.E., Effiong, C., 2014. Commercial bank credit and its contributions on manufacturing sector in Nigeria. *European Scientific Journal*, 8(3), pp. 19-36.
35. Ohlin, B., 1937. Some notes on the Stockholm theory of savings and investment. *The Economic Journal*, 47(185), pp. 53-69.
36. Olanrewaju, O.G., Aremo, A.G. and Aiyegbusi, O.O., 2015. Banking sector reforms and output growth of the manufacturing sector in Nigeria. *Journal of Economics and International Finance*, 7(8), pp. 183-191
37. Oputu, E.N., 2010. Banking sector reforms and the industrial sector: the bank of industry experience. *Economic and Financial Review*, 48(4), 3.
38. Oyebowale, A.Y., 2020. Determinants of bank lending in Nigeria. *Global Journal of Emerging Market Economies*, 12(3), pp. 378-398.
39. Kashyap, A.K. and Stein, J.C., 1994. Monetary policy and bank lending. In *Monetary policy* (pp. 221-261). The University of Chicago Press.
40. Shijaku, G. and Kalluci, I., 2013. Determinants of bank credit to the private sector: The case of Albania.
41. Stepanyan, V. and Guo, K., 2011. *Determinants of bank credit in emerging market economies*. International Monetary Fund.
42. Sharma, P. and Gounder, N., 2012. Determinants of bank credit in small open economies: The case of six Pacific Island Countries.
43. Stiglitz, J.E. and Weiss, A., 1981. Credit rationing in markets with imperfect information. *The American Economic Review*, 71(3), pp. 393-410.
44. Timsina, N., 2017. Determinants of bank lending in Nepal. *NRB Economic Review*, 20, pp. 22-42.
45. Uwalomwa, U., Uwuigbe, O. R. and Oyewo, B., 2015. Credit Management and Bank Performance of Listed Banks in Nigeria: *Journal of Economics and Sustainable Development*, 6(2), pp. 27-32.
46. Tobin, J., 1969. A general equilibrium approach to monetary theory. *Journal of Money, Credit and Banking*, 1(1), pp. 15–29.