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*Strategies for Sustainable Growth,
Demographic Resilience, and Social Equity*

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Dear Authors and Esteemed Readers!

It is both an honour and a privilege to introduce this new edition of the Proceedings of the International Scientific-Practical Conference “*Economic Growth in the Face of Global Challenges. Strategies for Sustainable Growth, Demographic Resilience, and Social Equity.*” The 2025 edition reaffirmed the conference’s role as a major regional platform for scientific dialogue, bringing together researchers, academics, and practitioners committed to examining the structural transformations shaping today’s economies.

In a global environment marked by uncertainty, geopolitical tensions, technological acceleration, demographic shifts, and widening social disparities, the need for coordinated and interdisciplinary research has become increasingly evident. This year’s conference once again demonstrated that cooperation across countries and academic communities is essential for identifying viable pathways toward sustainable development and resilient societies.

The discussions underscored the urgency of strengthening economic and fiscal resilience, accelerating digitalization and digital literacy—particularly in rural areas—and promoting entrepreneurship, innovation, and sustainable business ecosystems.

The conference proceedings further highlighted the need to reinforce economic competitiveness through the diversification of the productive base and the integration of sustainability, digital, and innovation principles into development policies. The importance of advancing digitalization and expanding digital literacy—especially outside urban centres—was reaffirmed, alongside the recognition of youth and women’s entrepreneurship as a key driver of economic resilience.

Analyses dedicated to green financing demonstrated the growing relevance of ESG criteria in corporate strategies and the necessity of developing a national framework for sustainable finance aligned with European standards. In parallel, discussions on agriculture and rural development underscored the imperative of modernizing the agri-food sector, promoting ecological practices, and improving resource efficiency, alongside the consolidation of value chains, producer associations, and investments in the bioeconomy and rural SMEs.

The conclusions in the social and demographic dimensions brought to the forefront the persistence of economic, educational, and territorial inequalities—phenomena further intensified by demographic and technological transformations. The role of socio-economic research was emphasized as fundamental for informing policies centred on equity, supporting vulnerable populations, and advancing social economy initiatives and community-driven innovation. Moreover, demographic

analyses highlighted the need for an integrated approach to ageing, migration, and declining natality, as well as the importance of developing robust methodological tools, improved databases, and indicators harmonized with European standards to ensure long-term demographic resilience.

We express our deep appreciation to our long-standing partners—the Institute for World Economy of the Romanian Academy, the Institute of Research for Agricultural Economics and Rural Development (Romania), and the Faculty of Sociology and Social Work at the University of Bucharest - whose partnership played a pivotal role in strengthening the academic relevance and analytical depth of the event. We are equally grateful to the members of the Scientific and Organizing Committees for their dedication and professionalism, which ensured the realization of a comprehensive and engaging scientific programme.

Finally, we extend our sincere thanks to all authors and participants whose work is presented in these volumes. Your research, critical reflections, and openness to dialogue contribute meaningfully to our shared effort to better understand the complexities of contemporary economies and to design strategies for a more resilient and equitable future.

We are confident that the studies gathered here will continue to inspire new research directions and inform policy debates at national and international levels.

AESM Rector, Alexandru STRATAN
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**ECONOMIC RESILIENCE, COMPETITIVENESS,
DIGITALIZATION AND ENTREPRENEURSHIP**

CENTRAL AND EASTERN EUROPE TOURISM IN THE CONTEXT OF GLOBALIZATION: AN ANALYSIS FROM THE PERSPECTIVE OF SUSTAINABILITY, DIGITALIZATION AND RESILIENCE

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Abstract. *The importance of tourism led to investigate it in the context of globalisation. Using panel data and regression analysis we show that globalisation depends on tourism. Tourism, and digitalisation contribute integration of the CEE into global market, but not decisively. Tourism expenditures have a positive impact, the tourist flows are positive in Bulgaria and Estonia, occupancy level in Latvia, Lithuania, Slovenia and Hungary, digitalisation in Poland, Bulgaria, Slovenia and Hungary, resilience in Lithuania and Romania. Foreign tourist flows influence the globalisation process in some members of CEE. The results show ambivalent results in some situations. CEE globalisation depends on the ability to adapt to digitalisation and how digital technology is used. Resilience is positive and statistically significant but not in all countries. For CEE, resilience tends to slow the integration rhythm.*

Keywords: *inbound tourism, globalisation, Central and Eastern Europe, digitisation, growth*

Introduction. Tourism is proving to be an engine of growth in a globalised, deeply interdependent world, bidder in terms of conjunctural and structural changes. Globalisation offers advantages and disadvantages analysed from numerous points of view. Tourism is a determinant and cause of globalisation, facilitated by technology, digitalisation, resilience but with environmental implications. Initially, tourism fell into the category of activities with the most invasive effects on the environment. Over time, the negative effects of tourism have become more and more evident and, of course, recognized, which justifies analysing the link among globalisation, tourism, sustainability, and resilience. Tourism has proven its economic impact by contributing to the balance of payments, being an important source of income, a catalyst for the labor market, a valve for improving people's quality of life, a stimulus for production, among many other effects because it is a sector with direct and induced effects. As technology and digitalisation have been outsourced amid the accentuation of globalisation, as transport has developed, especially air, as people have gained access to information but also to increasingly

affordable services from a cost perspective, we are witnessing an unprecedented development of tourism. These determines its analysis in the context of globalisation.

Literature review. Globalisation is the predominant feature of recent decades. This process is placed in the XVth and XVIth centuries. Great geographical discoveries have opened routes among continents. Without being well positioned temporarily, globalisation has occurred gradually, as a result of the intensification of economic, cultural, political and technological ties among countries and regions. Modern globalisation is specific to the XIXth and early XXth centuries, with its peak at the beginning of the current one. Technology, transport, trade, digitalisation, the international institutions are contributing to the evolution of globalisation. The theory does not neglects the analysis of globalisation which, according to Smith (2013), is a generally less understood process which, according to Acheampong et al., (2021), Zhang et al. (2022) and Gaies et al. (2022), affects the economy, ecology and society, but also offers solutions, after Balsalobre-Lorente et al. (2023) with the advantage of upper-middle and lower-middle income countries (Liu et al., 2022). Yuping et al. (2021) demonstrated that there is a long-term relationship among greenhouse emissions, non-renewable and renewable energy consumption, globalisation, and growth.

Another important factor that we find in the category of determinants and result of globalization is technology which, over time, associates to digitalisation, as is stated by Skare & Soriano (2021), Zheng et al. (2022), Ke et al., (2022) with reverberations in the tourism sector. The literature mainly studies the effects of globalisation on some activities or processes, less of them on globalisation, motivating the proposed research objective.

Research methodology. Quantitative analysis is performed using panel data and regression methods. We use indicators from World Bank, United Nations World Tourism Organization, and KOF for the period 1999–2021. The center of interest is represented by states in Central and Eastern Europe (CEE) for which there are valid statistical indicators.

Main results. Tourism imprints dynamics to globalisation in the CEE, with two exceptions. Globalisation dynamics through inbound tourism is supported by the expansion of digitisation and growth without a regional pattern. Tourism expenditures have a positive effect in the region and Poland, while for Lithuania the effect is negative. The foreign tourist flows influences the globalisation process in four countries and the occupancy level influences globalisation.

Discussion and conclusions. Tourism helps the CEE to connect to the global market, including through measures able to stimulate tourism expenditures. The globalisation of the CEE and member countries depends on the ability to adapt to digitisation and how digital technology is used and growth tends to slow the integration rhythm into the global market. The results does not validate the way in which environmental degradation influences globalisation of CEE. The results confirm the positive nexus among tourism, digitisation, trade openness, and growth, on the one hand, and globalisation, on the other.

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THE ROLE OF MILITARIZATION AND MOBILIZATION SOCIETY FOR THE ECONOMIC SUSTAINABILITY OF CYCLICAL SOCIETAL DEVELOPMENT

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Abstract. *The modern transformational stage of the cyclical development of the world-system (duration approximately from 2026 to the 2050s) is formed by the synergy of the crisis-militaristic phases of global cycles, among which the leading role is played by Kondratieff cycles, long cycles of world politics, cycles of hegemony, systemic cycles of capital accumulation. The development of crisis-militaristic phases of global cycles causes a comprehensive militarization of the economy and public consciousness. The start of a new cycle of militarization of the global economy is also evidenced by the growth in global military spending. It is precisely in such conditions that the mobilization form of social existence is formed. The formation of a mobilization society means the formation of a certain ecosystem of interaction between societal classes and public institutions, in which public consciousness is subordinated to the main idea, for the sake of which some exceptional, extraordinary means and resources are necessary to achieve it.*

Keywords: *crisis-militaristic phases, global cycles, world-system, geopolitical contradictions, militarization, mobilization society*

Introduction. The crisis-militaristic phases of each form of global cycles are periods of extreme aggravation of contradictions in the system of interactions of competing societal organisms, and this leads to a military-political conflict, the result of which determines the balance of power in the global geopolitical system and creates the basis for overcoming the systemic crisis. Under the crisis-militaristic phases a certain ecosystem of coexistence and constant interaction between the state, business, which provides for the needs of the military sphere, and civil society, the consciousness of which becomes militaristically oriented under the influence of political and ideological instruments, is formed (Podliesna, 2024). In such an ecosystem, the actions of all actors are subordinated to the needs of the military sphere in its broad sense, which includes the military economy and a special, strictly

regulated way of social life, which is limited by the requirements of a state of emergency, conditioned by the ideology of war.

Literature review. The formation of a mobilization society correlates with the cyclicity of societal development, in particular with the unfolding of global cycles. First of all, this concerns the long cycles of world politics by G. Modelski and W. Thompson (Modelski, 1995) and the hegemony cycles by I. Wallerstein (Wallerstein, 1983).

Research methodology. In this research we applied primarily logical and historical methods, as well as dialectical ascent from the abstract to the concrete, including general scientific methods of analysis and synthesis, induction and deduction.

Main results. The mobilization form of social life provides society with relative stability, thanks to which it survives, mobilizes to achieve certain goals and creates an economic basis for overcoming cyclical socio-economic crises through the commercialization of war (Podliesna, 2024). These days, the intensification of the outbreak of wars and armed conflicts has already begun, which is inherent in the "macro-decision" phase of the long cycle of world politics, which means increased militarization of the economy and society. According to the theory of long cycles of world politics, from the 10th century to 1973, nine long cycles of world politics unfolded, and from approximately 2026 the macro-decision phase of the 10th long cycle of world politics begins (Modelski, 1995). The strongest influence on the current global cyclical dynamics is exerted by the local-global conflict in the European region, unfolding in the form of a large-scale Russian-Ukrainian military-political conflict (it has the potential to initiate a confrontation between military-political blocs), as well as periodically escalating conflicts: hybrid in Syria, Israeli-Palestinian, Indo-Pakistani, Iranian-Israeli. These local-global hotbeds of military violence stimulate the development of the next crisis-militaristic stage in the cyclical development of the world system. After the completion of each crisis-militaristic stage of the cyclical development of the capitalist world-system, its new leader, or the old leader who has retained his dominance, establishes technical-technological, socio-economic, military-political, ecological and cultural benchmarks of development for the entire world. In historical retrospect, it was the countries that achieved the status of hegemon (according to I. Wallerstein, these were Holland in the mid-17th century, Great Britain in the mid-19th century and the USA in the mid-20th century (Wallerstein, 1983)) that, during the period of their dominance in the world-system, determined the institutional practices of international relations for the long term.

The fact that a new cycle of militarization and the establishment of mobilization forms of public life has begun in the global economy is evidenced, first of all, by economic indicators. For example, according to the Stockholm International Peace Research Institute (SIPRI), global military spending increased by 37 percent between 2015 and 2024 and rose in all five geographical regions. The United States remained by far the largest military spender in the world. Its expenditure of \$997 billion in 2024 was 3.2 times more than the second largest

spender, China (SIPRI, 2025a). The beginning of this new cycle is also evidenced by the militaristic statements of leading figures in the global political establishment, as well as the adoption of long-term development strategies in countries – leading actors in geopolitics, aimed at increasing defense budgets, stimulating the development of the military-industrial complex. Arms trade is growing, which is an important argument in favor of choosing militarization as a way to overcome the global economic crisis. According to SIPRI, the volume of international deliveries of major weapons in 2020–2024 was the second highest for any five-year period since the end of the Cold War, but still about 35 percent lower than during the peak years of the Cold War (1980–1984) (SIPRI, 2025a). The fact that the trend of militarization is increasing in the modern world-system is evidenced by the growth of total sales of weapons supplied by the 100 largest arms manufacturing and military services companies. Compared to 2002, the value of total arms sales of the top 100 companies in 2023 have doubled (from \$331 billion to \$632 billion) (SIPRI, 2025). In the cyclical development of the capitalist world system, a crisis-militaristic stage is now beginning, manifested in the outbreak of local and global conflicts, increased arms sales, and rising global military spending.

Discussion and conclusions. Militarization of the economy and public consciousness is a rather effective tool for implementing the mobilization scenario of overcoming deep crises of the capitalist economy, but at the same time it generates contradictions and disproportions of social reproduction, destruction of public consciousness, which ultimately leads to even deeper crises. Therefore, militarization allows temporarily stabilizing the political-economic system, returning it to the path of achieving sustainable development goals, but creates grounds for destabilization of society in the long term, so it cannot be recognized as an appropriate way to overcome crises at the global and local levels.

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THE VULNERABILITIES OF TRADE IN SERVICES IN THE CONTEXT OF RECENT GEOPOLITICAL TENSIONS

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Abstract. *Recent geopolitical tensions generated by the US trade policy have significantly amplified the vulnerabilities in the global economy, affecting many international businesses, including those in service industries. Although it is not directly targeted by US tariffs, trade in services is going to be affected due to the strong relationships between trade in goods and some services. At the same time, possible distortions are anticipated, due to the fact that trade in services could be the subject of some retaliation measures of trading partners, such as those that could limit access for US service providers to certain markets. The research identifies that trade in services is increasingly exposed to geopolitical tensions, making it harder for businesses to operate across borders, even for digital services.*

Keywords: *trade in services, geopolitical tensions, US tariffs, retaliatory measures*

Introduction. After the end of the pandemic, the global economy was marked by many geopolitical influential factors, among which the Russian-Ukrainian war and tensions in the Middle East stood out. In addition, the major changes in trade policy adopted by the US administration under the President Donald Trump's second term have reactivated the older tensions between the US and China, this time extended to all US trade partners. Since April 2025, the US has imposed new tariffs to all major trading partners for almost all products, using a succession of announcements regarding their increases and changes in the application deadlines (White House, 2025). The increased tariffs on US goods imports from major partners, as well as retaliatory measures taken by the latter, are fuelling a real trade war, amplifying uncertainty in the global economy (WTO, 2025).

Literature review. As geopolitics has become increasingly complex, international organizations and academic researchers have devoted extensive studies to its influences on the international trade. Yan and Piao (2025) demonstrated that geopolitical risks suppress trade openness, confirming the negative effects of geopolitical shocks on external economic liberalization of a country. After the outbreak of the war in Ukraine, Ruta (ed.) (2022) developed a detailed analysis of the direct impact of the war on trade and investment, identifying the main channels through which global economy and countries will be affected, including trade in

services. Li and Zymek (2025) found that services related to intellectual property and telecommunications are proving to be more sensitive to geopolitical alignment trends than traditional services, suggesting potential vulnerabilities as these sectors expand.

Research methodology. Throughout the article, we used a qualitative analysis of the relevant documents and reports released by international organizations, such as World Trade Organization (WTO, 2025), United Nations Conference on Trade and Development (UNCTAD, 2025) and World Bank Group (WBG, 2025) related to the impact of recent geopolitical evolutions on trade flows in goods and services, along with personal considerations. In order to support our explanations, the statistical data published by WTO and WBG, and also national institution (Oustr, 2025), to highlight some relevant aspects related to the evolution of trade in services, by main service categories and trading partners at the global level.

Main results. Geopolitical factors are recognized as having a significant disruptive impact on global businesses, with varying intensities depending on the geographical region, the partners involved, or the industry. Data on the evolution of global trade in services during the period 2019-2024 reveals that, overall, the two major conflicts that took place during this period (the war in Ukraine, and the tensions in the Middle East) have not significantly destabilized global service flows, these being in a broad recovery process after the pandemic crisis. However, the analysis on certain segments, such as maritime transport, highlights their global disruptive impact, in 2023 trade in transport services decreasing by 11%, year-on-year basis, as a result of the international sanctions against Russian Federation and transit restrictions in the Black Sea and the Red Sea.

In 2025, geopolitical factors have been complemented by the major changes in US trade policy. Even, apparently trade in services can be considered outside the applicability of the new tariffs adopted by the US administration, a detailed investigation reveals that the tariffs will affect also trade in services, along with other areas of cooperation between US and its main partners. In the first stage, the most affected services would be those related to trade in goods, specifically transport and logistics services, the decrease in demand of imported goods on US market as well as on their partners (considering the retaliatory measures) leading to a slowdown in trade in these services. Given the high level of integration of services in all economic activities, a wide range of intermediary services supporting trade in goods as well as other service categories, such as professional, engineering and research and development services, IT and various business services, are expected to be affected, facing declines in their demand. Financial services could also be affected, as the uncertain economic context will lead to a decrease in transactions and reschedule of investments (WTO, 2025).

Considering a certain vulnerability related to the dependence of many trade partners on US for the provision of many services (such as research and development, professional and business services, as the case of European Union), some response measures of US partners would worsen not only the trade relations with US, but also their national economies. Eventually, the tariff dispute would

escalate with technology and investments coming into conflict, affecting the economic relationships between the major global partners.

Discussion and conclusions. Even the overall trade in services has continued its pre-pandemic positive evolution, remaining robust and expanding year after year, generating major benefits for many economies, certain segments of services trade have been affected by recent geopolitical factors, as in the case of maritime transport. The new trade policies implemented by the US administration in 2025 are seen as a major destabilizing factor of the business environment, mainly due to the fact that the US is the world's leading economy and a major trade partner for many countries. The new tariffs applied to all its major partners affect also in services, so beyond the vulnerability of the link between trade in goods and services, there is the possibility of using trade in services for retaliatory measures, affecting its latest positive evolution. Moreover, the increased level of interconnectivity and reliance on intangibles, such as trust, makes trade in services susceptible to the ripple effects of geopolitical instabilities.

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POLYCRISES AND GEO-ECONOMIC FRAGMENTATION: THE CHALLENGES OF A SUSTAINABLE RECOVERY

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Abstract. *The paper analyses the main challenges facing the global economy in the post-pandemic period, in a context characterized by high uncertainty, geo-economic fragmentation and the confluence of systemic crises – economic, geopolitical, climatic and financial. The main objective is to assess the emerging risks that threaten macroeconomic stability and the structural vulnerabilities that hinder a sustainable recovery. In parallel, the economic policy solutions and directions proposed by the main international organizations are examined in order to find a coordinated response at global level. The analysis covers a wide range of measures – from restrictive monetary policy and fiscal consolidation to structural reforms and, where fiscal space allows, investment in the green and digital transitions and the strengthening of multilateral cooperation. The study also emphasizes the need for a differentiated framework for action depending on the specific characteristics of individual economies, especially for emerging economies that are exposed to external risks and have less fiscal space. The conclusion highlights the importance of a coherent mix of bold and sustainable economic policies that are able to simultaneously address cyclical challenges and structural transformations in an increasingly unstable international climate.*

Keywords: *global economy, systemic risks, structural vulnerabilities, geo-economic fragmentation, economic policy.*

Introduction. The global economy has entered a new phase after 2024, characterised by slow growth, geo-economic fragmentation and increased volatility amidst overlapping economic, geopolitical, energy and climate crises. Slowing international trade and weakening global demand are limiting the progress of developed economies, while regional disparities are deepening and emerging economies are gaining in importance. Restrictive monetary policy, limited fiscal space and geopolitical tensions increase uncertainty, so that inflation and commodity volatility remain the main risks.

Method. The research is based on the analysis of secondary data – statistical indicators and reports from the main international organisations – which provide the necessary framework for understanding global economic trends and policy responses. The period analysed is 2023–2026, with a focus on recent projections and developments. The methodology is qualitative and based on a critical and

comparative analysis of the sources, with the aim of highlighting the links between economic, geopolitical and structural phenomena at a global level.

Persistent pressures and emerging risks in the global economy. The global economy continues to be exposed to a variety of pressures and emerging risks and is in a difficult transition phase and macroeconomic uncertainty (IMF, 2025a; OECD, 2025a; World Bank, 2025a). Although the stabilisation of inflation and a slight recovery in demand are positive signs, the outlook is fragile. Risks identified include: persistent core inflation fuelled by wage increases and high service costs; escalating geopolitical tensions affecting energy, trade and food security; restrictive financial conditions and sovereign debt pressures, particularly in emerging markets; financial sector vulnerabilities and increased market volatility exacerbated by political uncertainties; China's slowdown impacted by structural issues and declining investor confidence. At a regional level, the EU faces persistent core inflation, risks in the commercial property sector, weak external demand and structural challenges due to the green transition (European Commission, 2025). Other sources (WEF, 2025; UNCTAD, 2025a, 2025b) point to the fragmentation of supply chains, the decline in productive investment in developing economies and the deepening of inequalities between North and South. Recent analyses (Euromonitor, 2025; EY, 2025) point to the slowdown in advanced economies, the volatility of commodities and the difficulties in adapting policies to new global conditions.

Economic policy responses: priorities and convergences. In the first half of 2025, global uncertainty remains high, fuelled by persistent inflation, geopolitical tensions, financial volatility and climate risks. The most important international institutions (IMF, 2025a; 2025b; OECD, 2025a; 2025b; World Bank, 2025a; 2025b; European Commission, 2025a; 2025b) emphasise the fragility of the recovery and the need for policies adapted to the level of development of each economy. The IMF (2025a; 2025b) recommends a restrictive monetary policy with persistent inflation, financial stability monitoring and fiscal rebalancing in the short term, followed by fiscal consolidation and productivity reforms in the medium term and multilateral cooperation and an acceleration of the green transition in the long term. The OECD (2025a; 2025b) argues in favour of a coordinated but differentiated response, combining monetary and fiscal prudence with targeted support for vulnerable groups, structural reforms adapted to demographic, digital and environmental change, strengthening banking supervision and reducing trade fragmentation. The World Bank (2025a; 2025b) proposes a policy mix geared towards macroeconomic stability and sustainable growth, focussing on investment in infrastructure, education and the green transition, but also on broadening the tax base and making public spending more efficient. The European Commission (2025a; 2025b) recommends a balance between fiscal discipline and support for strategic investments, maintaining a prudent monetary policy and accelerating digital and green reforms. Other international organisations (WEF, 2025; WTO, 2025; UNCTAD, 2025a; 2025b) and private analyses (EY, 2025; Allianz, 2025; Euromonitor, 2025) emphasise the need for proactive policies that focus in particular on resilience, digitalisation, reducing inequalities and avoiding geo-economic fragmentation.

Discussion and conclusions. The consensus of international institutions for 2025–2026 points to a fragile pathway, below the pre-pandemic average, in an environment where inequalities between regions and interlinked risks are increasing. Without a coordinated policy framework, the risk of prolonged stagnation and deterioration of social and economic cohesion is high. Key policies aim to maintain macro-financial stability through monetary prudence and fiscal consolidation, accelerate structural reforms through infrastructure investment, digitalisation and the green transition, and strengthen international cooperation to counter geo-economic fragmentation. The key for policymakers remains balancing the “tension triangle”: lowering inflation, supporting the recovery and protecting financial stability.

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THE ANALYSIS OF THE NEXUS BETWEEN EXTERNAL DEFICIT AND BUDGET DEFICIT

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Abstract. *The purpose of the paper¹ is to highlight the link between the external deficit and the budget deficit, given the high importance of the two imbalances in the evolution of each national economy. Thus, the author intends to make a literature review of the studies carried out in order to capture the interplay between the external and budget deficits. Another objective of the research is to disclose the mathematical relationship between the trade balance deficit and the budget deficit, through the absorption theory. The results obtained show that the external imbalance is the consequence of a higher/ lower domestic absorption than the national income. The results from the analysis of the economic literature are different in terms of the causality nexus between the two deficits due to the existence of several influence factors. The methodology used joins the identification of causalities with the descriptive analysis, and the literature review.*

Keywords: *causality, deficits, absorption, twin deficits, national income*

Introduction. There are four theories in the literature that explain the connection between the budget deficit and the current account deficit: the twin deficit hypothesis, the current account targeting hypothesis, the inter-temporal Ricardian perspective, and the feedback linkage.

Literature review. According to the twin deficit theory, an increase in the budget deficit leads to a rise in the real domestic interest rates, which generates capital inflows, exchange rate appreciation, and implicitly a growth of the current account deficit. Some empirical studies (e.g. Rault and Afonso, 2009) have shown that the two deficits are strongly correlated, the causal relationship ensuing from the budget deficit to the current account deficit, but with an incomplete transmission of variations. Thus, Forte and Magazzino (2013) have demonstrated that an improvement/increase in the budget deficit (cyclically adjusted) by 1 percentage point of GDP leads to an improvement/increase in the current account deficit by 0.3-0.5 percentage points of GDP. (NBR,2024).

¹ The article derives from the research project "The external disequilibrium: trend, determinants and perspectives", elaborated in CFMR "Victor Slăvescu" in 2024, coordinated by Camelia Milea, Ph.D.

Nickel and Vansteenkiste (2008) have shown that the link between the current account balance and the budget balance becomes insignificant in the case of countries with a high share of public debt in GDP (over 90%), because households increase their current savings in anticipation of future tax increases.

The analysis of the National Bank of Romania (2024) shows that the “twin deficits” theory can be invalidated. Thus, a fiscal easing policy might not lead to an increase in population consumption, if there are expectations of future tax increases, but rather to a rise in the volume of savings at present. Under these conditions, fiscal easing would have no effect on the current account deficit (a phenomenon known in the literature as Ricardian equivalence, according to which there is no link between the budget and current account deficits because fiscal measures bring about the inter-temporal reallocation of savings). This hypothesis is supported by the studies of Kouassi et al. (2004) which find no link between the two deficits.

Algieri (2013) found an inverse relationship, from the current account deficit toward the budget deficit. Thus, a worsening of the current account causes a slowdown in economic growth, and, implicitly, an increase in the budget deficit, as a result of a rise in budget expenditures and a decrease in tax revenues.

However, there are authors who have proved the existence of a bidirectional causality between the two imbalances (e.g. Bolukbas et al., 2018) due to the fact that savings and investments are highly correlated.

Research methodology. We will develop the absorption theory of twin deficits in order to highlight the mathematical relationship between the current account deficit and the budget deficit, starting from a macroeconomic model.

Main results. The Absorption approach. The Keynesian absorption theory explains the twin deficits theory, illustrating the cumulative effects of changes in the nominal exchange rate, national income, and expenditure in the process of external imbalance adjustment.

In an open economy, national income (Y) can be dissociated into the sectors where output is sold (destinations): consumption (C), investment (I), government spending (G), and export earnings (X), and also into the sources of spending: consumption, private savings (S), and taxes (T), plus national spending on imports (M):

$$C + S + T = Y = C + I + G + X - M \quad (1)$$

$$C + I + G = A$$

(Absorption = total domestic spending on goods and services) (2)

Rearranging the equations above, we obtain:

$$X - M = (C + S + T) - (C + I + G) = Y - A \quad (3)$$

National income can be smaller or higher than domestic absorption, which means that the trade balance² can be in deficit or surplus.

² The external deficit is approximated by the trade balance

When domestic absorption is higher than national income, the country consumes more than it produces, the difference being met by imports of goods and services, resulting in an external deficit. The level of absorption compared to national income is determined by real factors (marginal and average propensities to import, savings, and consumption).

Starting from equation (1) and rearranging the terms:

$$S+(T-G) -I = X-M \quad (4)$$

Equation (4) shows the relationship between the current account deficit and the budget deficit. Thus, total national savings (budget surplus (T-G) plus private savings) exceed investment by an amount equal to the trade balance, which is a decreasing function of national income. The slope of the trade balance line depends on the marginal propensity to import, on the variations in the prices of domestic goods and services relative to those from abroad, on the changes in trade policy.

The adjustment of the external deficit is based on the reduction of domestic absorption compared to national income, through different combinations of variations in the nominal exchange rate, national income and expenditure by expenditure reduction (contractionary monetary or fiscal policies) and expenditure redirection policies. The first category generates the decrease in national income and employment, while the second has opposite effects.

Conclusions. The results of the empirical studies are different. Some show that the budget deficit influences the external deficit (through incomplete transmission of variations), others that there is no link between the two deficits, a few show an influence from the current account deficit to the budget deficit, and certain that there is a bidirectional causality between the two imbalances. The different results in the literature can be explained by the existence of many factors influencing the transmission of fiscal shocks to the current account.

According to the absorption approach, the external imbalance is the result of an absorption higher or lower than the national income. The absorption theory also shows that an increase in the budget deficit causes a rise in domestic absorption, and imports, causing the external balance to worsen.

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ANALYSIS OF THE DEGREE OF IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT GOALS (SDGs) IN THE ECONOMIC DIMENSION IN ROMANIA

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Abstract. *This paper analyzes the degree of implementation of the Sustainable Development Goals (SDGs) in Romania, with a particular focus on the economic dimension, while integrating relevant indicators from the social and environmental areas. The paper emphasizes the interdependence between the three dimensions of sustainable development (economic, social and environmental), the results showing that economic development cannot be sustainable in the absence of social cohesion and environmental protection.*

Keywords: *sustainable development, economy, objectives, impact, Romania.*

Introduction. As a member state of the United Nations (UN) and the European Union (EU), Romania has expressed its commitment to implement the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda, adopted at the UN Summit on Sustainable Development in September 2015 (as shown in Figure 1). This commitment highlights Romania's active involvement in international efforts to support sustainable development and to integrate sustainability principles into its national policies.

The sustainable development goals formulated by the UN and the intention to implement them by 2030 represent an essential step in ensuring a fair, inclusive and sustainable social and economic framework (Argatu, 2022; Bratu, 2024).

Research methodology. This paper employs a quantitative and descriptive research approach, focusing on the analysis of SDG-specific indicators based on the framework established by the United Nations. The statistical data were sourced from the Sustainable Romania platform and categorized under the three pillars of sustainable development: economic, social, and environmental.

Main results.

ECONOMIC: Between 2000 and 2023, Romania's real GDP per capita followed a general upward trend. In 2023, it reached a peak of €10,250, marking an increase of approximately 171% compared to €3,780 in 2000. From 2002 to 2008, GDP per capita steadily rose from €4,260 to €6,730, before being affected by the global economic crisis. The most significant decline occurred in 2010, when GDP per capita dropped to €6,200. Recovery began in 2013, and by 2019 it had climbed to €9,110. However, the COVID-19 pandemic in 2020 led to a slight decrease, with GDP per capita falling to €8,780.

SOCIAL: Between 2008 and 2019, Romania saw a reduction of over 3 million in the number of people at risk of poverty or social exclusion, with a decrease of 287,000 compared to 2018 alone. The at-risk-of-poverty or social exclusion rate fell to 31.2% in 2019, down 1.3 percentage points from the previous year and 13 points from 2008. Key risk factors include gender (female), young age, low education levels, and unemployment. In 2019, nearly 60% of the unemployed faced this risk, compared to 38% of the employed. Pensioners saw the most significant improvement. Overall, the 2008–2018 period recorded a steady decline in this rate - from 42.4% to 31.2% - a drop of 11.2 percentage points. Most social groups followed this trend, except for other inactive persons, whose risk rate remained relatively stable with a slight increase of about 0.6 percentage points.

ENVIRONMENTAL: Efforts to address environmental challenges are central to achieving sustainable development. The EU has committed to reducing greenhouse gas emissions by 55% by 2030, supported by relevant directives. However, the relationship between economic and social developments and environmental sustainability remains complex. Some researchers advocate for the integration of sustainable logistics and green financing into public policies to mitigate environmental impacts. In Romania, greenhouse gas emissions declined over the 2008–2020 period. Emissions peaked in 2008 at 5.6 thousand tons of CO₂ equivalent and dropped to 4 thousand tons by 2020, representing a reduction of approximately 29%.

Discussion and conclusions. The analysis of economic, social, and environmental indicators highlights Romania's progress toward sustainable development, in line with the UN's SDG framework. Economically, the steady growth in GDP per capita reflects long-term development, despite temporary setbacks caused by global crises. Socially, the notable reduction in the population at risk of poverty or social exclusion indicates improvements in living standards and inclusion, though vulnerable groups remain affected. Environmentally, the downward trend in greenhouse gas emissions demonstrates Romania's efforts to align with EU climate targets. However, sustained progress requires continued integration of economic, social, and environmental policies to ensure balanced and resilient development.

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THE ROMANIAN ECONOMY PROBABLY HIT A MINIMUM IN 1ST QUARTER 2025

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JEL Classification: C22, E23, E32

Abstract. *The Romanian economy continued to grow by an annual pace below 1% at the beginning of 2025, in a context of the high level of uncertainty, caused by a tense domestic political climate and multiple global conflicts. In this paper, standard econometric tools are applied, and the database of the National Institute of Statistics of Romania (2025) is used to assess the recent macroeconomic developments in Romania. According to the results of our analysis, the Romanian economy probably hit a minimum in the first quarter of 2025, as the fiscal consolidation process announced during the summer is expected to support the investment climate. However, we emphasize the short-term risks for Romania's economic performance, including the possibility of a significant correction in international financial markets.*

Keywords: *Romania, uncertainty, industrial production, investments*

Introduction. The Romanian macroeconomic climate deteriorated in 2024, as the political tensions and the unprecedented expansionary income policy had a negative impact on investments. The GDP grew by an annual pace of 0.8% in 2024, the weakest since 2020, as the gross fixed capital formation contracted by the most severe annual rate since 2013 (3.3%) (Eurostat, 2025).

However, the recent macroeconomic developments express that the economic activity in Romania hit a low point during the first quarter of 2025. For instance, the constructions (a capital-and labor-intensive sector) rose for the second quarter in a row, while the industrial production improved in 2Q 2025 (Eurostat, 2025). At the same time, the trade balance deficit started an adjustment process in the month of May, while the foreign direct investments significantly improved in June (National Bank of Romania, 2025a).

In this paper, standard econometric tools are employed (the Hodrick-Prescott filter), and the databases of the National Institute of Statistics of Romania (2025), Eurostat (2025) and National Bank of Romania (2025a) are used to assess the recent macroeconomic developments in Romania. The rest of the paper has the following structure: the literature review is presented in chapter two; the third chapter describes the methodology; the main results are emphasized in chapter four; the conclusions are drawn in the last chapter.

Literature review. In 2024, the Romanian economy grew by a slowing annual pace to 0.8%, the weakest performance since the pandemic year 2020 (Eurostat, 2025). The deterioration of the macroeconomic climate was determined by the weakening investments and the widening trade deficit (World Bank, 2025a). The gross fixed capital formation contracted in the last quarter of 2024 by the most severe annual pace since 2009, according to Eurostat (2025), an evolution reflecting the deterioration of the investors' confidence, in a context dominated by the political tensions and the tough challenges in terms of public finance. The high level of political uncertainty and the large budget deficit were the main factors that determined the downward revision of the sovereign rating outlook (Fitch Ratings, 2024).

Furthermore, several institutions have cut the forecasts for the annual growth pace of the Romanian economy in 2025. For instance, the IMF (2025) diminished the forecasts for the annual growth rate of GDP in 2025 from 3.3% to 1.6%. At the same time, the World Bank (2025b) also cut the GDP growth forecast for this year from an annual pace of 2.6% to an annual rate of 1.9%.

However, the macroeconomic indicators have recently improved in Romania, an evolution supported by the improvement of the risk perception following the end of the electoral period, the prospects for the acceleration of the structural reforms, and the adjustment of the consumption behavior of the households (also influenced by the fiscal consolidation process). The foreign direct investments rebounded in June (National Bank of Romania, 2025a), while the industrial production rose for the second month in a row in June, by an annual rate of 2.0% (National Institute of Statistics, 2025). Last, but not least, we point out that the flash estimate of Eurostat (2025) indicates an acceleration of the annual growth pace of GDP from 0.5% in the first quarter to 2.4% in the second quarter of 2025.

Research methodology. In this paper we apply standard econometric tools and use the database of the National Institute of Statistics of Romania (2025) to analyse the recent macroeconomic developments in the country. We implement the Hodrick-Prescott filter to distinguish between the structural and the cyclical components of the most relevant *proxy* indicator for the economic activity, the industrial production (Ravazzolo & Vespignani, 2016).

This is one of the most used methods in the macroeconomic literature, due to its simplicity and transparency, being based on the following relation:

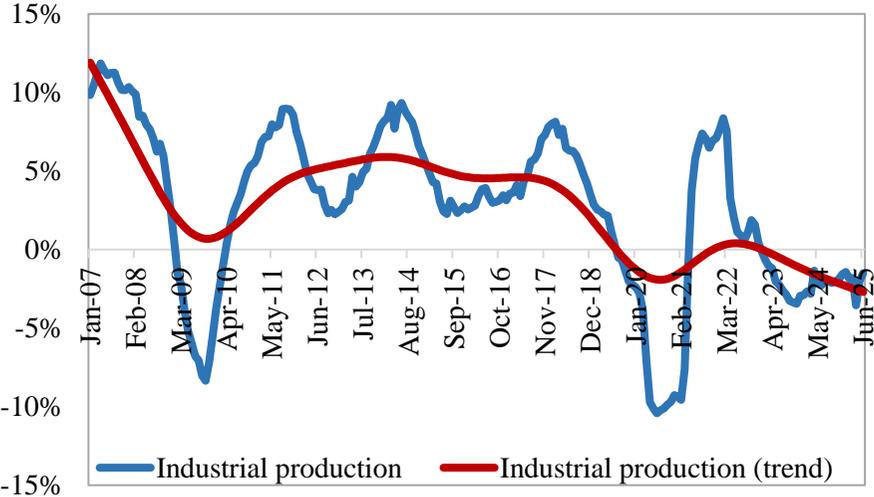
$$\text{Min} \sum_{t=1}^T (\ln Y_t - \ln Y_t^*)^2 + \lambda \sum_{t=2}^{T-1} ((\ln Y_{t+1}^* - \ln Y_t^*) - (\ln Y_t^* - \ln Y_{t-1}^*))^2 \quad (1).$$

In this relation Y_t , Y_t^* and λ are the macroeconomic indicator (in our case the volume of the industrial production), its structural component (the trend), and a smoothness parameter. We worked with monthly observations for this indicator, considering the 12-month moving average for the annual rate for the period January 2007 (when Romania joined the European Union) to June 2025, considering the database of the National Institute of Statistics 2025). For the smoothness parameter we considered a level of 14400, as recommended by Hodrick and Prescott (1997), while working with monthly observations.

Main results. According to the econometric estimates, the industrial production in Romania (the 12-month moving average for the annual rate) stood above its trend for the second month in a row in June 2025, as can be noticed in *Figure 1*. The trend component of the indicator improved for the second month in a row in June, towards the highest level since January 2025.

Furthermore, we point out that, except for the month of April 2025, this indicator has stood above its trend since October 2024. Last, but not least, we emphasize that the volume of the industrial production presented a level below its trend for seven quarters in a row, from January 2023 to September 2024 (except for April 2024), an evolution strongly influenced by the consequences of the intensification of the geopolitical tensions, including the deterioration of the international competitiveness and the increase of the energy prices.

Figure 1. The industrial production vs. its trend (12 months moving average for the annual rate)



Source: representation of the author considering the results of the econometric estimates, using the database of the National Institute of Statistics of Romania (2025)

In other words, according to our results, it seems that the worst has passed in the Romanian industry, following the contraction of the volume of industrial production for two years in a row, 2023 and 2024, by average annual rates of 3.0%, and 1.6%, respectively according to the estimates of the National Institute of Statistics of Romania (2025). This perspective is supported by several factors, including the recent developments of the manufacturing new orders and labour productivity in industry, but also the prospects of the acceleration of structural reforms. The manufacturing new orders grew by annual rates of 13.7% in May and 9.2% in June, while the labour productivity in industry advanced by annual rates of 9.6% in May and 3.9% in June 2025, according to the National Institute of Statistics of Romania (2025).

Discussion and conclusions. In this paper, we analysed the recent macroeconomic developments in Romania, with a focus on the dynamics of the volume of the industrial production, a widely used coincident indicator and a

barometer for economic activity. The results of our econometric estimates indicate that the worst has passed for the Romanian economy in the first quarter of 2025, as the industrial production seems to have changed the trend (from a downward to an upward) in the second quarter of the year, while this indicator has stood above its trend since October 2024 (except for April 2025).

The recent improvement of the industrial production in Romania was convergent with the developments in the European Union, where the volume of the industrial production resumed growth in February 2025 (after contracting for seven quarters in a row), climbing by annual rates of 0.4% in February, 2.8% in March, 0.2% in April, 2.7% in May, and 0.5% in June (Eurostat, 2025). On the other hand, we have to mention the risk factors for the evolution of the Romanian economy in the short run: the persistent uncertainty in the world economy and the high level of the domestic twin deficits.

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**DETERMINANT VECTORS OF THE DEVELOPMENT OF RURAL
COMMUNITIES WITH TOURISM RELATED ACTIVITIES.
CASE STUDY: SUCEVIȚA RESORT**

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***Abstract.** The mountainous area of Bukovina is continuously shaped by numerous economic processes in which the natural environment plays a key role. In the context of the economic dynamics of recent years, the initial status of the determinant elements of the geographical environment (water areas, forested areas, soil quality, cultural landscape, privileged geographical position) has led to the emergence of a new determinant for local development: tourism and leisure activities, present in most mountainous areas with adequate accessibility. This determinant factor triggers a redistribution of the resources available to rural communities and alters the functional profile of the settlements where the tourism business` growth has already reached threshold of development. In view of the above circumstances, the paper aims to identify a new potential set of determinants for the development of a rural community in which the scale of tourism activities has resulted in the coexistence of two types of rurality that can be identified in the same geographical area: one dominated by the traditional primary sector, the other in which tourism has substantially changed the way of life of the inhabitants and the perception of the use of the resources offered by the natural environment.*

***Keywords:** structuring vectors, tourism, resorts of local interest*

Introduction. Approaching rural space through the lens of development-driving vectors offers an integrative method of analysis, based on the level of influence that key factors gain or lose over a given territory within a specific timeframe. A relevant example is the village of Sucevița, located in Suceava County, Romania, which was designated in 2017 as a national tourist resort. The main reason for obtaining this new status lies in the dynamic and diverse tourism infrastructure, which has led to increased visitor flows. This transition to a new stage of community development has activated both internal and external forces, whose mechanisms we aim to decipher.

Literature Review The development of rural communities through tourism is a widely explored topic in both international and Romanian academic literature. Recent studies highlight rural tourism as a strategic vector for economic and social revitalization, with the potential to strengthen local identity and stimulate entrepreneurship. Saarinen (2018) emphasizes the role of rural tourism in enhancing community resilience in the post-pandemic context, while Sangwon et al. (2020) stress the importance of community participation in tourism planning. Stojanova et al. (2021) propose the integration of digital technologies into rural development through the concept of the “smart village,” exploring tourism as a tool for local empowerment.

In the European context, Caneloro & Tartari (2025) analyze the valorization of cultural heritage in rural tourism, and Joshi et al. (2024) offer a comparative perspective on regional development strategies. Romanian contributions complement this vision with applied studies: Urquhart (2019) and Avram & Bălan (2020) propose innovative methods for rural tourism development, including digitalization and access to European funding, while Matei (2013) highlights the role of traditional and gastronomic marketing in promoting Romanian villages. The literature converges on the idea that the success of rural tourism depends on the community’s ability to capitalize on local resources, adapt to market demands, and build sustainable development models.

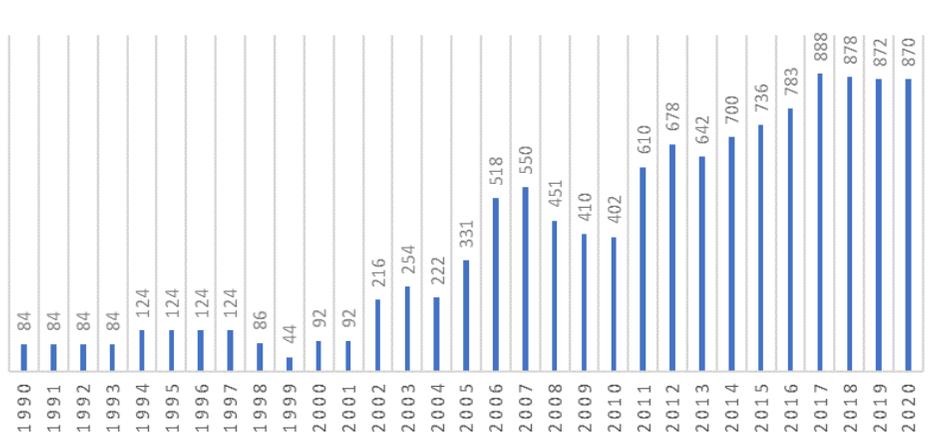
Research Methodology To demonstrate the transformation of Sucevița’s economic structure over the past two decades, the research relies on official statistical data provided by the National Institute of Statistics, focusing on the dynamics of economic activities and the evolution of the tourism sector. In addition to the quantitative analysis, the study also explores the social dimension of tourism development through three guiding research questions: (1) Are the two types of rurality – traditional and tourism-driven - in competition? (2) Do active economic actors (tourism entrepreneurs) impose their own model of rurality on passive actors? (3) Does this behavior alter traditional social relations within the community?

This mixed-method approach aims to outline an explanatory model of rural transformation driven by tourism, with relevance for local development policies.

Main Results The analysis of Sucevița’s tourism function over the past three decades reveals a profound transformation of the village’s economic and spatial structure. Until 1990, the local economy was dominated by agro-forestry activities such as animal husbandry, potato cultivation, timber exploitation, and small-scale processing industries. Tourism played a marginal role, mainly supported by the presence of the Sucevița Monastery and the area’s relatively good accessibility.

Between 1990 and 2021, an accelerated reconfiguration of the economic structure occurred, shifting from an agro-industrial profile to one focused on services—particularly tourism and recreation (*Figure 1*). This transition is evident in the densification of residential housing and the expansion of tourism-related constructions, especially along valleys and ridgelines surrounding the village, indicating increased pressure on the rural landscape.

Figure 1. Evolution of accommodation in Sucevița during 1990-2020



Source: authors' calculations based on data from the National Institute of Statistics

Discussion and conclusions. At a certain point in the historical evolution of a community, a complex interplay of factors – potential, resources, and a well-defined strategy – acting over a sufficiently long period, can trigger an accelerated transformation of its economic profile. This shift often results from the influence of active agents (in this case, tourism entrepreneurs) who impose their own model of rurality upon passive actors. In the case of Sucevița commune, the primary vectors of development were natural resources – especially the forest, which evolved from its traditional role as a source of food and construction material into a tourism asset, valued for its scenic appeal and health-related benefits. Secondary vectors include the cultural-religious heritage represented by the Sucevița Monastery, which has become a regional attraction, and improved accessibility that connects the village to urban centers such as Rădăuți, Câmpulung, and Suceava.

The designation of Sucevița as a national tourist resort in 2017 marked a turning point in the commune's development, consolidating its tourism function and attracting investments in hospitality infrastructure. Census data from 1992 and 2011 confirm this trend, showing a decline in the share of agricultural workers and a significant increase in employment within the service sector, particularly in tourism and commerce.

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GENDER-SENSITIVE PERSPECTIVES ON WOMEN'S ENTREPRENEURSHIP: INSIGHTS FROM UNGHENI AND CAHUL

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JEL Classification: L26, J16

Abstract. *This study investigates women's participation in entrepreneurship and employment in Development Regions (Center and South) with focus in Ungheni Cahul districts, aiming to identify gender-specific barriers and regional disparities in economic inclusion. The purpose was to assess women's labour market integration, wage equality, access to assets, and potential for entrepreneurship within local and national development programs. Findings reveal that women account for the majority of the employed population, yet they are concentrated in service sectors and remain underrepresented in higher-paying fields such as agriculture, construction, and ICT. Informal employment is particularly widespread among rural women, limiting access to stable income and social protection. Limited ownership of agricultural land and property further constrains women's access to credit and entrepreneurial resources. The study concludes that addressing these inequalities requires gender-responsive policies, inclusive business support services, and targeted measures to expand women's entrepreneurial opportunities.*

Keywords: *women entrepreneurship, gender gap, gender-disaggregated indicators, gender-specific barriers, gender sensitive approach.*

Introduction. Women's participation in entrepreneurship and employment is a key driver of inclusive growth, yet persistent gender disparities continue to shape labour markets in Moldova. This study focuses on the Development Regions Centre and South, with particular attention to Ungheni and Cahul districts, to assess women's integration into the labour market and their potential for entrepreneurship. By combining quantitative and qualitative approaches, the research explores wage inequality, ownership of productive assets, access to credit, and sectoral distribution of employment. The analysis seeks to inform policies and programmes that address structural barriers and promote women's economic empowerment at both regional and national levels.

Literature review. Existing literature underscores that gender inequalities in Moldova's labour market are systemic, rooted in occupational segregation, unequal pay, and limited access to entrepreneurial resources. According to the National Bureau of Statistics (NBS), women represent nearly half of the employed population but are concentrated in services, healthcare, and education, while underrepresented in higher-paying sectors such as construction, ICT, and agriculture. Studies by ILO (2020; 2023) highlight that women entrepreneurs often operate micro-enterprises,

facing constraints in financing, digitalisation, and integration into value chains. UN Women and UNDP reports further emphasise the persistence of informal employment among rural women, limiting their access to social protection and stable income. The Country Gender Profile of Moldova (EU, 2023) stresses the importance of gender-responsive budgeting and tailored support services to close gender gaps. Together, these studies provide a foundation for understanding barriers to women's economic empowerment and the need for regionally adapted interventions.

Research methodology. The methodology combined statistical analysis of gender-disaggregated labour market indicators from the National Bureau of Statistics with qualitative methods, including semi-structured interviews with local business service providers and focus group discussions with women entrepreneurs. This mixed-methods approach provided a comprehensive understanding of both structural conditions and lived experiences shaping women's participation in the economy.

Main results. Data confirm that women account for slightly more than half of the employed population, reflecting their central role in Moldova's labour market. However, women are concentrated in service sectors, including education, health, retail trade, and hospitality, which are typically lower-paid and more vulnerable to economic shocks. In contrast, women remain underrepresented in higher-paying fields such as agriculture, construction, and information and communications technology (ICT).

SMEs are the backbone of Moldova's economy, and Ungheni and Cahul reflect this structure. In Ungheni, SMEs represent nearly 99.7% of all enterprises, employing about 6,300 persons. Micro-enterprises dominate, accounting for 90% of SMEs, which reflects a fragmented business environment with limited opportunities for scaling up. In Cahul, the SME sector is similarly structured but exhibits stronger performance. SMEs account for 27% of the region's total, employing nearly 9,500 persons and generating 4.3 billion lei in turnover, equal to 25% of the South region's SME turnover. Micro-enterprises also dominate (87%), but Cahul SMEs demonstrate relatively higher profitability compared to Ungheni.

From a gender perspective, women are more likely to own micro-enterprises (90.3%) compared to men (82.3%), yet remain largely absent in medium and large businesses. Women-led enterprises record slightly higher growth rates after establishment (84% versus 78% for men), but face systemic barriers such as limited access to finance, low demand, and shortages of skilled labour. In rural areas, informal employment is widespread among women, limiting their access to stable income, social protection, and employment rights. Focus groups revealed that many women accept seasonal or unpaid family work due to lack of alternatives.

This precarious employment further reinforces women's dependence on household income and reduces their resilience to external shocks, such as migration or health crises. From a gender-sensitive economic monitoring perspective, this productivity gap may be linked to sectoral composition, market access, and business model differences between the two districts. Given the high share of women among micro-enterprise owners, targeted interventions to enhance productivity-such as skills upgrading, access to digital tools, and value-chain integration -could help close the performance gap and improve women's economic outcomes in the South region.

Women entrepreneurs demonstrate a clear and growing demand for short-term, practice-oriented programmes that enhance skills in specific areas from digital

competencies to applied entrepreneurship. Delivering such courses through colleges and universities would strengthen women's economic participation and facilitate the transition into higher value-added activities; reduce the mismatch between the supply of educational services and the needs of the labour market; ensure long-term availability and institutional anchoring of entrepreneurial training opportunities. Formal education not only prepares a qualified labour force but also offers a sustainable platform for the systematic development of entrepreneurial skills. Integrating gender-responsive business courses into educational institutions can create a resilient model of women's entrepreneurship support, independent of the limitations of external financing and short-term projects.

Conclusions and Policy Implications. The study concludes that despite women's strong presence in the labour market and micro-enterprise sector, structural inequalities continue to limit their economic empowerment. Women remain underrepresented in profitable industries, carry disproportionate care responsibilities, and face systemic barriers to accessing finance and assets.

To address these inequalities, the following measures are recommended:

1. Gender-responsive policies that mainstream equality into labour market and entrepreneurship programmes.
2. Inclusive business development services, extended to rural and peripheral communities, to improve access to training, advisory services, and professional networks.
3. Targeted financial instruments and incentives to expand women's access to credit, land, and property.
4. Supportive infrastructure, including childcare services, to reduce the care burden and enable women's fuller participation in the economy.
5. Skills development and digitalisation programmes, aimed at equipping women entrepreneurs with tools for market expansion and resilience.

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QUALITY OF EMPLOYMENT AS A BASIS FOR ECONOMIC SUSTAINABILITY OF THE STATE AND COMPETITIVENESS OF ENTERPRISES

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JEL Classification: J20, J21, J22, J23

Abstract. *The relevance of the work is due to the global challenges of digital changes and socio-demographic crises that undermine the economic sustainability of different countries and the competitiveness of national enterprises. High-quality employment is a crucial prerequisite for the economic sustainability of the state and the competitiveness of enterprises. The purpose of the study is to analytically assess various aspects of employment quality, primarily the type of contract, working conditions and social protection. Research methods. The study was conducted using structural and functional analysis, and expert opinions. The analytical assessment was based on data from international organizations and sociological surveys. The article examines aspects of employment quality, such as models of labour contracts, working hours, and reasons for precarious work. The features of part-time employment, temporary work, employment on digital platforms, etc. are outlined. It is proved that the organization of working time is an important factor in the productivity of enterprises, which determines their ability to meet fluctuations in demand and at the same time retain the required number of employees with appropriate working conditions for quality employment. The author emphasizes the impact of informal labour relations and digital technologies on such an aspect of employment quality as social protection.*

Keywords: *part-time employment, temporary work, employment on digital platforms, quality of employment*

Introduction. Non-standard employment is embodied in various forms: temporary employment, part-time work, temporary work through employment agencies and other multilateral labour relations, as well as hidden informal employment, employment on digital platforms, work on call, etc.

Literature review. The model of the labour contract is an important aspect of employment quality; in addition, non-standard contracts are associated with increased risk due to harsh working conditions and precarious working hours. Also, such labour contracts can create vulnerability for workers because they do not provide adequate economic and social protection systems. In this context, the evolution of labour contracts from standard to non-standard (temporary, part-time,

etc.) provides additional insight into the guarantees and quality of employment (Kalleberg, 2012; Huk, 2016; Rubery et al., 2018).

Research methodology. The study was conducted using structural and functional analysis, and expert opinions. The analytical assessment was based on data from international organizations and sociological surveys.

Main results. Non-standard employees who have entered into employment agreements to perform work or provide services and whose wages or income are subject to social security contributions are considered insured persons. Such non-standard employees are entitled to receive social benefits from the state under the same conditions as standard employees. Employees of digital platforms who are registered as individual entrepreneurs and/or work under certificates confirming the right to conduct independent professional activities and subject to payment of the unified social tax are insured persons and are entitled to all social insurance benefits provided for by law.

Temporary employment under a fixed-term contract is becoming an increasingly common form of precarious work in Ukraine. According to the State Employment Service, more than 60% of employed citizens have received temporary work. In the first half of 2024, a total of 124,004 people used the services of the State Employment Service to find work. Public and other temporary work was performed by 16722 people, and community service work by 68209 people. Fixed-term contracts are the standard for business entities providing employment mediation services. In the first half of 2024, business entities providing employment agency services employed 20,389 people under fixed-term contracts for a period of 6 months to 3 years or more.

Part-time employment, when less than 30 hours per week are actually worked, amounted to 7.3% in 2021. This form of employment may be relevant for young people studying, for workers who have family responsibilities, care for children, or for relatives in need of care. But part-time work can be forced. In 2021, 1.6% of full-time employees in Ukraine were forced to switch to part-time work: 1.4% of full-time employees were transferred to part-time work for economic reasons, and 0.2% were on unpaid leave. The main problem with part-time employment is the “voluntary” nature of its choice. On the one hand, an employee's conscious choice of part-time employment expands his or her potential for self-realization and stimulates labour activity, resulting in an increase in decent productive employment in the national labour market. On the other hand, forced part-time employment exacerbates the risks of precarization of the labour force, increasing the level of hidden unemployment and exacerbating existing inequalities.

According to various sources, Ukraine ranked first in Europe and fourth in the world in terms of *employment on digital platforms*, measured by the amount of financial flows and the number of tasks performed on such platforms in 2013-2017. We are talking about employees who represent a cohort of skilled workers who provide mostly interactive services and are engaged in independent entrepreneurial activities. According to sociological studies, it is estimated that at least 3% of the Ukrainian labour force was involved in online work. The surveyed digital platform

workers said they earned an average of UAH 7,512 per month in 2017. As of December 2017, this was equal to USD 260 per month, which was slightly higher than the average national wage of UAH 7,479 and slightly more than twice the minimum monthly wage. Given that the average working hours on digital platforms, including paid and unpaid activities, were 30 hours, working on a platform is quite attractive (ILO, 2018).

Discussion and conclusions. When comparing earnings on digital platforms and wages in the offline economy, it should be remembered that employers already deduct social contributions from the wages of employees, while workers on digital platforms must do so on their own if they officially register their activities, or they can choose informal shadow employment, when no taxes or social contributions are paid on their income. In the first option, workers on digital platforms will be entitled to social benefits from the state as insured persons, although their income may be lower than that of employees (depending on the level of earnings of the freelancer). In the second option, workers on digital platforms may have an income higher than that of employees, but without any social and labour guarantees.

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DIGITAL INCLUSION & INNOVATION FOR COMMUNITY RESILIENCE: EMPOWERING SMALL-SCALE FARMERS IN MOLDOVA

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JEL Classification: Q1, R1, H254

Abstract. *This presentation explores how digital innovation can enhance economic resilience and inclusive development in rural Moldova by empowering small-scale farmers within community ecosystems. Its purpose is to analyze the potential of digital enablers—such as mobile advisory platforms, e-learning tools, and blockchain-based value chain transparency—to support inclusive entrepreneurship and competitiveness. The methodology combines a literature review of FAO-supported initiatives for Moldovan smallholders with a comparative case study approach and interviews with local agri-entrepreneurs and digital service providers. Key findings reveal that tailored digital tools significantly increase access to market information, input sourcing, and financial services, boosting farm incomes and social inclusion while mitigating demographic decline in rural areas. The research also identifies critical barriers—digital infrastructure gaps, low digital literacy, and regulatory inertia—that constrain scale-up. The conclusion underscores that integrating digital innovation into community-driven development not only enhances individual competitiveness but fosters demographic resilience and social equity. Strategic public-private collaboration and targeted capacity building emerge as essential. Recommendations focus on policy frameworks and partnership models to scale digital inclusion across Moldova’s rural communities. The article was developed within the framework of Subprogram 030101 „Strengthening the resilience, competitiveness, and sustainability of the economy of the Republic of Moldova in the context of the accession process to the European Union”, institutional funding.*

Keywords: *digitalization, innovation, community development, rural entrepreneurship, small-scale farming, resilience, competitiveness*

Introduction. The Republic of Moldova is undergoing a dual transformation: digital modernization and the reset of rural communities affected by migration, aging, and poverty. The ICT sector gains crucial attention on the Government agenda and in the same time is a cross-cutting sector, the agriculture still remains a strategic sector, but small-scale farmers are often left behind in the digital transition. In this context, innovation and digital inclusion are increasingly recognized as strategic

tools to build resilient rural economies. This article aims to explore the intersection between digitalization and inclusive growth in Moldova, focusing on small-scale farmers as drivers of rural development and local entrepreneurship.

Literature review. International organizations such as FAO, ITU, and the World Bank emphasize the role of digital agriculture in achieving Sustainable Development Goals (SDGs), especially those related to poverty reduction, food security, and economic resilience. FAO (2022) notes that smallholders in Eastern Europe, including Moldova, are often excluded from value chains due to limited access to data and markets. ITU and FAO’s joint e-agriculture readiness assessment (2022) identifies gaps in connectivity, skills, and policy coordination. These reports confirm that inclusive digital transformation requires an ecosystem approach that combines infrastructure, policy, training, and multi-stakeholder engagement. Moreover, institutional and regulatory frameworks—including those related to entrepreneurship and bankruptcy law—play an indirect but important role in shaping innovation ecosystems (Armour & Cumming, 2008).

Research methodology. The study uses a qualitative comparative approach based on three data sources:

- i. Desk review of national and international reports (FAO, ITU, World Bank);
- ii. Case studies from Moldovan rural communities implementing digital tools (e.g., e-extension platforms, mobile agronomy);
- iii. Semi-structured interviews with 10 local entrepreneurs, cooperatives, and tech service providers.

The framework analyzes four dimensions: (1) access to technology, (2) knowledge and skills, (3) institutional support, and (4) perceived impact on livelihoods.

Main results.

Table 1. Perceived Benefits from Digital Adoption among Smallholders

Benefit Area	Reported Impact (%)	Example
Market Access	25%	Selling via digital platforms
Input Planning	18%	Using weather & crop planning apps
Income Growth	30%	Saving through optimized operations

Source: Field interviews with 10 small-scale farmers

Access to Technology: While Moldova has decent mobile coverage (4G in most rural areas), access to affordable smart devices and broadband remains limited. Community centers equipped with digital services are scarce.

Knowledge and Skills: Digital literacy is a major barrier. Only 30–35% of smallholders report using mobile apps for agriculture. Training programs are either donor-funded pilots or ad hoc.

Institutional and Policy Support: No comprehensive national digital agriculture strategy exists. Ministries operate fragmented initiatives, often lacking alignment with rural development goals.

Impact on Livelihoods: Interviewees using digital tools (e.g., FarmIQ, AgriMarketplace) reported:

- 20–30% increase in market access.
- Reduced input costs due to better planning.
- Enhanced connection to urban consumers via e-commerce.

These innovations not only improved productivity but fostered inclusive participation of youth and women in agribusiness.

Discussion and conclusions. Digital inclusion has the potential to become a transformative tool for Moldova’s rural development. However, progress remains uneven and constrained by systemic barriers: low digital literacy, weak policy coherence, and underinvestment in infrastructure. Also, very limited resources and focus is put on digital enablers. The findings confirm that digital transformation cannot succeed without a human-centered approach focused on:

- Equipping farmers with relevant skills;
- Building digital trust and inclusion;
- Creating supportive ecosystems, including digital enablers, that align public and private incentives.

Community development models that integrate digital cooperatives, rural innovation hubs, and local knowledge sharing could accelerate change. In addition, cultural attitudes toward technology adoption vary across contexts, influencing how rural households perceive risks and opportunities in digital engagement (De Mooij, 2017). Inclusive innovation must become a national priority - not just a tech trend.

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THE IMPACT OF THE ICT SECTOR ON THE COMPETITIVENESS OF THE REPUBLIC OF MOLDOVA

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Abstract. *The purpose of the research is to evaluate and analyze the impact of the ICT sector on the economic competitiveness of the Republic of Moldova. Research objectives: To examine conceptual aspects related to the ICT sector and economic competitiveness at the national and international levels, to analyze the evolution of the ICT sector in the Republic of Moldova, comparing it with Estonia and other leading countries in terms of competitiveness.*

Results: assessment of the ICT sector's contribution to national GDP, identification of the main challenges and opportunities for the development of the ICT sector in the Republic of Moldova, proposal of measures to improve economic competitiveness. The article was developed within the framework of Subprogram 030101 „Strengthening the resilience, competitiveness, and sustainability of the economy of the Republic of Moldova in the context of the accession process to the European Union”, institutional funding.

Keywords: *competitiveness, information technology, economic growth, global innovation index*

Introduction. In the contemporary digital age, the synergy between economic growth and the information and communications technology sector is essential for global development. As societies adapt to new technologies, ICT integration is becoming a key driver of economic progress. This interdependence highlights the sector's importance in optimizing productivity and efficiency across various industries, from e-commerce to healthcare and education. ICT capital, defined by increased investment in technological infrastructure, contributes significantly to enhancing economic competitiveness. Furthermore, the widespread adoption of ICT solutions facilitates innovation and rapid access to information, creating opportunities for new business models and promoting digital inclusion. This creates a favorable environment for entrepreneurship and sustainable development.

However, we wanted to identify the impact of ICT on competitiveness, as well as analyze the gaps between the economy of the Republic of Moldova and other countries in this regard.

Literature review. Multiple studies on the impact of ICT on countries' economies are reflected in global reports by the World Bank, UNCTAD, the World

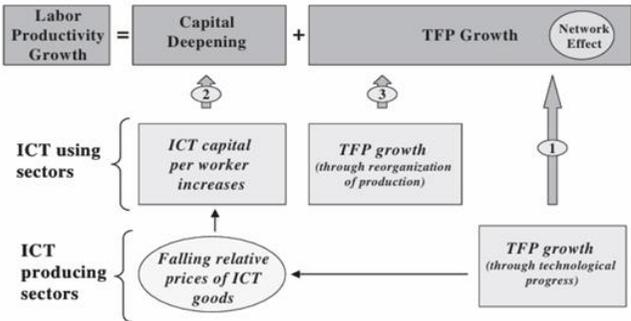
Economic Forum, etc. The latest analyses are reflected in the research of Christine Zhen-Wei Qiang, Alexander Pitt, Seth Ayers, Di Wang, Jianing Sun, Renhao Yang, Kangchuan Su, and Qingyuan Yang are globally recognized.

Research methodology. The research methods used are analysis and synthesis of existing reports, as well as evolutionary quantitative analysis, argumentation, and deduction.

Main results. Starting from the idea that economic competitiveness is a multifaceted concept influenced by numerous factors. A comprehensive understanding of these elements is crucial for decision-makers and business leaders who aspire to stimulate economic growth and development. The determining factors of economic competitiveness are productivity, innovation, workforce skills, and access to technology. Other factors that also play an important role are: structural changes, FDI, education levels, human capital expenditure, research and development, and incentives for innovation.

In the paper "The Contribution of Information and Communication Technologies to Growth" by Christine Zhen-Wei Qiang, Alexander Pitt, and Seth Ayers, three channels of the ICT sector that can contribute to economic growth are described (*Figure 1*), namely: 1) PTF growth in ICT production sectors, 2) Capital deepening, 3) PTF growth through reorganization and ICT use.

Figure 1. ICT contribution channels to economic growth



Source: Christine Zhen-Wei Qiang, Alexander Pitt, with Seth Ayers (2024)

Such performance gains are equivalent to rapid TFP growth in ICT-producing sectors, which in turn contribute to average TFP growth in the economy. The second channel through which ICT can influence productivity is when higher levels of financial investment in ICT bring about new products and price reductions.

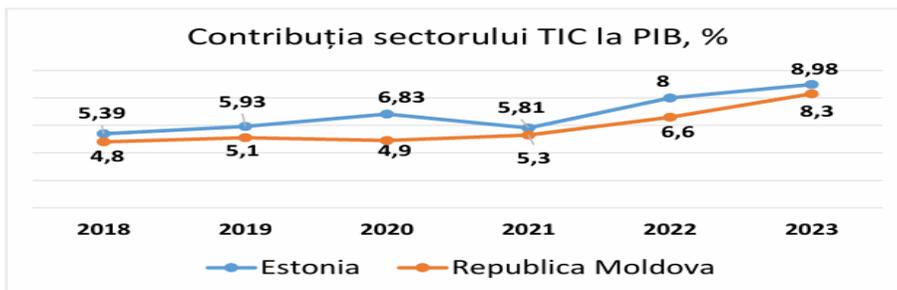
Figure 2. Moldova's digital performance in global rankings (2023-2024)



Source: Created by the author based on an analysis of indicators

If we analyze the global ICT and competitiveness rankings (*Figure 2*), I believe that Estonia and Finland are good examples of best practices in the adoption of digital technologies and innovation, while the Republic of Moldova needs to consolidate and improve its digital infrastructure to minimize the gap with regional leaders and other countries that rank higher in ICT, which increases economic competitiveness. IT companies in Estonia operate on a unique logic, offering strategic consulting, change management, and IT development to create functional electronic solutions. Seamlessly functioning digital services increase economic growth potential and offer a higher quality of life.

Figure 3. Contribution of the ICT sector to GDP, %, based on global reports, 2023



Source: Created by the author based on an analysis of indicators

In the above diagram (*Figure 3*) on the contribution of the ICT sector to GDP, we can see that Estonia is generally following an upward trend, with the most significant increase occurring between 2021 and 2023, when it rose from 5.81% to 8.98%. A similar upward trend can be observed in the Republic of Moldova during the same period, with a considerable increase from 5.3% to 8.3%. These increases can be attributed to various factors, such as investments in the field, an increase in the number of IT companies, and subsequently the development of digital infrastructure.

Conclusions: Based on the research conducted, we can conclude that the ICT sector does indeed have a significant influence on economic competitiveness in both the Republic of Moldova and other countries. This research reflects the continuing major importance of information and communication technologies in the socio-economic context at national and international level. This study highlights the historical evolution of the ICT sector and the fact that it has become a key component in promoting economic and social development, making a key contribution to increasing economic competitiveness through innovation, productivity, and digital integration. Key recommendations for the Republic of Moldova include attracting strategic investments to ensure a modern and efficient ICT infrastructure. Promoting research and development in the field of ICT can lead to the creation of new technologies and various solutions that could be applied in economic sectors. Creating a favorable business environment for the ICT sector by establishing a transparent legal framework that can encourage and attract foreign investment.

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TOBACCO MANUFACTURING INDUSTRY IN THE REPUBLIC OF MOLDOVA: MAIN TRENDS

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Abstract. *In the last years the tobacco product manufacturing industry in the Republic of Moldova has experienced important transformations. In particular, in 2019-2023, the sector has consolidated its market position and reorientated towards foreign markets. In this paper we aim to analyse the evolution of manufacture of tobacco products sector, based on the data from the financial reports of the companies. The main findings reveal a 33.3% reduction in the number of enterprises, while sales revenues increased by 70% compared to 2019, reaching MDL 276.3 million in 2023. The value of industrial production increased by 76.7% from MDL 139.2 million to MDL 246.0 million. The sector is dominated by three major companies controlling 81.3% of the market: 'TUTUN-CTC', 'BT-TABAC HOLDING' and 'AGOS GREEN'. The labor force is concentrated in medium-sized companies that account for 89% of the workforce and generate 99.9% of revenues. A significant shift occurred in the structure of deliveries - from an increasing dependence on the domestic market (99.5% in 2021) to a rapid reorientation towards exports (37.7% in 2023), indicating a strategic diversification of markets and a reduction of risks associated with dependence on the domestic market. The research was performed within the framework of Subprogram 030101 „Strengthening the resilience, competitiveness, and sustainability of the economy of the Republic of Moldova in the context of the accession process to the European Union”, institutional funding.*

Keywords: tobacco industry, exports, market concentration

Introduction. The tobacco manufacturing industry in Moldova has experienced significant changes since independence. What began as a thriving sector quickly faced serious challenges. Public health campaigns targeting smoking reduction dealt another blow to the industry. However, despite its controversial nature, this sector could generate substantial revenue and employment opportunities. Today, policymakers must balance legitimate public health concerns with the potential economic benefits that could support Moldova's development goals.

Research methodology. The analysis of the tobacco industry in the Republic of Moldova covers the period 2019-2023 to provide a relevant picture of recent sector developments. The data are sourced from financial statements submitted by Moldovan companies to the National Bureau of Statistics, specifically from enterprises whose activity is classified under code C12 Manufacture of tobacco products.

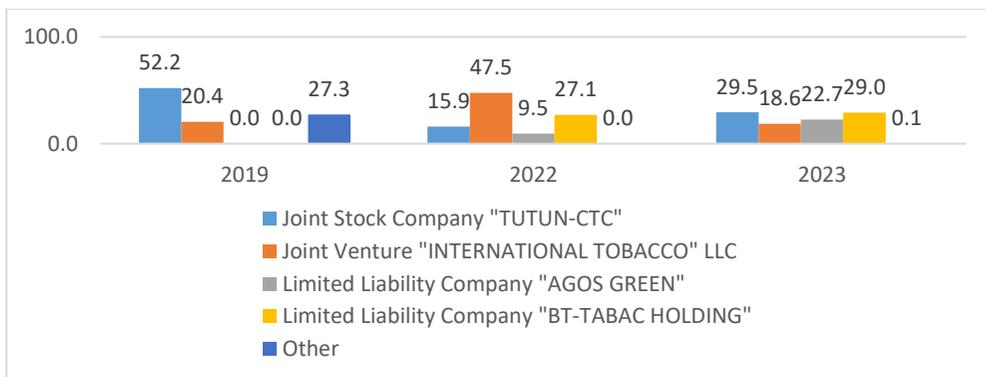
Main results. *Evolution of main indicators of enterprises in the tobacco products manufacturing industry.* Between 2019 and 2023, the tobacco products manufacturing industry in the Republic of Moldova registered several structural changes. The sector

decreased from 12 enterprises in 2019 to 8 enterprises in 2023, representing a 33.3% reduction. The workforce remained relatively stable when comparing 2019 to 2023 figures. The year 2023 marked a particularly notable upturn, with employee numbers reaching to 318 (an 18.2% increase from the previous year). This employment growth, occurring alongside the reduction in company numbers, may indicate that surviving enterprises have expanded their operations and workforce capacity.

The sector faced a considerable downturn in 2020, when sales dropped to MDL 133.46 million from MDL 162.44 million the previous year. However, 2021 brought an unexpected surge, with revenues increasing to MDL 397.07 million. By 2023, the industry counted MDL 276.3 million in cumulative sales revenue, representing modest growth of 3.2% year-over-year but a substantial 70% increase compared to 2019 data (National Bureau of Statistics, 2025a).

The market is dominated by three mid-sized companies in 2023 - Joint Stock Company "TUTUN-CTC", Limited Liability Company "BT-TABAC HOLDING" and Limited Liability Company "AGOS GREEN" - which together generate about 81.3% of the turnover of the sector. Market share analysis reveals important changes in the positioning of the leading companies. "Tutun-CTC" remains the market leader with a share of 29.5% in 2023, but down significantly from 52.2% in 2019. LLC "BT-TABAC HOLDING" maintained a stable share of 29% in 2023, up slightly from 27.1% in 2022. The most spectacular growth was recorded by LLC "AGOS GREEN" with a market share of 22.7% in 2023 (a significant increase from 9.5% in 2022) (Figure 1).

Figure 1. Market share of companies in the sector C12 Manufacture of tobacco products, %



Source: own calculations based on financial statements submitted to NBS

According to the size class structure of enterprises, half of the enterprises consist of medium-sized enterprises while the remaining half are micro enterprises. Medium-sized enterprises clearly dominate the sector, owning 89% of the workforce and generating almost all of the industry's revenues (99.9%). In contrast, micro enterprises only own 11% of the employees and contribute insignificantly to total revenues (0.1%).

Evolution of manufactured industrial production and deliveries. The tobacco product manufacturing industry in the Republic of Moldova has registered a significant increase in the value of industrial manufactured output between 2019 and

2023. The production value of the entire tobacco industry increased by 76.7% in 2019-2023, from MDL 139.2 million to MDL 246.0 million. In the last years (2023 vs. 2022), the increase was 27.8%, marking a rebound following a decline in 2022 (National Bureau of Statistics, 2025b).

The analysis of production delivery structure indicates a major strategic shift in sales market orientation between 2019 and 2023. During early years, companies operated with an almost singular focus on domestic consumers. In 2019, local market deliveries accounted for 92.9% of total production. Starting in 2022, a major strategic shift occurred as exports increased significantly, reaching 23.4% of total deliveries in 2022 and continuing upward to 37.7% in 2023 (National Bureau of Statistics, 2025c).

Conclusions. The Republic of Moldova tobacco industry experienced significant changes during 2019-2023. Despite short-term variations, the industry has demonstrated significant growth prospects, with revenues 70% greater than 2019 and manufacturing output value increasing by 76.7% over the same period. The industry has transitioned from one company's clear dominance to a more balanced market, with three top players holding a combined 81.3% market share. The most significant change has been the delivery structure shift from increasing dependence on the domestic market (99.5% in 2021) to rapid export growth (37.7% in 2023).

For long-term sustainability, the Moldovan tobacco industry should continue to reinforce export markets diversification, invest in technology-driven modernization and construct plans to adapt to developing global tobacco regulations.

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Note: The research was performed within the framework of Subprogram 030101 „Strengthening the resilience, competitiveness, and sustainability of the economy of the Republic of Moldova in the context of the accession process to the European Union”, institutional funding.

THE INTEGRATION OF SMART TECHNOLOGIES AND THE DEVELOPMENT OF PHOTOVOLTAIC PARKS IN THE REPUBLIC OF MOLDOVA

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Abstract. *The adoption of smart technologies in photovoltaic parks in the Republic of Moldova represents a critical step toward the energy transition and the strengthening of national energy security. These technologies include advanced monitoring systems, automated control, intelligent energy storage, and integration with smart grids. Their implementation contributes to improved operational efficiency, real-time energy production optimization, and reduction of energy losses.*

Recent studies highlight that the use of smart solutions allows for predictive analysis of equipment performance, helping to prevent failures and extend the life of investments. At the same time, the integration of digital technologies in the photovoltaic sector optimizes management processes through data-based decisions and strengthens the attractiveness of projects for investors.

In the context of the Republic of Moldova, the adoption of these technologies is favored by the continuous reduction of costs associated with solar technologies, as well as the alignment of the regulatory framework with European standards. Moreover, smart solutions facilitate a more efficient integration of renewable energy into the national electricity grid, contributing to achieving decarbonization and sustainability objectives.

The article was developed within the framework of Subprogram 030101 „Strengthening the resilience, competitiveness, and sustainability of the economy of the Republic of Moldova in the context of the accession process to the European Union”, institutional funding.

Keywords: *renewable sources, stability, security, energy, sustainability.*

Introduction. The energy transition to renewable sources has emerged as a strategic priority for many countries, including the Republic of Moldova, amid the constant growth of energy demand, price volatility on the regional market and international commitments to reduce greenhouse gas emissions. Photovoltaic (PV) energy stands out as one of the most accessible, efficient and easily scalable

renewable sources, and the development of solar parks is gaining an increasingly significant share in the national energy mix. However, the large-scale integration of solar energy into the national grid generates challenges related to intermittency, balancing supply and demand, and ensuring grid stability. In this context, smart technologies such as smart grids, energy storage systems, and digital monitoring solutions provide essential tools for the efficient management of decentralized production, increasing system resilience, and harnessing energy flexibility.

In the Republic of Moldova, the implementation of such technologies is still at an early stage, primarily due to financial constraints, the lack of adapted digital infrastructure, and gaps in the regulatory framework. Nevertheless, their adoption in future photovoltaic projects could significantly contribute to optimizing investments, reducing energy losses, and ensuring long-term energy sustainability.

This paper aims to investigate the prospects for integrating smart technologies into photovoltaic parks in the Republic of Moldova by assessing technological potential, regulatory context, and, most importantly, conducting a cost and investment profitability analysis. The study focuses on developing an applied cost-benefit analysis model tailored to the realities of the Moldovan energy market and seeks to formulate policy recommendations and best practices for investors and decision-makers.

Literature review. The integration of smart technologies in photovoltaic (PV) systems has been widely addressed in the global academic literature, emphasizing their role in enhancing energy efficiency, grid reliability, and investment performance. Numerous studies underline the importance of digitalization, automation, and intelligent energy management systems in overcoming the technical and operational challenges associated with intermittent renewable energy sources. According to (IEA, 2023), smart grids and energy storage solutions are key enablers for the large-scale integration of solar power into national energy systems, as they provide flexibility and support grid stability. Similarly, research by (Lund et al., 2020) and (REN21, 2022) highlights that smart inverters, real-time monitoring, and AI-driven predictive maintenance significantly improve the operational performance of solar parks and extend the lifespan of equipment.

Main results. In 2024, the Republic of Moldova recorded a remarkable increase in its photovoltaic energy production capacity, reaching an installed capacity of 521 MW. This substantial expansion reflects the dynamism of the sector and highlights the growing investment attractiveness of the solar energy market. The rapid development of photovoltaic infrastructure generates significant opportunities for both investors and consumers, thereby strengthening the country's energy transition. Public authorities have supported this growth through financing programs, fiscal incentives, and favorable regulatory measures aimed at promoting the use of renewable energy sources. These initiatives primarily target improvements in energy efficiency, diversification of supply sources, and the reduction of dependence on fossil fuels.

Investments in photovoltaic parks are characterized by high long-term profitability due to low operating and maintenance costs and the extended lifespan of equipment. Technological progress in the solar energy sector allows for technical solutions to be adapted to local conditions, thus optimizing both energy performance and economic efficiency.

International financial instruments play an essential role in project development. Programs such as the Green Economy Financing Facility (GEFF), supported by the European Bank for Reconstruction and Development (EBRD), facilitate access to financing for green technologies. These programs accelerate the energy transition and create a favorable framework for the expansion of renewable energy capacities.

Discussion and conclusions. The findings of this study highlight the rapid evolution of the photovoltaic sector in the Republic of Moldova, driven by a combination of favorable policy frameworks, declining technology costs, and increasing demand for clean energy. The eleven-fold increase in installed capacity between 2019 and 2024 demonstrates the country's growing commitment to renewable energy, particularly solar power. This expansion, however, brings forward new challenges related to grid stability, energy balancing, and investment sustainability. In conclusion, the Republic of Moldova is entering a decisive phase in its energy transition. The successful integration of smart technologies in photovoltaic parks will be essential not only for meeting climate targets, but also for ensuring a reliable, cost-efficient, and sustainable energy future. Policy interventions should focus on strengthening institutional capacity, facilitating public-private partnerships, and aligning national strategies with European energy and digital agendas. Further empirical research is recommended to refine cost-benefit models and to monitor the long-term performance of smart PV investments under local conditions.

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DIGITALIZATION IN ROMANIA - A TERRITORIAL ANALYSIS

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Abstract. *Digitalization has recently gained particular importance, not only in the business environment, but also in public administration. Improving operational efficiency and competitiveness by transforming processes, data, and activities into digital formats allows for decisions based on predictive data, increases transparency, and provides faster access to information. In this context, this study aims to analyze the state of digitalization in Romania, from a territorial perspective, in terms of the degree of implementation of digital applications in the payment of local taxes and fees, as well as other taxes levied by public institutions. The analysis of available public data and information shows that there is still a low level of digitization in Romania, with significant variations across the country.*

Keywords: *digitalization, development, territorial gaps*

Introduction. In the field of public administration, digitalization plays an important role, leading to reduced time spent on administrative tasks, more efficient resource management, and significant cost savings. Digitalization also enables the transparent publication of government data and information, contributing to greater transparency and accountability in public administration.

Literature review. In the context of new global trends and rapid technological progress, digitization has undergone significant development worldwide. According to experts (Bezrukova et al., 2022), the digitalization of economies significantly increases their competitiveness in the international market and fundamentally changes business processes in the international business environment. Digitalization also gives rise to new risks, among which cybersecurity risks play a special role.

According to the United Nations (UN, 2025), digital processes can support and accelerate the achievement of each of the 17 Sustainable Development Goals – from eradicating extreme poverty to reducing maternal and infant mortality, promoting sustainable agriculture and decent work, and achieving universal literacy. However, technologies can also have a negative impact on privacy, erode security, and fuel inequality.

In Romania, digitalization has become increasingly important with the significant expansion of internet connectivity. However, there are still problems related to connectivity to various digital applications, either due to technical issues or, more importantly, to a lack of technological education across age groups.

Research methodology. From a methodological point of view, this approach is based on public information provided by the digital application *ghiseul.ro*, developed by the Ministry of Finance, regarding the degree of connection of localities in Romania to the electronic payment of various local taxes and fees. It should be noted that the approach mainly uses the comparison method, with 2025 as the reference period.

Main results. Preliminary, we mention that the *ghiseul.ro* application allows the payment of local taxes and fees, as well as other fees, such as, for example, the fee for issuing a driver's license, identity card, fines, fees for issuing certain certificates, etc. In 2025, out of the 3078 municipalities and cities in Romania, 1558 localities were connected to this application, representing 50.6% of the total.

From an administrative point of view, Romania's territory is divided into eight regions, comprising the 42 counties. By development region, in 2025, the highest degree of digital connection to the *ghiseul.ro* application was recorded in the South-Muntenia region (18%), followed by the Center region (15%) and the South-East region (14.8%) (Table 1).

Table 1. Degree of connection to the *ghiseul.ro* application of localities in Romania by development region, in 2025 (%)

	Localities (number)	% in total
North-East	275	17.7
South-East	231	14.8
South-Muntenia	280	18.0
South-West	159	10.2
West	132	8.5
North-West	197	12.6
Center	244	15.7
Bucharest-Ilfov	40	2.6
Total	1558	100.0

Source: Calculations based on data provided by the application *ghiseul.ro*, 2025.

Discussion and conclusions. In Romania, there is a visible trend towards the expansion of digitalization in all areas of activity. Speaking of digitalization in public administration, it is worth noting the efforts made in recent years to implement digital solutions that allow the public access to a range of services.

From this point of view, it should be noted that although there is a developed IT infrastructure, the connection of localities to various digital applications that allow the payment of various taxes does not yet exceed 50%. One explanation is either the lack of an adequate connection infrastructure at the level of territorial-administrative units, determined by costs, or their low interest.

However, it is clear that the development of digitization is not only an alternative in the development of quality services, but also a necessity in line with new European trends.

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THE APPLICABILITY OF ARTIFICIAL INTELLIGENCE IN DIGITAL ENTREPRENEURSHIP: TIME MANAGEMENT STRATEGIES AND PSYCHOLOGICAL IMPLICATIONS FOR EMPLOYEES

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Abstract. *Technology has become the reality in which every day is shaped, so artificial intelligence no longer belongs to science specialists, but is part of professional life, intervenes in choices, in the pace of work, in the way professional relationships are carried out. Entrepreneurship, as a driver of initiative and change, is no exception. Based on a qualitative analysis of recent literature in the fields of technology, entrepreneurship, and organizational psychology, relevant AI applications in task automation, decision optimization, and efficient organization of daily activities are identified. The article summarizes the ways in which artificial intelligence can intervene to support entrepreneurs in managing one of the most valuable resources of the present – time, as well as the psychological implications of interactions with artificial intelligence from stress and adaptability, to resilience and trust. The conclusions contribute to the current debate on the ethical and sustainable transformation of entrepreneurship, providing directions for future research and putting people at the center of innovation.*

Keywords: *artificial intelligence, digital entrepreneurship, time management, employees, psychological impact, efficiency*

Introduction. The continuous development of digitization in all areas has become a challenge for entrepreneurship, where it has been implemented and used to optimize all resources, human, material and financial. Thus digital entrepreneurship has one main goal, that of continuously and efficiently improving productivity. The digitization of entrepreneurship has impacts on the way the human resource performs its tasks and to be understood requires special attention, in particular the psychological impact, which generates both benefits and challenges. The further development of advanced technologies contributes to automating tasks and optimizing processes.

Literature review. The literature provides valuable insights and evidence related to the effectiveness and challenges of integrating artificial intelligence (AI) into time management and its impact on employees. Davenport and Ronank (2018) emphasize that AI technologies such as virtual assistants and scheduling software using AI help to reduce administrative tasks by giving employees opportunities to

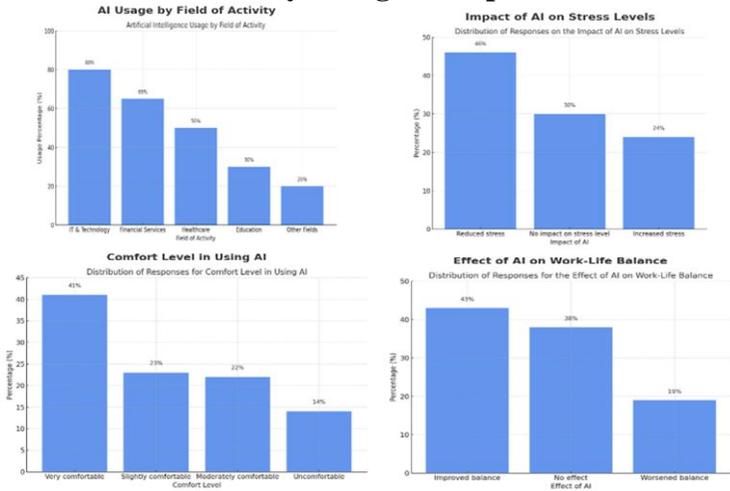
focus on prioritized activities. According to Sousae and Rochaa (2019), although AI can reduce the amount of work and stress associated with repetitive tasks, it can cause anxiety and stress due to fears about job security and adapting to new technologies. Prem (2019) states that organizational changes required to incorporate AI can have a negative impact on employee well-being; this highlights the importance of managing the effects of these changes on employees. Implementing AI comes with significant and complex challenges as observed by Duan, Edwards, and Dwived (2019). Huang and Rust (2018), on the other hand, discuss resistance to change and difficulties in integrating into the existing organizational structure as major barriers to AI technology adoption. According to Giuggoli and Pellegrini (2023), a review announced in the literature could provide useful insights into the relationship between AI and entrepreneurship by identifying new directions for research and evolution.

Research methodology. By applying these research methods, a comprehensive and well-founded perspective on the topic discussed in the article was obtained, thus informing us with relevant and useful details for practitioners in the field and interested researchers. The online questionnaire used for data collection was distributed to employees working in various professional sectors.

The data collection was conducted between January and May 2025 with the aim of gathering information from both employees with experience in the field but without extensive experience in the use of Artificial Intelligence and the hiring of young people who are more familiar with digitization and artificial intelligence.

A total of 100 responses were collected and retained for analysis. Part of the results are presented in *Figure 1*.

Figure 1. Comprehensive Analysis of AI Integration: Usage, Perception, and Psychological Impact



Source: developed by the author

The distribution of the various fields of activity and application of artificial intelligence was as follows: in the IT and technology sector 80% stated that they use

AI-based solutions, in the financial sector 65% use artificial intelligence, in the medical sector it amounts to 50%, in education and other fields 30% and 20% of the participants use AI respectively. The impact that artificial intelligence has on stress levels is reported as follows: of those who mentioned that AI has increased their anxiety levels (25%), the majority come from sectors with high demands on performance and time invested in IT (50%).

Conclusions. The artificial intelligence revolution in work management is about automating daily tasks, optimizing planning and increasing the efficiency of actions. This makes it possible to focus on high value-added work and reduce the time spent on tedious administrative tasks. The integration of artificial intelligence into time management can help to reduce the stress associated with task administration and achieve work-life balance by facilitating appropriate prioritization of task resolution. The future of AI-enabled time management involves collaboration between human reason and AI effectiveness. It is important for AI tools to support employees without overwhelming them, in order to maintain positive emotional mindsets and achieve optimal output.

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INTERREGIONAL COOPERATION AND ENTREPRENEURIAL ACCELERATION

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Abstract. *The digital transformation of cultural heritage in small towns of the Republic of Moldova is gaining increasing importance in the context of regional development, European integration, and the formulation of innovation-oriented policies. This study explores the potential of interregional and cross-border cooperation in rethinking and preserving local cultural heritage using digital tools and entrepreneurial approaches. Employing a mixed methodology - including case analysis of EU-funded projects, stakeholder interviews, and comparative research - the study identifies key mechanisms for the successful digitization of cultural initiatives. The analysis demonstrates that the digitization of cultural heritage not only preserves and reuses cultural resources but also stimulates innovation, creative industries, and civic engagement. Based on the findings, a conceptual model is proposed that integrates digital tools, cultural mapping, and creative entrepreneurship acceleration. Sustainable development in this sector is achievable through active cooperation between public authorities, the private sector, and local communities. The proposed model is scalable and may be implemented through interregional networks and targeted support programs.*

Keywords: *digital heritage, small towns, cultural transformation, interregional cooperation, creative economy, entrepreneurial ecosystem, cultural mapping, digital storytelling*

Introduction. In the context of accelerated digitization, the cultural heritage of small towns has become a vital asset for sustainable development, particularly in countries undergoing EU integration. Moldova possesses rich but underutilized cultural resources that require strategic rethinking. Digital technologies open new avenues for inclusive participation, cultural entrepreneurship, and interregional

collaboration. This research seeks to identify an effective model of digital transformation tailored to small-town conditions, emphasizing the acceleration of creative initiatives and integration into European cultural networks.

Literature review. Recent studies highlight the strategic role of digital tools in transforming the cultural sector. The European Commission (2024) emphasizes the importance of digitization, interdisciplinary approaches, and support for cultural entrepreneurship in regional development. Babin et al. (2024) stress the value of interoperable strategies across macro-regions and the importance of community engagement. There is a consensus that digitalization enhances cultural engagement, drives economic growth, and creates new identities through storytelling and cultural mapping.

Research methodology. This study employs a mixed-methods approach, including case studies of three European cross-border projects (Be.CULTOUR, AMAZING AoE, INACO), semi-structured interviews with local experts and administrations in Moldova, and secondary data analysis (EU documents, reports, scientific publications). The methodological framework is based on comparative analysis, participatory mapping, and assessment of entrepreneurial acceleration potential in the cultural sector.

Main results. The analysis revealed that successful digital transformation requires a flexible model encompassing: Digital cultural mapping; Storytelling platforms; Creative acceleration programs; Municipal and cross-border partnerships. The proposed model demonstrates scalability potential through interregional networks. European case studies confirmed the importance of integrating digital tools, especially in areas with limited cultural infrastructure (*Table 1*).

Table 1. Comparative analysis of cross-border digital cultural projects in Central Europe

Project / Region	Main focus / Goals	Digital tools & Methods	Partners / Stakeholders	Results / Impact
Be.CULTOUR (EU / Cross-Border)	Sustainable cultural tourism innovation, heritage reinterpretation, civic engagement	Toolkits, guidebooks, educational networks, co-creation with local communities	15 partners: research institutes, regional/provincial authorities, NGOs, municipalities	Improved sustainable tourism strategies, increased inclusivity, new business models, accessible environments, interregional cooperation
AMAZING AoE – Responsible Green Destination Amazon of Europe (Interreg Danube)	Promoting sustainable economic growth and tourism based on natural and cultural heritage	Responsible Green Destination Tourism Impact Model (RGD TIM), digital investment, joint strategy, stakeholder training	13 main partners + 15 associated partners from Slovenia, Hungary, Croatia, Austria, Serbia	Developed integrated destination management model, deployed digital monitoring tools, improved cross-country cooperation, enhanced employment and sustainability
INACO (Interreg Central Europe)	Resilience of cultural/natural heritage in river basins, climate risk adaptation	WebGIS-based tools for vulnerability assessment, risk managers training	11 partners from 8 countries, including research institutes, municipalities, environmental agencies	Increased resilience of heritage sites, introduced innovation in self-assessment tools, trained climate risk managers

Source: author's elaboration

Discussion and conclusions. The findings of this study confirm the hypothesis that small towns can serve as experimental hubs for digital innovation in the cultural sector, especially when supported by structured interregional cooperation and

targeted entrepreneurial programs. The integration of digital tools-such as cultural mapping, digital storytelling, and interactive platforms - creates new avenues for preserving, reusing, and promoting local cultural heritage in innovative ways. The comparative analysis of European cross-border projects demonstrates that successful models share several common features: inclusive stakeholder engagement, cross-sectoral partnerships, and a strong emphasis on sustainability and community empowerment. These projects underscore the importance of viewing digital transformation not merely as a technological upgrade but as a holistic process that integrates cultural identity, economic development, and civic participation. For Moldova’s small towns, the adoption of such models holds transformative potential. Through the proposed framework - which combines cultural heritage digitization with creative entrepreneurship and interregional networking - local communities can enhance resilience, generate employment, and integrate more effectively into European cultural and innovation ecosystems. However, the implementation of this model requires long-term commitment from public authorities, adequate funding mechanisms, and capacity building at the local level. Partnerships between municipalities, NGOs, private actors, and academic institutions are essential for scaling up and ensuring the sustainability of such initiatives.

Figure 1. Integrated model of digital transformation of cultural heritage of small towns



Source: author's elaboration, 2024

In conclusion, digital transformation of cultural heritage, when aligned with entrepreneurial acceleration and collaborative governance, represents a powerful driver for inclusive regional development. The model (*Figure 1*) developed in this study offers a replicable and adaptable strategy for other small towns in Moldova and similar contexts in Eastern Europe.

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SMART SPECIALIZATION AND REGIONAL COMPETITIVENESS: INTEGRATING BAK S3 AND RHOMOLO METHODOLOGIES FOR MOLDOVA AND EASTERN PARTNERSHIP COUNTRIES

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Abstract. *In the context of Moldova's European integration efforts, regional development policies require alignment with EU best practices in smart specialization (S3), innovation, and territorial cohesion. This paper proposes a combined application of the BAK S3 diagnostic model and the RHOMOLO spatial computable general equilibrium (CGE) model to support Moldova's Smart Moldova 2030 strategy. The integration of data-driven diagnostics, participatory processes like Entrepreneurial Discovery Process (EDP), and spatial policy modeling is proposed in a four-stage plan, which may be extended to other Eastern Partnership countries. This approach strengthens institutional coordination, improves investment planning, and enhances competitiveness at the regional level.*

Keywords: *Smart Moldova 2030, smart specialization, BAK S3, RHOMOLO, entrepreneurial discovery process, regional policy, regional competitiveness, Eastern Partnership, cohesion policy*

Introduction. The Republic of Moldova is undergoing a significant transformation in its approach to regional development, aiming for closer alignment with European Union policy frameworks and funding mechanisms. A central pillar of this transformation is the Smart Moldova 2030 strategy (Government of Moldova, 2023), developed on the basis of Smart Specialization (Foray, 2012) principles (S3/RIS3) and modeled after EU guidance documents and successful case studies (European Commission, 2021). Effective implementation requires a modern policy framework that integrates:

- Data-driven diagnostics,
- Participatory planning processes,
- Long-term modeling of spatial policy effects.

This paper discusses how the BAK S3 (Wagner, 2023) and RHOMOLO (Mercenier, 2022) methodologies can be integrated into Moldova's policy planning, with potential for wider adoption across the Eastern Partnership region.

Literature Review. The concept of Smart Specialization RIS3/S4 (Provenzano, 2025). emerged from EU cohesion policy as a strategic approach to regional innovation. Key documents include the EU's Smart Specialization Platform and Common Provisions Regulation 2021–2027 (European Commission, 2021). BAK S3, developed by BAK Economics (Switzerland), is widely used in competitiveness benchmarking and S3 diagnostics across European regions. It incorporates tools such as GVA-based benchmarking, digital readiness scoring, and regional innovation ratings.

RHOMOLO, developed by the European Commission's Joint Research Centre (JRC), is a spatial Computable General Equilibrium (CGE) model. It allows simulation of policy effects at the NUTS - levels, integrating factors such as labor mobility, R&D spillovers, infrastructure investments, and sectoral productivity (Mercenier, 2016). RHOMOLO can be also used to: model the effects of European Neighbourhood Programmes; analyse scenarios for integration into the EU Single Market; assess regional imbalances and target allocation of support from EU funds (e.g., through the Cohesion Policy after accession); assess the impact of transport/infrastructure investments (e.g., Rail2Sea, Via Carpathia, etc.).

The RIS4DANUBE project (Wagner, 2022), funded by the Horizon Europe Programme, offers a model for implementing Entrepreneurial Discovery Processes (EDP) through multi-stakeholder workshops and cluster mapping, aligning bottom-up initiatives with regional investment planning.

Research Methodology. This paper proposes a four-stage integration methodology that combines BAK S3 diagnostic tools with RHOMOLO spatial modeling, anchored by EDP as a mechanism for regional consolidation. The methodology consists of:

Stage 1 (2025–2026): Application of BAK S3 tools for diagnostics and regional profiling (Wagner, 2023).

Stage 2 (2026–2027): Implementation of EDP following the RIS4DANUBE models SWOT, Delphi, cluster mapping (Wagner, 2022).

Stage 3 (2027–2028): Calibration and application of RHOMOLO CGE model based on regional data (Mercenier, 2022).

Stage 4 (from 2028): Scenario planning and submission of project applications (e.g., Horizon Europe, ESIF).

The EDP public dimension plan may include: scenarios for individual localities; strategies for the revitalization of sites using green and digital solutions; recommendations for attracting investments through EU4Moldova, Digital Europe, Green Deal mechanisms, etc. For the selection and prioritisation of project initiatives within the transformation plan, a formula for multi-criteria evaluation of projects, multi-criteria ranking model (e.g. weighted sum method) can be applied:

$$S_i = \sum_{j=1}^n w_j \cdot x_{ij}$$

where:

S_i - final score of project i ;

X_{ij} - value of project i according to criterion j ;

W_j - weight of criterion j determined by expert method.

Main Results. The integration of BAK S3 and RHOMOLO enables:

- Identification of regional growth points and innovation capacity,
- Bottom-up project generation via EDP,
- Long-term forecasting of employment, GDP, and productivity changes,
- Simulation of cohesion, digital and green policy impacts up to 2040 (European Commission, 2020).

In Moldova, pilot implementation is recommended in the South and Center regions. This approach ensures compatibility with EU programming cycles (European Commission, 2013), and funding requirements (Horizon, ESIF, Interreg).

Discussion and Conclusions. The proposed methodology creates a coherent architecture for smart regional policy, aligning Moldova's planning processes with EU norms. Key benefits include:

- Enhanced evidence-based policymaking,
- Stronger stakeholder engagement at local and regional levels,
- Better integration into EU funding instruments (Horizon, Digital Europe, EU4Moldova),
- Increased institutional capacity to manage open regional data in line with Regulation (EU) 2021/1060 (European Parliament and Council, 2021), and European Statistics Regulation (EC) 223/2009.

Beyond Moldova, this methodology is scalable to other Eastern Partnership countries (e.g., Ukraine, Georgia, Armenia, Azerbaijan), providing a common platform for cross-border cooperation and investment planning under frameworks like the Danube Strategy or Green Deal, and the European Data Strategy (European Commission, 2020).

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THE ROLE OF THE CASPIC REGION IN THE ENERGETIC SECURITY OF EU

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Abstract. *The Caspian region stands as a cornerstone of global energy dynamics, harboring immense reserves of oil and natural gas alongside nascent renewable potentials. This thesis explores its pivotal role in enhancing European Union energy security, aiming to delineate the region's hydrocarbon wealth, infrastructural developments, EU-cooperation frameworks, and pathways for diversification. Employing a descriptive-analytical methodology drawing from secondary data sources, the study synthesizes findings on reserves, pipelines, and strategic partnerships, highlighting implications for sustainable energy transitions. Results underscore the Caspian's ability to alleviate EU dependencies, foster regional stability, and promote renewables, offering actionable insights into geopolitical synergies. The purpose is to inform policy discourses on energy resilience, while objectives center on quantifying potentials and evaluating collaborations for 2020s advancements. Key outcomes reveal untapped opportunities in hydro, geothermal, and renewables, positioning the region as a fulcrum for transcontinental energy diplomacy.*

Keywords: *Caspian region, EU energy security, Southern Gas Corridor, diversification, pipelines, renewables, energy efficiency.*

Introduction. The Caspian region, nestled at the crossroads of Europe and Asia, embodies a tapestry of diverse energy endowments that reverberate through global security paradigms. Encompassing the maritime realms of Azerbaijan, Kazakhstan, Russia, Turkmenistan, and Iran, this expanse not only commands a lion's share of worldwide hydrocarbon stockpiles but also harbors latent abilities in sustainable energy avenues. This thesis delves into the multifaceted contributions of the Caspian to the European Union's quest for energy self-sufficiency, unraveling layers of reserves, infrastructure, and strategic alliances. As geopolitical currents shape international energy landscapes, understanding the Caspian's integrative potential becomes imperative for policymakers and scholars alike. Addressing the underpinnings of vulnerability in EU energy supply chains, the analysis pivots on transformative theses that bridge resource abundance with equitable distribution mechanisms (Winrow, 2005).

Literature Review. Scholarly discourse on the Caspian region's energy profile unveils a rich corpus of investigations illuminating its dual role as a hydrocarbon

powerhouse and a nascent renewables hub. Studies by prominent analysts underscore the region's dominance in global reserves - claiming about 7% of proven oil and 33% of natural gas positioning it as indispensable for mitigating EU dependencies on distant suppliers (e.g., Winrow, 2005). Reviews of infrastructural evolutions, such as the Baku-Tbilisi-Ceyhan and Nord Stream pipelines, emphasize their facilitation of seamless exports, yet critique vulnerabilities to political instabilities (Karaosmanoglu, 2001). EU-Caspian collaborations, explored in bilateral agreements, highlight strategic dialogues fostering mutual benefits, with case studies on Azerbaijan exemplifying cooperative dividends (Clarke, 2014). Diversification narratives evolve around renewables like hydropower from rivers such as the Volga and solar potentials, advocating for eco-friendly shifts amid climate imperatives. Collectively, literature reveals gaps in exploiting geothermal resources and calls for holistic frameworks integrating economic, environmental, and security dimensions.

Research Methodology. This thesis adopts a qualitative-descriptive approach, synthesizing secondary data from peer-reviewed sources, international reports, and statistical databases such as those from BP Energy and the World Bank. Drawing upon content analysis of literature, key metrics on reserves, production volumes, and infrastructural capacities are presented. Methodologically, the study employs thematic clustering to organize findings into thematic propositions -energy potential, pipelines, EU engagements, case exemplars, diversification strategies, and futurescapes- ensuring a coherent narrative. Quantitative elements, sourced from 2020 estimations, provide empirical anchors without resorting to primary fieldwork, aligning with journal constraints for succinct, evidence-based expositions. This framework ensures objectivity, cross-verifying claims against global energy benchmarks while prioritizing geopolitical ramifications for EU relevance.

Main Results.

Thesis 1: Caspian Energy Potential. The region boasts oil reserves of 48 billion barrels (7% global share) and natural gas at 292 trillion cubic meters (33% share), with 2020 production figures of 10.3 million barrels daily and 792 billion cubic meters, respectively - Russia dominating output (*Table 1*).

Thesis 2: Renewable Avenues. Hydroelectric capacities, peaking at 23 GW in the Volga basin, alongside untapped possibilities in wind, solar, and geothermal resources, offer diversification frontiers.

Thesis 3: Pipeline Infrastructure. Networks like Baku-Tbilisi-Ceyhan and TANAP enhance export reliability, transporting Caspian hydrocarbons westward.

Thesis 4: EU Cooperation Dynamics. Bilateral dialogues prioritize secure supplies, with memoranda and summits fostering technological exchanges and investment.

Thesis 5: Case Studies: Azerbaijan-EU Nexus. Strategic partnerships exemplify mutual gains, through energy deals bolstering EU grids.

Thesis 6: Diversification Imperatives. Emphasizing renewables amid political risks, efforts target sustainable mixes reducing fossil dependencies.

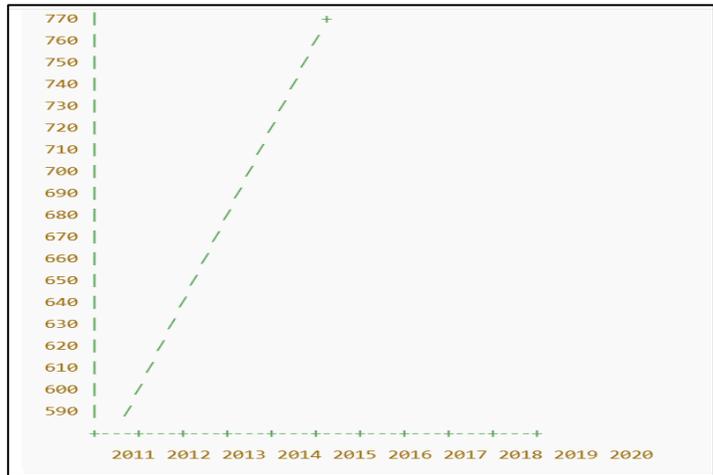
Table 1. Caspian Hydrocarbon Reserves and Production (2020)

Metric	Oil (Barrels/Year)	Gas (Cubic Meters/Year)
Reserves (% Global)	7% (48 billion barrels)	33% (292 trillion cu m)
Production (% Global)	15% (10.3 million/day)	20% (792 billion)

Source: BP Statistical Review of World Energy 2021, adapted for Caspian aggregate.

The results delineate the Caspian's ascendancy (*Figure 1*), where production trajectories signal resilience. Geopolitical analyses affirm that pipeline expansions amplify supply security, yet diversification pursuits mitigate risks inherent to volatile regions.

Figure 1. Trends in Caspian Natural Gas Production (2011–2020)



Source: BP Energy Outlook 2022, illustrating upward trajectories.

Discussion and Conclusions. Discourse on the Caspian elucidates its indispensable veneer in EU energy narratives, transcending mere resource metrics to encompass geopolitical equilibria. Reserves and renewables not only buffer against supply disruptions but also catalyze sustainable transitions, aligning with global decarbonization goals. Infrastructural advancements, while promising, necessitate vigilance against transboundary tensions, urging robust diplomatic apparatuses. EU partnerships, exemplified in Azerbaijan, herald mutual prosperity, yet challenges like corruption and environmental impacts warrant integrative strategies. Diversification into renewables embodies proactive adequacy, potentially sparking economic upswells and job creations in frontier locales. Conclusively, the Caspian epitomizes a bridgehead for enduring security, propelling EU policies toward equitable, forward-looking energy paradigms (Karaosmanoglu, 2001).

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APPLICABILITY OF THEORIES OF COMPETITIVE ADVANTAGE FOR ENTERPRISES OF THE GAGAUZ REGION

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Abstract. *In the context of increasing global competition, companies and regions are faced by the need to identify sustainable sources of competitive advantage. One of the most influential approaches is the Resource-Based View (RBV) - a theory focused on the internal resources and capabilities of an organization. In the European context, RBV is particularly useful for assessing the competitiveness of small innovative enterprises, clusters and regional ecosystems in combination with other theories for a more comprehensive assessment of competitive strategies at the enterprise and regional level, as well as theories of dynamic capabilities and interfirm interaction. According to the Relational View theory, proposed as an extension of the resource-based approach, sustainable competitive advantage can be formed not only within the company, but also through relationships with external partners-suppliers, customers, allies. Relational resources and joint investments in unique relationships can create „interorganizational rents” that are inaccessible to individual companies, an important element of competitive advantage in this case is idea, and the value is created in network interaction that cannot be fully appropriated by one party. The Institutional Complementarity Theory or Composition Based View (CBV) is applicable to European small and medium sized enterprises, especially in peripheral regions. According this theory, firms without unique resources can create competitive advantages through creative combination of open resources and integrations of foreign components. The article presents a critical analysis of modern theories of competitive advantage of enterprises, shows the main indicators of innovation activity of the region and draws conclusions about the applicability of modern theories.*

Keywords: *theories, competitive advantage, enterprises, global competition*

Introduction. The examination of theoretical foundations indicates that innovation is widely acknowledged as one of the principal drivers of regional development and sustainable competitiveness. Its impact on regional competitiveness unfolds through several interdependent channels, including infrastructure, human capital, and institutional collaboration. Nevertheless, methodological limitations, lack of coherence, and strategic fragmentation persist as

significant challenges, particularly in peripheral regions. Moreover, the application of contemporary methodologies for assessing the influence of innovation on regional competitive advantages constitutes a complex methodological endeavor, shaped by the multidimensional nature of indicators, the temporal lag between implementation and measurable outcomes, institutional particularities of regions, and the diversity of analytical approaches employed.

Literature review. In the scholarly literature, theories of competitive advantage at the regional level and theories of regional competitive advantage often intersect, yet they differ in focus and conceptual origin. For instance, T.Buyse et al. (2018) propose a methodological framework for cluster identification. A.Levitskaia (2020), analyzing cluster formation policies in Gagauzia. E.Benea-Popușoi (2021) analyzes the real-world textile cluster. C.Gribincea (2024) studied Moldova's adoption of smart specialization strategies as a framework for economic growth and innovation. The study by Ilie (2021) focuses on the agro-industrial sector of Southern Moldova, including Gagauzia. C.Morcan (2024) emphasizes that experience exchange between Moldovan and European clusters. The European Commission Report (2024) notes that Moldova remains at the initial stage of developing and implementing its Smart Specialisation Strategy (S3). H. Hollanders et al. (2024) identifies priority S3 areas for four Moldovan regions. In A.Topala's (2020) presentation, industrial clusters in Gagauzia within the S3 framework, along with their potential for further cluster development. E. Ilie (2021) highlights that the implementation of S3 in particularly in Gagauzia.

Research methodology. In our research, we employed a comprehensive set of innovation assessment systems, including EUROSTAT/ CIS, the OECD Oslo Manual, OECD MSTI/STI Indicators, the European Innovation Scoreboard, the Regional Innovation Scoreboard and the Joint Research Centre (JRC Moldova), UNECE Innovation for Sustainable Development Review (Moldova), the GET Economic Monitor GAGAUZIA (GET, 2024) and documents of the Innovation for Sustainable Development Review initiative. Moreover, the Roadmap on Innovation and Technology Transfer for Moldova.

Main results. The data reveal several trends: a decline in internal R&D expenditures; a sharp increase in external R&D in 2022; investment in equipment and software acquisition identified as a key priority; a marked contrast between regions in innovation performance. The analysis of the regional innovation investment index for Moldova over the period 2017–2022 demonstrates substantial territorial disparities. As of 2023–2025, JRC EC/RIS3 Mapping Moldova identifies Gagauzia as a region with low or moderate innovation activity (Hollanders, 2018). Several key factors explain why Gagauzia is not considered an innovation hub: limited R&D infrastructure and the absence of strong universities with applied research laboratories; low funding for innovation, including minimal participation in national programs or Horizon Europe initiatives; concentration in traditional industries - such as wine-making, textiles, and agri-food production - which remain characterized by low levels of digitalization and technological advancement and weak integration into global innovation value chains. The most prevalent forms of

innovation are organizational and marketing innovations (approximately 10% of enterprises). Fewer than 18% of firms engage in any form of innovation, and the share of technological (product/process) innovations is twice as low as in more developed regions. Market-novel products are particularly rare, underscoring a limited capacity for technological breakthroughs. Small and medium-sized enterprises dominate the region's innovative landscape, yet their activity remains largely localized.

Discussion and conclusions. Gagauzia's innovation profile remains capital-intensive and low in knowledge intensity, being heavily skewed toward tangible investments (mainly equipment) while displaying very limited development of in-house R&D, technology transfer, and knowledge acquisition mechanisms. A positive signal, however, is the increase in innovation-related expenditures in 2022, which may indicate the initial formation of a local innovation infrastructure. In this regard, theories of regional-level competitive advantage can be viewed as adaptations of broader theoretical frameworks originally developed for firms. These theories are predominantly employed in academic discourse, where emphasis is placed on their contextual application to specific regional settings. The pursuit of competitive advantage is characterized by active yet still fragile attempts to establish internal sources of regional competitiveness. These efforts often rely on the support of international donors and development agencies but lack stable internal mechanisms of innovation synergy, highlighting the need for stronger institutional coordination, research capacity building, and integration into cross-regional innovation networks.

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TRANSFORMING MARKETING MANAGEMENT IN B2B WITH EVIDENCE FROM MOLDOVA

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Abstract. *This study investigates how Moldovan B2B companies manage their marketing activities, focusing on how traditional management functions—planning, organization, motivation, and control—are adapted under digital transformation. Through in-depth interviews with managers and marketers from three leading firms in the construction sector, the research uncovers common practices and unique strategies in managing marketing efforts. The results indicate that while companies actively use CRM systems, social media marketing, and cross-marketing techniques to foster long-term relationships and enhance market positions, strategic planning often remains shortsighted, and digital tools are used only sporadically. Weaknesses include the poor integration of CRM and ERP systems, the underuse of predictive analytics, and a lack of comprehensive KPI systems. The study shows that marketing management in Moldovan B2B firms is at a transitional phase: traditional methods coexist with emerging digital practices, but there is considerable untapped potential. The article concludes with suggestions to improve long-term strategic planning, strengthen digital integration, develop employee skills in analytics and digital marketing, and establish effective control and monitoring systems to boost competitiveness in the B2B sector. The article was developed within the framework of Subprogram 030101 „Strengthening the resilience, competitiveness, and sustainability of the economy of the Republic of Moldova in the context of the accession process to the European Union”, institutional funding.*

Keywords: *marketing management, B2B companies, digital transformation, CRM systems, Moldova*

Introduction. Marketing management is based on the general foundations of management. However, marketing management in the digital era is becoming more complex: it is no longer sufficient to manage the 4Ps, it is essential to manage ecosystems, networks, and relationships (Hofacker et al., 2020). Digitalization requires marketing management to develop dynamic capabilities: to quickly adapt processes, learn, and redesign interaction models.

Accordingly, the main functions of marketing management are considered through the lens of common management approaches. The planning function in marketing is associated with defining strategic goals, selecting target segments, and

developing programs for lead generation, client retention, and branding. In the context of digitalization, planning requires the use of analytical data and forecasting models to ensure the efficiency of resource allocation. The organizational function in marketing includes the implementation of CRM systems, digital platforms, and the integration of online and offline channels. This function ensures coordination between marketing, sales, and production, creating a unified ecosystem of customer interaction. The motivation function is designed to foster a customer-oriented culture and encourage employees to establish trust-based relationships with clients. Coordination involves aligning the actions of different departments and developing employee competencies in analytics and digital technologies.

The control function of marketing activities is carried out through a system of KPIs: ROI, customer retention rate, lead quality, and customer satisfaction. It enables timely adjustment of strategies and ensures business sustainability.

Recent studies highlight that digital transformation has become an integral part of marketing management. The marketing manager must manage not only people and processes but also digital platforms and the integration of IT solutions (Alonso-Garcia et al., 2023; Kim & Moon, 2021). B2B marketing has evolved from transactional approaches toward relationship-based and increasingly digitalized practices (Zimmerman & Blythe, 2017; Grewal et al., 2022).

The study aims to identify the specific features of marketing management in Moldovan B2B companies under conditions of digital transformation.

Research Methodology. The research methodology relies on the analysis of marketing management approaches in three large companies within Moldova's construction sector: *Comsales Grup*, *RoofArt*, and *MCF Engros*. These companies operate in the B2B sector, possess extensive experience in the Moldovan market (on average more than 15 years), and maintain dedicated marketing departments within their organizational structures. Empirical data were collected through in-depth semi-structured interviews with business owners and marketing specialists, conducted in August 2025.

Main results. The analysis of the three companies revealed differences in their strategies but also highlighted common managerial approaches to marketing (*Table 1*).

The comparative framework reveals common challenges across all companies. Planning often remains tactical rather than strategic, with limited use of predictive analytics. Organizational efforts are hindered by the fragmented adoption of digital tools and the lack of CRM–ERP integration. Motivation and coordination suffer from insufficient investment in staff competencies, particularly in digital marketing and data analysis, while control functions are underdeveloped, with KPI systems not fully implemented.

Table 1. Comparative analysis of B2B marketing management functions in Moldovan companies

Management Function	Comsales Grup	RoofArt	MCF Engros
Planning	Strong planning; focus on lead generation and cross-marketing; clear resource allocation to digital channels and partnerships.	Planning less detailed; emphasis more on organizational and control aspects.	Planning focused more on tactical tasks, limited long-term strategy.
Organization	Integration of digital channels and partnerships; strong coordination with sales to attract new clients.	Strong organization; CRM integration, customer retention programs, and advertising campaigns.	Use of SMM and corporate website as catalog; partial integration of tools.
Motivation & Coordination	Less emphasized; motivation practices not explicitly highlighted.	Moderate attention; oriented toward long-term relationship building.	Strong emphasis; employees motivated to interact with clients and provide comprehensive service.
Control	Limited information; monitoring mainly through client inflow and partnerships.	Focus on KPIs (ROI, loyalty indicators); systematic monitoring of communication effectiveness.	Relatively weak; limited direct online sales data, trust built via transparency and personalization.

Source: developed by the author based on the case study

Conclusions. The study shows that Moldovan B2B companies are at a transitional stage, where traditional marketing management practices coexist with emerging digital tools. While firms adopt CRM systems, social media, and cross-marketing initiatives, their use remains fragmented and largely tactical, with strategic planning and KPI-based monitoring underdeveloped. To ensure sustainable competitiveness, companies need to strengthen long-term planning, achieve deeper integration of digital platforms, and invest in employee competencies in analytics and digital marketing. Evidence from Moldova demonstrates both the opportunities and limitations of digital transformation in B2B contexts, highlighting the necessity of moving toward a more structured and digitally mature approach to marketing management.

Evidence from Moldovan companies illustrates how the challenges and opportunities described in global B2B marketing research (Zimmerman & Blythe, 2017) manifest in an emerging economy, highlighting both convergence and divergence with international practices.

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GROSS DOMESTIC PRODUCT AND THE BALANCING OF THE NATIONAL ACCOUNTS SYSTEM

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***Abstract.** Gross Domestic Product (GDP) is the central indicator of a country's economic activity, widely used to measure the overall performance of national economies. It represents the monetary value of all final goods and services produced within a country's borders over a specific period, usually a quarter or a year. Unlike measures of production that focus on specific industries or regions, GDP provides a comprehensive snapshot of economic output and is therefore regarded as the most important aggregate in national accounting. The importance of GDP lies in its dual role. First, it serves as a quantitative measure of economic performance, allowing comparisons across time and between countries. Second, it functions as a basis for policymaking, as governments, central banks, and international organizations rely on GDP dynamics to assess economic stability, set fiscal and monetary policies, and design development strategies. Gross Domestic Product (GDP) is the most widely used indicator of a country's economic performance, representing the total value of all final goods and services produced within a given period. Economists apply three principal approaches to calculate GDP: the production approach, the expenditure approach, and the income approach. While these methods differ in perspective, they are theoretically consistent and should arrive at the same aggregate value.*

***Keywords:** output, gross domestic product, production approach, expenditure approach, income approach*

Introduction. Gross Domestic Product (GDP) is the most widely used indicator for measuring the overall performance of an economy (Blanchard, 2021). It reflects the total value of goods and services produced within a country over a given period and serves as a central reference point for policymakers, researchers, and international organizations. As a composite indicator, GDP not only measures economic output but also provides insight into structural dynamics, income distribution, and spending patterns, depending on the method of calculation employed (Mankiw, 2021).

There are three main approaches to measuring GDP: the production (or output) approach, the income approach, and the expenditure approach (IMF, 2023). While each method theoretically arrives at the same value, they differ in perspective.

Research methodology. This study employs a mixed-methods research design, combining both quantitative and qualitative approaches to provide a comprehensive analysis of the Balance of Payments (BoP) in the Republic of Moldova. The methodology is structured to ensure reliability, validity, and objectivity in addressing the research objectives.

Data. The research primarily relies on secondary data collected from credible international and national institutions, including the International Monetary Fund (IMF), the World Bank, the National Bureau of Statistics of Moldova, and the National Bank of Moldova. Supplementary sources such as academic articles, policy reports, and government documents are used to provide additional context and support. Quantitative data, such as BoP statistics, GDP figures, trade flows, remittances, and foreign direct investment (FDI), are extracted from official databases. Qualitative data are obtained from policy documents, government strategies, and relevant literature that explain the institutional framework and external economic environment.

Main results. The application of the three approaches to calculating Gross Domestic Product yields consistent values, while also providing different perspectives on the structure and dynamics of the economy. The analysis of the three approaches to measuring Gross Domestic Product - expenditure, income, and production - demonstrates that they are complementary perspectives on the same economic reality (National Bureau of Statistics of the Republic of Moldova, 2023). In theory, all three methods should yield the same GDP figure, since they measure national output from different angles: total spending, total income, or total value added. In practice, however, small discrepancies often appear because of data limitations, measurement challenges, and the existence of informal or unrecorded economic activities.

Taken together, the three approaches reinforce the reliability of GDP measurement while providing different analytical lenses. The expenditure approach emphasizes aggregate demand, the income approach reveals the distribution of earnings among economic agents, and the production approach highlights the structure of output across industries. Policymakers and researchers often use all three to cross-check results and obtain a fuller understanding of economic performance. This triangulation reduces statistical errors and ensures that GDP, as the most widely used indicator of economic activity, serves as a reliable basis for decision-making.

Discussion and Conclusions. The comparative application of the three GDP approaches (the production, income, and expenditure methods) confirms their consistency in arriving at the same measure of economic output while offering different perspectives on the structure of the economy (National Bank of Moldova, 2023). Together, they provide a more comprehensive understanding of both the strengths and weaknesses of economic performance.

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SECTORAL COMPETITIVENESS AS A DRIVER OF SUSTAINABLE GROWTH AND RESILIENCE

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Abstract. *Sectoral competitiveness is a key driver of sustainable growth and economic resilience, particularly for small and open economies such as the Republic of Moldova. This paper analyzes three strategic domains, Information and Communication Technology (ICT), the agri-food sector, and the energy sector to outline the main opportunities and constraints shaping Moldova's path toward European integration*

The findings show that ICT is emerging as a growth engine, supported by digitalization and the expansion of high value-added service exports. The agri-food sector remains a traditional pillar, yet it is vulnerable, challenged by low productivity, inadequate infrastructure, and labor migration. Moreover, the energy sector reflects a high dependence on imports, while also offering opportunities through the expansion of renewable sources and the green transition.

The study concludes that enhancing competitiveness requires coherent public policies focused on innovation, agricultural modernization, digital transformation, and renewable energy development. Implementing such measures could help reduce structural vulnerabilities, strengthen resilience, and foster Moldova's integration into the European economic space.

This paper was written within the framework of Subprogram 030101 "Strengthening the resilience, competitiveness and sustainability of the Moldovan economy in the context of the EU accession process," institutional funding.

Keywords: *globalization, migration, approaches, strategic management of human resources*

Introduction. Because of their limited internal markets and strong external exposure, small economies often rely on sectoral competitiveness as a safeguard against external instability and as a foundation for sustainable development. According to the National Bureau of Statistics (2025a), Moldova's GDP reached MDL 323.8 billion in 2024, showing a modest 0.1% increase over the previous year. Exports totaled USD 3,555.1 million in 2024, which represents a 12.2% drop compared with 2023 (National Bureau of Statistics, 2025b).

The export structure remains heavily concentrated in agri-food products; however, IT services have been gaining weight in the external balance and are

increasingly regarded by analysts as a viable alternative for reducing the excessive current account deficit and for diversifying the country's comparative advantages (Expert-Grup, 2025).

In September 2024, Moldova adopted the National Economic Development Strategy 2030 – a roadmap focused on innovation, high value-added services, and a transition toward a greener, more digital economy.

This paper focuses on three strategic sectors, namely ICT, agri-food, and energy, assessing their potential to contribute to sustainable development and to strengthen the economic resilience of the Republic of Moldova.

The sectors analyzed in this paper (ICT, agri-food, and energy) were chosen for their strategic relevance: ICT represents a fast-growing and export-oriented industry, agri-food ensures food security and employment, while energy influences the overall cost and reliability of production across the economy.

Literature review. The concept of sectoral competitiveness is grounded in the specialized literature through Porter's "diamond model of competitiveness" (1990), which highlights the importance of the interaction between factor conditions, domestic demand, firm strategy, and related industries. Later studies extended this framework, emphasizing innovation, digitalization, and participation in global value chains (Ketels, 2017).

At the international level, the Global Competitiveness Report (World Economic Forum, 2019) placed Moldova in modest positions, particularly in areas such as infrastructure, labor market, and innovation. At the national level, analyses such as the State of the Country Report (Expert-Grup, 2024) and the World Bank's Country Economic Memorandum (2022) emphasize the need to diversify the economy, stimulate productivity, and reduce the dependence on a few traditional markets and products.

Research methodology. This research uses a quantitative, comparative, and documentary analysis of Moldovan economy during the period of 2023–2024. The primary source of data is the National Bureau of Statistics (NBS), complemented by policy documents (the National Economic Development Strategy 2030) and independent analyses (Expert-Grup, 2024; World Bank, 2022).

The methodological steps comprise:

- Processing statistical series (GDP, exports, sectoral shares).
- Comparing the ICT, agri-food, and energy sectors to highlight performance differences.
- Correlating the results with the strategic objectives of public policies.
- Integrating analytical insights from independent experts.

Main results. The 2023–2024 evidence points to a mixed macroeconomic picture and differentiated sectoral dynamics, summarized below (*Table 1, Table 2*).

Table 1. Macroeconomic Indicators of the Republic of Moldova (2023–2024)

Indicator	2023	2024	Evolution, %
GDP, billion MDL	300.4	323.8	0.1
Real GDP growth, %	+0.7% compared to 2022	0.1%	-
Exports of goods, million USD	4 048.0	3 555.1	-12.2%

Source: National Bureau of Statistics (2025a; 2025b)

Table 2. Sectoral Share in GDP and GVA Evolution (2023–2024)

Sector	2023 (% of GDP)	2024 (% of GDP)	GVA Evolution (%)
IT&C	7.9%	8.3%	+8.0%
Agri-food	8.1%	7.6%	-9.9%
Energy	3.1%	3.2%	-

Source: National Bureau of Statistics (2024a; 2024b)

Data interpretation:

- The ICT sector registered the strongest performance, confirming its role as an emerging growth engine and as a significant contributor to service exports.
- Agriculture remains a key sector, however, a vulnerable one, recording negative results in 2024.
- The energy sector remains largely import-dependent, yet the gradual shift toward renewable energy sources opens consistent prospects for long-term development.

Discussion and conclusions. The Moldovan economy is currently experiencing a gradual but visible process of structural transformation. The Moldovan economy is currently experiencing a gradual but visible process of structural transformation. Although agriculture retains a crucial socio-economic role, its performance is constrained by climate variability, outdated practices, and limited technological adaptation. The energy sector remains import-dependent but is also opening space for progress through renewable sources and stronger ties to the European energy market.

Consistent with the 2030 National Economic Development Strategy, Moldova’s competitiveness agenda should prioritize the following actions:

- Develop a coherent innovation and digital transformation framework to reinforce ICT growth;
- Enhance agricultural productivity through technological innovation and broader export diversification;
- Accelerate the green transition by supporting investment in renewable energy and improving energy efficiency across industries.

Independent analyses highlight that, beyond traditional exports, IT services represent a realistic and competitive alternative for improving the current account balance and expanding Moldova's comparative advantages. Transitioning toward a greener and more digitally integrated economy will strengthen resilience and competitiveness, facilitating Moldova's integration into the European single market.

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**GREEN FINANCE AND CIRCULAR ECONOMY
SYNERGIES:
A PATH TO SUSTAINABLE DEVELOPMENT**

SUSTAINABLE FINANCE AS A PILLAR OF ECONOMIC RESILIENCE: EVIDENCE FROM EU POLICIES AND MARKET DEVELOPMENTS

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Summary

Sustainable finance has evolved from a marginal notion into a pillar of the global financial architecture, defined as an investment process that integrates environmental, social, and governance (ESG) factors. Its importance lies in the ability to channel capital not only towards financial returns but also towards long-term social and environmental value, in alignment with global climate and development objectives. The purpose of this research is to explore the interconnection between finance and sustainability, with particular attention to the role of European policies in accelerating the green transition. The study applies a comparative-analytical methodology, combining documentary analysis of the EU regulatory framework (EU Taxonomy, SFDR, CSRD) with statistical data from Eurostat, OECD, and the Climate Bonds Initiative. The results demonstrate the decisive role of the European Green Deal, the Sustainable Finance Action Plan, InvestEU, and the Just Transition Mechanism in mobilizing financial resources for renewable energy, green bonds, and emission reduction initiatives. At the same time, challenges such as regulatory complexity, persistent disparities between Member States, and the risk of greenwashing remain significant. The findings confirm that sustainable finance is no longer merely an ethical option but a structural necessity for strengthening economic resilience and achieving the European Union's climate targets.

This research is part of Subprogram 030101 "Strengthening the resilience, competitiveness, and sustainability of the economy of the Republic of Moldova in the context of the accession process to the European Union."

Keywords: *Sustainable finance, ESG factors, European Green Deal, EU Taxonomy, Green bonds, Green transition*

Introduction. In the context of intensifying climate change and pressures for a transition to a green economy, sustainable finance has become an essential tool of economic and financial policies. From a niche concept, it has transformed into a central pillar of the global financial architecture, with the role of directing capital flows towards activities with a positive impact on the environment and society. The European Union has positioned itself as a leader in this field, by adopting ambitious initiatives such as the European Green Deal, the Sustainable Finance Action Plan, the EU Taxonomy and the Sustainability Disclosure Regulation (SFDR). These instruments not only stimulate green investments, but also increase transparency, reduce the risks associated with climate change and contribute to strengthening economic resilience. The aim of this article is to analyze the interconnection between finance and sustainability in the European framework, by highlighting the policies implemented, the results achieved and the persistent challenges in the transition process towards a climate-neutral economy.

Literature review. Sustainable finance has gradually evolved from a niche concept into a central pillar of the global financial system. The literature consistently defines it as an investment process that integrates environmental, social and governance (ESG) factors, aiming not only to obtain financial returns but also to create long-term value for society (Scholtens, 2006; Schoemaker, 2017). The evolution of the concept reflects a transition from socially responsible investments, based on the exclusion of sectors considered harmful, to the integration of ESG criteria into financial analysis (UNPRI, 2006), to currently reaching the deliberate orientation of capital towards activities with measurable environmental and social benefits, in line with global objectives such as the Paris Agreement or the 2030 Agenda. In terms of application, the literature highlights two major directions. The first focuses on green finance, particularly through instruments such as green bonds and loans or sustainability bonds, which condition financing costs on the achievement of ESG objectives (CBI, 2021). The second direction concerns the management of ESG risks, including climate stress tests conducted by central banks (NGFS, 2019) and transparency regulations, such as TFCF (*Task Force on Climate-related Financial Disclosures*) and SFDR (*Sustainable Finance Disclosure Regulation*), designed to ensure the disclosure of the impacts and risks associated with investments. At the same time, the literature highlights notable challenges. Among these, greenwashing and the lack of standardization are frequently criticized, which has led to the development of taxonomies, in particular that of the European Union, to classify sustainable economic activities (Berg et al., 2022). There is also ongoing debate about the financial returns of sustainable investments, but recent meta-analyses suggest that ESG

integration rather contributes to reducing risks and identifying long-term opportunities, without compromising profitability (Friede et al., 2015). In conclusion, the academic consensus argues that sustainable finance is no longer an ethical option, but a practical necessity to manage risks and support the transition to a low-emission economy. International regulations, especially European ones, are reinforcing this process, transforming sustainability into a structural element of financial markets.

Research methodology. The study uses a comparative-analytical approach, based on documentary analysis of European policies (EU Taxonomy, SFDR, CSRD), corroborated with statistical data from sources such as Eurostat, OECD and Climate Bonds Initiative. The method includes comparative assessment of implementation at Member State level, analysis of trends regarding green financial instruments and identification of challenges (greenwashing, lack of standardization). The research aims to capture the interconnection between financing and sustainability and reveal the impact of these policies on European financial markets.

Main results. Sustainable finance has become a central pillar of the European Union's strategy to accelerate the transition to a climate-neutral, competitive and inclusive economy. Through innovative policies and financial instruments, the EU not only provides strategic direction but also mobilises the capital needed for green investments. This approach is coordinated at supranational level and has a direct impact on investment decisions by the public and private sectors.

The European Green Deal, launched in 2019, sets the ambitious goal of making Europe the first climate-neutral continent by 2050 (European Commission, 2019). This plan includes concrete measures to reduce greenhouse gas emissions, promote renewable energy and boost the circular economy.

To financially support this transition, the Action Plan on Financing Sustainable Growth (2018) introduced an unprecedented regulatory framework, built around several key instruments: the EU Taxonomy – a classification system defining sustainable economic activities, the Regulation on Sustainability Disclosures in Financial Services (SFDR) – requiring transparency on sustainability risks, and the European Green Bond Standard (European Commission, 2018, 2020). The results of these policies are observable in statistical data. According to Eurostat (2023), the share of energy from renewable sources in gross final energy consumption in the EU reached 23% in 2022, and greenhouse gas emissions have decreased significantly compared to the levels of the 1990s. Member States such as Germany, Denmark and Spain have been notable for their massive investments in wind and solar parks, supported by financial mechanisms such as feed-in tariffs, subsidies and credit facilities (IEA, 2022). The European green bond market

has continued to expand, with the EU becoming the largest global sovereign issuer of green debt through the NextGenerationEU instrument, to finance sustainable infrastructure, energy efficiency and innovation projects (Climate Bonds Initiative, 2023).

To ensure a fair transition, the EU has established the Just Transition Mechanism and the Recovery and Resilience Facility, allocating substantial funds to support regions and economic sectors dependent on coal, as well as to develop workforce skills for the green economy (European Court of Auditors, 2021). Programmes such as InvestEU and Horizon Europe also stimulate technological innovation and provide funding for SMEs and sustainability research and development projects. However, the analysis also highlights significant challenges. There are notable disparities in the absorption capacity of funds and in advancing the green transition between Western and Central and Eastern European Member States (EBRD, 2022). Other obstacles include regulatory complexity, the risk of greenwashing and the resilience of some traditional industries. Recent geopolitical and economic crises have also tested the resilience and stability of capital flows to green investments (NGFS, 2022). In conclusion, the European framework for sustainable finance has demonstrated its effectiveness in mobilising capital, stimulating innovation and progress towards climate goals. However, long-term success will depend on strengthened cooperation between Member States, simplified implementation and increased financial literacy in the field of sustainability among investors, businesses and citizens. The European Union has consolidated its position as a global leader in this field, but the path to climate neutrality requires more coherent and faster implementation across the bloc.

Discussion and conclusions. This analysis highlighted the transformative role of European Union policies in building a financial system that serves sustainability objectives. Through its comprehensive regulatory framework, the EU has succeeded in laying the foundations for an integrated, transparent and future-oriented capital market, becoming a true global laboratory for sustainable finance.

The results presented confirm the hypothesis that strong regulatory intervention is an essential catalyst for redirecting capital flows. The success of European plans, materialized in the exponential growth of green debt issuance and in progress towards climate goals, demonstrates that sustainability and financial stability are two sides of the same coin. The unique framework provided by the Taxonomy, SFDR and green bond standards has reduced uncertainty for investors, allowing for a more efficient allocation of capital to truly sustainable activities. However, the research highlighted a significant contradiction: the gap between the ambitious architecture at European level and the heterogeneous implementation capacity at national level. Economic and structural disparities between Member States risk creating

a “two-speed Europe” in the green transition, where countries with limited financial and institutional resources could be left behind, amplifying existing regional imbalances. This underlines the continued importance of cohesion instruments, such as the Just Transition Fund, not only as a compensation mechanism but also as a pillar of European solidarity.

In addition, increased regulatory pressure has generated an innovative market response, but has also amplified the risk of sophisticated greenwashing. Tackling this phenomenon will require not only clearer regulations, but also the development of sophisticated supervisory capacities and closer collaboration between financial and environmental authorities.

Main conclusions of the study are:

➤ The European Union has consolidated its undisputed leadership position in the field of sustainable finance. Its framework serves as a reference model for other jurisdictions and influences global standards, essentially exporting a rules-based financial paradigm.

➤ EU policies have proven highly effective in mobilizing private and public capital for green investments. The mechanisms created have transformed sustainability from a niche to a central component of financial decision-making.

➤ Long-term success is conditional on addressing three major challenges: coherence of implementation across the bloc, simplification and alignment of the regulatory framework (whose complexity can be an obstacle for SMEs), and increasing ESG financial literacy among all economic actors.

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DEPOSIT-RETURN SYSTEM ÎN REPUBLIC OF MOLDOVA: THE POTENTIAL ADVANTAGES AND DISADVANTAGES

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The implementation of a Deposit-Return System (DRS) is one of the most significant policy measures aimed at improving waste management and promoting circular economy practices. The aim of this study is to assess the potential advantages and disadvantages of introducing a DRS in the Republic of Moldova, where the system is planned to become operational in 2027. The research applies a mixed-methods approach, combining the analysis of European and national policy documents with consultations with stakeholders, including producers, recyclers, retailers and end-consumers. The results indicate that the DRS could significantly increase the collection and recycling rates of plastic, glass and aluminium packaging, reduce environmental pollution and encourage public engagement in sustainable practices. However, several challenges were identified, such as the large initial investments required for infrastructure, logistical barriers to national implementation and potential resistance from producers and consumers to cost and behavioural changes.

The research is part of Project 24.80012.7007.10SE "Social impact analysis for the return guarantee system of recyclable packaging in the Republic of Moldova". The project is carried out by the research team of the National Institute for Economic Research (ASEM) and is funded by the National Agency for Research and Development (ANCD).

Keywords: *deposit-return system, recycling, circular economy, advantages and disadvantages.*

Introduction

The Deposit-Return System (DRS) in the Republic of Moldova is scheduled to be implemented no later than 2027. This implementation represents a strategic public policy instrument, essential for aligning the country with European environmental objectives and for advancing the transition toward a circular economy. The studies carried out within project 24.80012.7007.10SE, "*Social impact analysis for the return guarantee system of recyclable packaging in the Republic of Moldova*", have identified several key findings. The main conclusions are presented in this paper. **Research methodology.** The study "*Consumer Perceptions Regarding the Implementation of the Deposit-Return System in the Republic of Moldova*" was developed based on a structured questionnaire, with the purpose of assessing the level of social preparedness of national end-consumers for the integration of the deposit-return system. The questionnaire, approved by the INCE ASEM Ethics Committee, contains 26 questions. A total of 608 respondents participated in the survey. The questionnaire was hosted on Google Forms: <https://forms.gle/NkeaWH1PdxthnNRh8>. Responses were collected in a mixed format: online via Google Forms and through telephone interviews. All responses were anonymous, ensuring full confidentiality and respect for respondents' rights. The second study developed within the project was "*Implementation of the Deposit-Return Guarantee System for Packaging in the Republic of Moldova.*" This empirical research was carried out using a questionnaire addressed to the main economic agents (actors) involved: producers/importers of products with returnable packaging, retailers, and recyclers. The questionnaire was approved by the INCE ASEM Ethics Committee. A total of 26 economic agents responded. The questionnaire was hosted on Google Forms: <https://forms.gle/rSWyimZBRA6Y4tvD6>. The methodology for collecting responses was also mixed, combining online completion with telephone interviews.

Main results

I. Potential Advantages of Implementing the Deposit-Return System (DRS) in the Republic of Moldova

The experience of other European countries shows that the DRS can increase the collection rate of these materials to over 90% (Perciun et al., 2024), a performance far superior to traditional selective collection systems. This not only increases the availability of high-quality secondary raw materials for the recycling industry but also reduces dependence on their import. The study "*Consumer Perceptions Regarding the Implementation of the Deposit-Return System in the Republic of Moldova*" found that, among the 608 surveyed individuals, only about 20% do not know what the DRS is, while the likelihood of participating in the system is approximately 80%. The main reasons for participation are: financial benefits (deposit refund) – 59%,

environmental concern – 15.5%, and social responsibility – 12.7%. However, around 9% stated that they will not participate (Timofei et al., 2025; Infographics “Consumer Perceptions of the DRS”, 2025). Based on these findings, the potential advantages and anticipated benefits of this system for the Republic of Moldova may include:

1. Significant Improvement of Collection and Recycling Rates. The most direct and important advantage of the DRS is its impact on the quantity of packaging waste that is recycled. By attaching a financial value (the deposit) to single-use packaging made of plastic, glass, and aluminum, the system offers consumers a strong incentive to return used containers, transforming them from “waste” into “valuable resources.”

2. Significant Reduction of Environmental Pollution. The implementation of the DRS has an immediate effect in reducing visual and ecological pollution. Large quantities of packaging (PET bottles, glass bottles, aluminum cans) currently end up on roadsides, in rivers, and in green areas, contributing to soil and water pollution (Perciun et al., 2023). By introducing the deposit, this type of waste is quickly removed from urban and rural waste flows and directed to return centers. This action contributes directly to ecosystem protection and reduces the volume of waste disposed of at non-compliant sites.

3. Public Awareness and Behavioral Change. The DRS is not only a logistical system but also an environmental education tool. By integrating the act of returning packaging into daily routines, the system increases public awareness of material value and promotes more responsible consumption practices. Public engagement in the DRS transforms waste management from a government obligation into a shared responsibility.

Overall, the DRS offers the Republic of Moldova an opportunity to make a qualitative leap in waste management, providing measurable benefits in terms of environmental protection, economic efficiency, and social responsibility.

II. Disadvantages and challenges of implementing the Deposit-Return System (DRS) in the Republic of Moldova. Despite the undeniable ecological benefits of the DRS, the study mentioned above highlights that implementing such a system at national level in a transitioning economy like the Republic of Moldova entails major challenges that require careful planning and strategic allocation of resources. Another study identified the main anticipated barriers faced by economic operators in the implementation of the DRS. It showed that approximately 62% of respondents are not prepared, about 27% are partially prepared, and only about 11% are ready for the implementation of the system (Infographics “Implementation of the Deposit-Return System for Packaging in the Republic of Moldova”, 2025).

Disadvantages and challenges for Producers/Importers of Products with Returnable Packaging

1. *High Initial Costs and Infrastructure Financing.* The most significant barrier is financial in nature. The implementation of the DRS requires substantial initial investments to build the entire infrastructure. These high costs may create financial pressures on producers and retailers, who are usually responsible for the operational funding of the system. Thus, for the 12 importers/producers of products with returnable packaging surveyed, the major obstacles identified were:

- Additional costs for modifying packaging and the need to make investments – 11 respondents.
- Technical difficulties in adapting production lines – 10 respondents.
- Uncertainties regarding standards and regulations – 10 respondents.
- Coordination issues with suppliers – 8 respondents.
- Lack of financial resources – 7 respondents.
- Less frequently mentioned factors: the complexity of the reporting system – 3 respondents, and the size of existing stocks of packaging without the DRS emblem – 1 respondent.

Thus, 50% of respondents anticipated that the required investments would exceed 500,000 EUR, 25% estimated the value in the range of 100,000–400,000 EUR, and the remaining 25% did not know.

2. *Logistical Challenges and Territorial Coverage for Producers.* The most frequently mentioned concern (11 respondents) was the adaptation of IT and management systems to the specific requirements of the DRS.

Other concerns were related to:

- Establishing the optimal value of the deposit per packaging unit for the local market (10 respondents are concerned about how the deposit will be determined so that it remains acceptable both for consumers and for system operators).

- Procedures and mechanisms for payments to the DRS administrator – at this stage, 7 respondents consider that uncertainties exist regarding financial processes, deadlines, and administrative flows.

- Impact on competitiveness and the final price of products – 7 respondents believe that the DRS may lead to additional costs and increased product prices on the market.

- Thus, all respondents to the survey (26 economic agents) are confident that prices will increase with the implementation of the DRS, and these increases are not directly related to the deposit fee itself, but to the need to cover the costs incurred by businesses. Economic agents estimate that prices

will increase by 1–3% (33.3%), by 3–5% (33.3%), and by more than 5% (33.3%) (Infographics “Implementation of the Deposit-Return System for Packaging in the Republic of Moldova”, 2025).

Disadvantages and challenges for Retailers

A total of 13 retailers participated in the survey. Their main concerns and anticipated obstacles are related to:

- Ensuring adequate space for storing returned packaging – 13 respondents;
- Space limitations for installing RVMs – 10 respondents;
- Operational costs – 10 respondents.
- Retailers estimate that they may need investments of over 200,000 EUR (approx. 30%), up to 50,000 EUR (46%), or between 50,000–100,000 EUR (23%).

Furthermore, nearly half of the surveyed retailers expect that product prices will increase by more than 5%, while the other half anticipate an increase of 3–5% (Infographics “Implementation of the Deposit-Return System for Packaging in the Republic of Moldova”, 2025).

Disadvantages and challenges For Recyclers

Three recyclers participated in the survey. For this category of stakeholders involved in the DRS implementation, the main obstacles identified were:

- Logistical challenges in collecting and transporting materials across the country (3 responses);
- Insufficient processing capacity for the estimated volumes of returned waste;
- Implementation of reporting and traceability systems – 2 respondents;
- Inadequate technological equipment for certain types of packaging specific to the local market – 1 response (Infographics “Implementation of the Deposit-Return System for Packaging in the Republic of Moldova”, 2025).

3. Potential Resistance to Change

Finally, considering both studies, it can be anticipated that any major policy change generates a certain level of resistance. In the case of the DRS, this may arise from two main directions:

Producers and Retailers: They may resist due to operational costs and the additional administrative and logistical efforts required by the system. Small retailers, in particular, may consider that handling returned packaging affects their sales space and hygiene.

Consumers: Although the deposit refund is a strong incentive, some consumers may resist behavioral change (keeping packaging clean, transporting it back to the store) or the initial payment of the deposit.

Moreover, confusion may arise regarding eligible versus non-eligible packaging.

Conclusion. The analysis of the disadvantages and challenges associated with the implementation of the Deposit-Return System (DRS) in the Republic of Moldova highlights that, while this mechanism represents a significant opportunity for modernizing waste management and transitioning toward a circular economy, it requires considerable efforts from all involved actors.

Producers, importers, retailers, and recyclers face substantial difficulties, particularly those related to initial investments, adaptation of technical and logistical infrastructure, and ensuring compliance with the new operational and legislative requirements. At the same time, uncertainty regarding costs and the impact on final prices can generate resistance among both economic agents and consumers.

However, identifying these impediments during the pre-implementation phase represents a strategic advantage, offering the possibility to adjust public policies, optimize processes, and develop an effective dialogue between authorities and the business environment.

Through transparent communication, adequate technical support, and a predictable legislative framework, the DRS can become not only a functional instrument but also a beneficial one for the economy, the environment, and society. Thus, the current challenges can be transformed into opportunities for development and innovation, facilitating the successful implementation of the system nationwide.

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HOW STATE AID POLICY FINANCES THE GREEN TRANSITION: EVIDENCE FROM ROMANIA

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Abstract. *The green transition is a long-term goal of the European Union (EU), aiming for environmentally sustainable economic development by boosting clean energy and green innovation across the internal market. Following the adoption of the Green Deal, Member States have been encouraged to implement green economic policies and support investments in sustainable technologies. Against this background, our paper investigates how State Aid policy has contributed to financing the green economy in the post-pandemic period. We focus on Romania as a case study, exploring both challenges and opportunities arising from the recently adopted Temporary Crisis and Transition Framework, which allows special derogations to support the green transition in all Member States. Methodologically, we conduct a comparative analysis using data from the EU State Aid Scoreboard to assess Romania's progress relative to EU targets and other Central and Eastern European (CEE) countries. Our findings indicate that, although Romania recorded significant improvements in green financing during 2022-2023, there remains a need for a more targeted approach to fully align with EU green objectives and enhance its contribution to the green transition.*

Keywords: *green transition, State Aid, sustainable development, Romania, European Union, comparative analysis*

Introduction

The European Union's legal framework on State aid, as set by Article 107 TFEU, is restrictive, allowing aid only under exceptional circumstances (Friederiszick, Röller & Verouden, 2006; Hölscher, Nulsch & Stephan, 2017; Clichici, Drăgoi & Timuș, 2024). The adoption of the European Green Deal has expanded the scope of acceptable interventions by enabling Member States to channel aid towards green transition objectives (Drăgoi, 2024a). Romania represents a relevant case study for examining how State Aid contributes to the financing of environmental protection and sustainable development during overlapping crises, including the COVID-19 pandemic and the Ukraine war.

This section introduces the role of the Temporary Crisis and Transition Framework (TCTF) and Romania’s reliance on diverse financial instruments to support the green economy (Drăgoi, 2024b; Yi, 2024; Vaupot & Plešej, 2024).

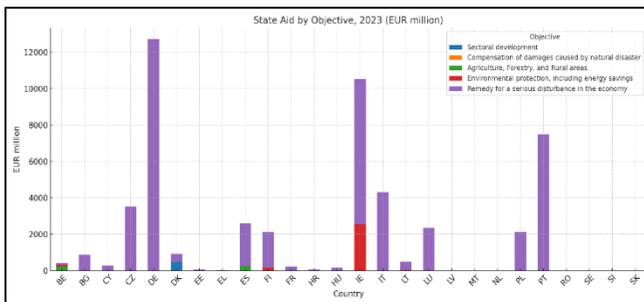
Research methodology

The paper employs a comparative methodology, using quantitative data from the EU State Aid Scoreboard (2021–2023) with a focus on Romania. Data are analysed to capture the evolution of State Aid volumes and instruments dedicated to environmental protection. Romania’s case is interpreted relative to EU averages and other Central and Eastern European countries, though the emphasis remains on Romania-specific trends. Policy documents complement statistical evidence to highlight the country’s strategic orientation under the TCTF.

Main results

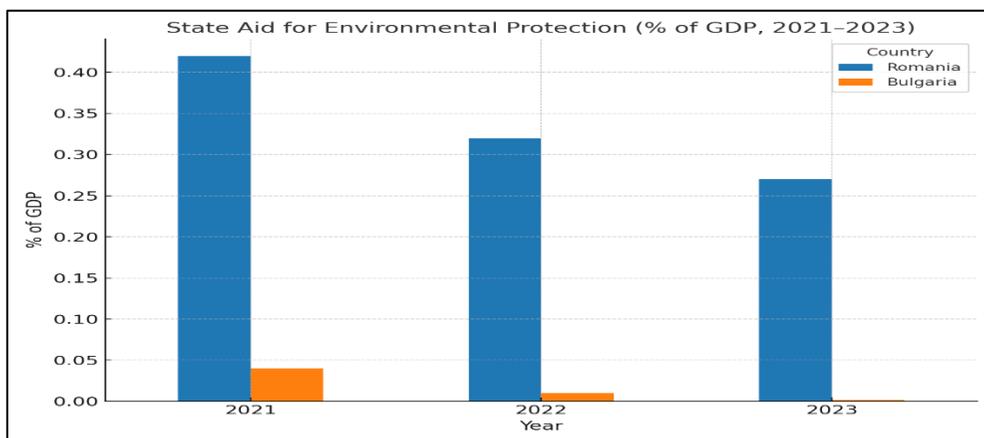
Romania allocated significant less State Aid under the TCTF compared with other Member States, but performed better in terms of environmental aids compared with other non-Eurozone countries, such as Bulgaria (Graph 1 & 2). In 2021, 0.42% of GDP was devoted to environmental objectives, followed by 0.32% in 2022 and 0.27% in 2023. These values consistently surpassed Bulgaria and reveal Romania’s relative commitment to sustainability within the State Aid framework. A notable feature of Romania’s policy is its use of diverse instruments. The category of 'other instruments' (repayable advances, unspecified non-grant measures) dominated allocations, representing 0.31% of GDP in 2021, 0.25% in 2022, and 0.19% in 2023. Direct grants also played a consistent role, remaining stable around 0.045% of GDP each year. Tax advantages and subsidies complemented this portfolio at smaller but steady levels. This diversified approach reflects Romania’s stronger institutional engagement with green transition goals compared to many peers.

Graph 1: State aid expenditure under the TCTF by Member State and policy objective in 2023 (EUR million)



Source: Author, based on State Aid Scoreboard data (https://competition-policy.ec.europa.eu/state-aid/scoreboard/scoreboard-state-aid-data_en)

Graph 2: State aid expenditure under the TCTF for environmental protection in 2021- 2023 in Romania and Bulgaria (% from GDP)



Source: Author, based on State Aid Scoreboard data (https://competition-policy.ec.europa.eu/state-aid/scoreboard/scoreboard-state-aid-data_en)

Discussion and conclusions

Romania’s reliance on a broad mix of State Aid instruments demonstrates a relatively strategic alignment with EU sustainability priorities. By dedicating approximately 0.34% of GDP to environmental and energy efficiency objectives over 2021–2023, Romania achieved the highest share among its aid priorities. Nonetheless, despite this progress, Romania did not emerge among the leading users of the TCTF in the EU, suggesting an untapped potential to further capitalise on the regulatory flexibility provided by the framework. Future efforts should aim at strengthening the targeting of aid measures to ensure more substantial contributions to the EU’s long-term green objectives.

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REPUBLIC OF MOLDOVA'S TRANSITION TO A GREEN ECONOMY: RECENT INITIATIVES

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***Summary.** This paper analyzes the Republic of Moldova's progress in transition to a green economy, focusing on recent policy measures and financial instruments supporting sustainable development. It examines strategic efforts to align with EU environmental standards. Drawing on national policy documents and institutional reports, the study reviews initiatives such as the 2024–2028 Green and Circular Economy Promotion Program, GEF, and partnerships involving BSTDB, Microinvest, and Victoriabank. These instruments support SMEs through green credit, tax incentives, and technical assistance. While the transition shows promising developments, persistent challenges remain - bureaucratic barriers, limited financing access, traditional business culture. The findings highlight the need for ongoing reforms, stronger institutional engagement, inclusive support mechanisms to ensure a successful green transition. The paper was developed within the framework of 23.70105.0807.10T Project for Young Researchers "Development of new working models in the context of post-pandemic consequences and strengthening of job-specific skills for occupations and areas of smart specialization in the Republic of Moldova".*

Keywords: green economy, circular economy, sustainable development, green finance, SMEs, Moldova

Introduction. The green economy promotes well-being and equity while reducing environmental risks, whereas the circular economy focuses on eliminating waste and maximizing resource use. These models are complementary: the green economy sets the vision, and the circular economy provides the tools. For Moldova, integrating both is essential for aligning with EU environmental standards and building a sustainable, resilient economy. A survey on the transition to a green economy in Moldova revealed several major barriers for enterprises (Monitorul Fiscal, 2023): bureaucracy and heavy

regulation in relations with the state; high costs of commercial loans; limited access to and lack of transparency in public support programs; absence of an ecological business culture and a market still dominated by traditional demand; deficiencies in waste management infrastructure and public investment policy. To facilitate the transition, it is essential to provide fiscal incentives and subsidies for ecological practices and to establish a special fund to finance the green transition. With Moldova's EU candidate status reforms must be accelerated to meet European criteria, including the green transition.

Literature review. In recent years, the concept of a green economy has gained significant traction as an alternative model of development that emphasizes sustainability, resource efficiency, and social equity. Defined by the United Nations Environment Programme as an economy that leads to “improved human well-being and social justice by significantly reducing environmental risks and scarcity of environmental benefits” the green economy framework has become central to policy discussions globally (Coșeleva, 2023). Hamuraru & Cojocaru (2024) propose a machine learning-enabled model structured around five pillars - energy efficiency, renewables, agriculture, waste, and transport, to operationalize Moldova's green strategy.

Research methodology. This study is based on the analysis of national policy documents, institutional reports, and recent green financing programs. Special attention is given to the Green and Circular Economy Promotion Program 2024–2028 (Ministerul Mediului al Republicii Moldova, 2024), which supports investments, innovation, and job creation in sustainable sectors. The program's components, such as resource optimization, carbon footprint reduction, and the integration of green skills into public administration, are examined in the context of Moldova's alignment with the European Green Deal. The research also reviews financial instruments and public-private initiatives that facilitate the transition to a green economy.

Main results. Moldova is advancing green transition through financial and policy initiatives. The Government's Green and Circular Economy Program 2024–2028, with a 200 million MDL budget, promotes green investment, jobs, renewable energy in line with European Green Deal. The €5 million GEFF program by MAIB and EBRD supports SMEs and homeowners with accessible financing for eco-friendly technologies (maib, 2025). BSTDB and Microinvest launched a €10 million green credit line for SMEs, while Victoriabank secured €10 million from the Green for Growth Fund to finance energy efficiency and climate resilience (Microinvest, 2024) (Victoriabank, 2024). These efforts enhance sustainability and economic resilience.

Discussion and conclusions. Moldova's transition to a green economy is no longer merely a policy choice but a strategic necessity for sustainable development. The measures adopted, ranging from public policy and government programs to SME-centered financial initiatives, demonstrate clear

resolve. The success of this process depends on reform continuity, institutional support, and active engagement from the business community and wider society. While challenges like bureaucracy and limited access to finance remain, growing institutional commitment and measurable environmental gains signal real progress. The road ahead depends on continued reforms, collaboration and citizen engagement to build a greener and resilient economy.

The article was developed within the framework of 23.70105.0807.10T Project for Young Researchers "Development of new working models in the context of post-pandemic consequences and strengthening of job-specific skills for occupations and areas of smart specialization in the Republic of Moldova".

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THE PARTICULARITIES OF INVESTMENTS IN THE CIRCULAR ECONOMY

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Abstract. *Investments in a circular economy represent the placement of capital to support, through the design of systems and initiatives related to maximizing the value of resources by extending the life cycles of products (keeping them in use for as long as possible), minimizing waste, maximizing the efficient use of resources and minimizing waste and eliminating pollution. The focus of these investment efforts is to change from a linear model to a closed-loop system, where materials are reused, recycled, and regenerated. The transition to a more sustainable and resource-efficient future requires investing in the circular economy, which has become an important element. Investments in the circular economy can provide benefits to both recipient companies (such as reduced costs, new revenue streams, improved reputation) and investors (e.g., risk mitigation, long-term value creation, strengthening the image of social responsibility). The main characteristics of investments in the circular economy are: focus on closed-loop systems; extension of product life cycles; increasing resource efficiency; focus on sustainable growth.*

Keywords: *globalization, migration, approaches, strategic management of human resources*

Introduction. Investments are an important element of the circular economy. They constitute the totality of capital allocated to financing systems, companies and projects that are intended to support the regenerative economic model focused on reusing resources, minimizing waste and reducing dependence on new raw materials. (*Circular...*, 2018), (Sustainability Directory, 2025)

The promotion of the circular economy has led to the development of circular investments as a specific form of investment activity carried out exclusively to finance or refinance companies, technologies and infrastructure related to the implementation of the circular business model. These capital

investments are largely related to the financing or refinancing of new or existing companies, as well as projects integrated in the implementation of a circular resource strategy and generating a positive long-term impact.

The aim of the research was to uncover the specifics of investments within the circular economy.

Literature review. The presentation of circular investments in the specialized literature is relatively modest. In this context, the publications of the Ellen MacArthur Foundation, KPMG, PwC, European Investment Bank and Sustainability Directory are noteworthy.

Research methodology. Open information space publications, such as reports from specialized companies and articles by experts in the field addressed, were analyzed for this purpose.

Main results. Circular investments specifically target systems and business models capable of creating an economy in which resources are reused, repaired, refurbished and recycled, thereby reducing waste and pollution, extending product life cycles, conserving natural resources and promoting sustainable economic growth with social and environmental benefits.

The main characteristics of circular investments are the following:

- *Circular investments focus on resource loops.* They are primarily related to financing projects that narrow and slow the flow of resources or close resource loops, meaning that materials are reused, refined, repaired, and recycled to remain in economic use.
- *Circular investments have a long-term investment horizon* with a view to creating long-term value by financing circular solutions and implementing sustainable business models.
- *Circular investments focuses on preserving value* by promoting the retention of materials and products in use for longer at a high value.
- *Circular investments are based on the shift from ownership to access.* They channel funds towards models that provide access to goods and services, rather than direct ownership, such as leasing, sharing and product-as-a-service models.
- *Circular investment promotes profitability in loops.* Smaller loops (such as repair and reuse) are often more profitable and resource-efficient than larger ones, which are associated with high energy consumption (such as recycling).
- *Circular investments promote innovation and technology adoption* by supporting innovative solutions and technologies, including artificial intelligence, digital platforms and smart packaging.

Priority areas for investment in the circular economy are waste management, resource efficiency, sustainable materials and product design, enabling technologies such as digitalization and artificial intelligence. Investments are also directed towards the development of renewable energy,

the promotion of product-as-a-service models and the encouragement of circularity and collaborative economy platforms.

Circular investments are based on three principles of the circular economy:

- Reducing waste and pollution;
- Keeping products and materials in use for as long as possible, at their maximum value, through mechanisms such as sharing, leasing, repairing, renovating and recycling;
- Regenerating natural systems by investing in and restoring natural capital and ecosystems.

Promoting circular investments is linked to a complex of challenges stemming from the lack of financing and high upfront costs, the lack of viable business models and efficient technologies, market imperfections such as unvalued environmental externalities and low consumer demand, political and regulatory uncertainties, operational complexity in reverse logistics, as well as organizational inertia and resistance to change.

Discussion and conclusions. Circular investments are an important factor in the development of the circular economy, which currently has modest proportions but with significant growth prospects. These investments are focused on achieving long-term sustainable growth and returns by promoting resource efficiency, new economic opportunities and reducing the depletion of exhaustible natural resources. These investments have specific characteristics, forms of application and principles. The related challenges are also to be considered.

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INNOVATIVE FINANCIAL INSTRUMENTS FOR INCLUSIVE GROWTH. EMPOWERING FINANCIAL INCLUSION, ENHANCING WELL-BEING, AND REDUCING SOCIAL INEQUALITIES IN THE CONTEXT OF GLOBAL CHALLENGES

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Abstract. *This paper examines how innovative financial instruments—fintech, digital microfinance, and sustainable finance—promote financial inclusion, well-being, and the reduction of social inequalities. Using a mixed-methods approach, quantitative analysis of international datasets (Global Findex, World Bank, OECD) assesses links between financial access and social outcomes, while qualitative case studies and semi-structured interviews explore contextual factors in developed and emerging economies. Findings show that technological innovation expands access to financial services, but its impact depends on regulatory frameworks, financial literacy, and public-private collaboration. Effective models demonstrate that inclusive finance can reduce disparities, enhance social cohesion, and strengthen demographic resilience. The study concludes that integrating innovative financial tools into holistic development strategies is crucial for sustainable, inclusive growth amid global uncertainties.*

Keywords: *innovative financial instruments, fintech solutions, sustainable finance, financial inclusion, social inequalities, society well-being*

Introduction. Amid rapid technological change and complex global challenges, innovative financial instruments—fintech, digital microfinance, and sustainable finance—have emerged as key levers for promoting financial inclusion, poverty reduction, and social equity (Demirgüç-Kunt et al., 2018; Beck et al., 2020; World Bank, 2021). Digital microfinance supports entrepreneurship and household stability (Morduch, 1999; Suri & Jack, 2016), while sustainable finance aligns growth with long-term social and

environmental objectives (OECD, 2020). However, their effectiveness depends on regulatory strength, financial literacy, and cross-sector collaboration, as outcomes vary across institutional and social contexts (Zhang & Posso, 2021; Allen et al., 2016). Integrating financial innovation with comprehensive policy strategies is thus essential for advancing inclusive, resilient, and equitable development (Creswell & Plano Clark, 2018).

Literature review. Innovative financial instruments - fintech, digital microfinance and sustainable finance - play a central role in promoting financial inclusion and reducing inequalities. Fintech expands access to underserved populations, though its impact depends on regulation, financial literacy, and cross-sector collaboration (Amnas, 2024; Lee, 2024), while digital microfinance enhances efficiency and capital access for marginalized groups, supporting entrepreneurship and poverty reduction (Offiong, 2024). Sustainable finance incorporates ESG principles to align growth with long-term societal objectives (Hasan, 2024). Models like 4G Capital and Kinara Capital illustrate the potential of technology-driven, unsecured lending for SMEs in emerging economies (4G Capital, 2025; Kinara Capital, 2025), but risks remain: without equitable digital access and financial education, fintech may exacerbate disparities (Kodongo, 2024). Their transformative impact therefore relies on inclusive regulation, digital infrastructure and targeted capacity-building to ensure sustainable and equitable outcomes.

Research methodology. This study employs a mixed-methods approach to investigate how innovative financial instruments promote financial inclusion, enhance well-being, and reduce social inequalities. Quantitative analysis of datasets such as the Global Findex, World Bank indicators, and OECD data uses regression and correlation techniques to examine relationships between financial access, poverty reduction, and essential service utilization (Demirgüç-Kunt et al., 2018; World Bank, 2021). Complementing this, qualitative insights are drawn from comparative case studies and semi-structured interviews with policymakers, financial providers, and development actors, exploring regulatory frameworks, institutional support, and public-private cooperation mechanisms (Creswell & Plano Clark, 2018). Integrating these methods allows the study to capture both statistical trends and contextual dynamics, generating evidence-based guidance for fostering inclusive and sustainable economic growth.

Main results. The analysis of innovative financial instruments highlights their potential to advance financial inclusion, well-being, and social equity. Quantitative data from the Global Findex Database show that fintech adoption expands access to formal financial services, particularly for underserved populations (Demirgüç-Kunt et al., 2018), while digital microfinance and mobile banking increase borrowing, investment capacity, and account ownership, now reaching 79% of adults globally (World Bank's

Global Findex, 2025). Enhanced financial access is linked to improved household welfare, including income stability, consumption smoothing, and investments in education and health (Beck et al., 2020). Regional variations, such as differing insurance coverage in South Asia and Africa and emergency fund availability—from 16.1% in Africa to 32.7% in Pakistan—highlight the role of local practices, culture, and social networks in shaping financial resilience (Lyons et al., 2020). Beyond individual benefits, inclusive financial tools reduce income disparities and foster social cohesion. Digital microloans and sustainable finance enable marginalized groups to participate in entrepreneurship (Suri & Jack, 2016; OECD, 2020), but projected income trends indicate persistent inequality. Effective outcomes therefore depend on regulatory capacity, digital literacy, and cross-sector collaboration, emphasizing the need for integrated policies, equitable access, and capacity-building to translate technological potential into sustainable, inclusive growth (Zhang & Posso, 2021).

Discussion and conclusions. Innovative financial instruments—mobile banking, fintech, and digital microfinance—have increased access to formal financial services for underserved populations, enhancing account ownership, digital payment usage, and engagement with financial networks, while improving household resilience, income stability, and investments in health and education. Regional variations highlight the role of local practices, culture, and social networks. These tools also contribute to reducing social disparities, as microloans and sustainable finance enable marginalized groups to engage in entrepreneurship and support social cohesion and economic resilience (Manta O., 2021). Nevertheless, income projections suggest persistent inequality, underscoring the need for integrated strategies that combine technology adoption, regulatory support, digital literacy, and capacity-building. Limitations include incomplete data on informal financial practices and the inability to establish causality. Future research should adopt longitudinal or experimental approaches to assess long-term impacts, examine interactions among technology, policy, and culture, and explore emerging innovations such as blockchain and AI-driven finance to advance equitable and sustainable growth.

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DETERMINANTS OF BANK BRANCH DISTRIBUTION IN THE REPUBLIC OF MOLDOVA

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***Abstract.** Financial inclusion and regional disparities in banking access remain pressing challenges in developing countries like the Republic of Moldova. We aim to analyze territorial distribution of bank branches in Moldova and identify key socioeconomic factors influencing their placement. Using regional data and linear regression, we assess the impact of variables like enterprises' number, average number of employees, sales revenue, population. Results show that economic indicators, especially number of average employees per enterprise ($R^2=0.9899$), are the strongest predictors of branch presence, outweighing spatial factors. Chişinău hosts most branches, yet distribution spans all districts. Findings suggest banks prioritize economically active regions over the densely populated. The study underscores the need for policies to improve access in underserved areas and supports efforts to reduce regional disparities, contributing to a better understanding of how economic development shapes financial infrastructure and inclusive growth. The paper was elaborated within the framework of the "Young researchers 2024-2025" competition project 24.80012.0807.09TC "Strengthening scientific and methodological support for reducing social vulnerability by increasing the level of financial inclusion of low-income groups" (2024-2025), institutional funding, ANCD.*

***Keywords:** bank, branch, distribution, financial inclusion, regional disparities, Moldova*

Introduction. Concerns over financial inclusion and regional disparities in banking access remain urgent in developing countries like the Republic of Moldova. This study examines the key drivers of bank branch distribution in Moldova, emphasizing the link between local economic activity and physical banking presence. International examples provide valuable context.

Literature review. In Portugal, higher national bank branch density is linked to conservative SME financing, while cooperative banks encourage more borrowing, even as digitalization reduces the benefits of physical proximity (Gama, Fátima & Vieira, 2024). Peru illustrates how geographic and infrastructural challenges, especially in rural areas, hinder banking access. Urban concentration and the digital surge during COVID-19 exposed major gaps in financial and digital literacy (Náñez Alonso et al., 2024). Spain presents a mixed picture: post-2008 branch closures had limited impact due to digital banking, but without inclusive digital policies, inequality risks persist (Cruz-García & Peiró-Palomino, 2025). Spain's case highlights the need to pair digital innovation with mobile branches or local partnerships. These cases affirm the ongoing importance of territorial banking. For Moldova, amid financial restructuring and digital transition, understanding branch distribution is vital, especially in rural and economically fragile areas.

Research methodology. Regional-level data for 2024 from National Bureau of Statistics of Moldova (NBS, 2025), disaggregated by district, serve as basis for a series of regression analyses aimed at identifying primary determinants of bank branch allocation. A total of 9 variables, ranging from enterprise characteristics (number of firms, average number of employees, sales revenues) to population indicators (size, density) and geographic metrics (land area), were evaluated using simple linear regression. Model performance was assessed through coefficient of determination (R^2), t-statistics, and Akaike Information Criterion, allowing for a robust ranking of explanatory strength.

Main results. The results consistently prioritize economic variables as the dominant predictors of branch distribution. The average number of employees per enterprise yields the highest explanatory power ($R^2 = 0.9899$), followed closely by the number of enterprises ($R^2 = 0.9849$) and total sales revenues ($R^2 = 0.9817$). These findings suggest a strong association between branch presence and local economic maturity, where enterprise consolidation and business dynamism create favorable conditions for banking operations. Demographic variables, while statistically significant, exhibit slightly lower, but still strong predictive value, thus population size ($R^2 = 0.9764$) plays also a very important role, but population density ($R^2 = 0.6051$) proves to be a much weaker indicator. Geographic surface area emerges as statistically irrelevant ($R^2 = 0.0124$), underscoring the limited influence of spatial scale in the current configuration of Moldova's financial infrastructure. The evidence thus points to a clear pattern: economic viability outweighs spatial considerations in

shaping the country's banking geography. The concentration of branches in Chişinău reflects national trends. However, the presence of bank branches and ATMs in smaller and more remote districts demonstrates the persistence of minimum service thresholds across administrative divisions.

Discussion and conclusions. Findings suggest several policy implications. Financial inclusion strategies should rely on economic diagnostics rather than demographics alone. Regional economic development is vital for attracting financial institutions, pointing to a need for coordinated support. In economically weaker districts, targeted interventions may be required to sustain physical banking. A hybrid model, digital tools with selective physical infrastructure, balances cost-efficiency and inclusion. Despite scalability, digital platforms still exclude some groups, underlining the relevance of territorial branches.

The paper was elaborated within the framework of the "Young researchers 2024-2025" competition project 24.80012.0807.09TC "Strengthening scientific and methodological support for reducing social vulnerability by increasing the level of financial inclusion of low-income groups" (2024-2025), institutional funding, ANCD.

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SUSTAINABLE FINANCE FOR CIRCULAR ECONOMY TRANSFORMATION

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Abstract. *Economies in transition face a complex challenge driven by the current need to balance economic development with environmental sustainability - they must simultaneously address structural problems inherited from the past and adapt to the imperatives of the transition to sustainable finance and the circular economy imposed by new global economic paradigms.*

This research study examines the early-stage transformation process of the Republic of Moldova, analyzing the convergence of policy frameworks, banking sector modernization, and investment models that facilitate the implementation of the circular economy. Using a mixed approach combining policy analysis and banking sector data, the research identifies key enabling factors and barriers in Moldova's sustainable finance ecosystem. The findings reveal that while policy reforms and EU partnership programs are creating solid foundations, implementation faces constraints including limited institutional experience, market awareness gaps, and traditional economic volatility. The study demonstrates that banking sector modernization, characterized by increased digitalization, improved credit accessibility, and lower interest rates, creates natural synergies with corporate investment models increasingly focused on operational efficiency. The research contributes to understanding how emerging economies can use policy-market convergence to accelerate the adoption of sustainable finance, offering insights for similar transition contexts.

Keywords: *sustainable finance, circular economy, banking development, investment modernization, financial infrastructure, green transition*

Introduction. Circular economy principles are driving economic transformation in emerging markets, where sustainable finance facilitates the adoption of circular practices. Linear economic models are inadequate for today's environmental challenges, and the intersection of financial innovation and sustainability is becoming essential. The Republic of Moldova is starting this transition, supported by policy reforms and EU partnerships supporting

regulations and pilot projects. The banking sector, with increased liquidity, is gradually aligning with sustainability policies. Academic research on sustainable finance in emerging economies is limited, being more focused on developed markets. This study proposes a theoretical framework for a sustainable financial ecosystem in transition economies, analyzing the alignment between policies, banking capacities and market requirements. Success depends on this strategic alignment.

Literature review. Sustainable finance has evolved from a theoretical concept to a practical necessity driven by the urgency of climate change (Ozili, 2021). The concept integrates social responsibility and environmental stewardship through impact investments and improved regulatory frameworks (Ozili, 2023; Migliorelli, 2021), creating the foundation for integrated financial approaches (Aggarwal et al., 2024).

The circular economy offers a practical model for sustainability, decoupling economic growth from resource consumption (Zăpuciu & Trică, 2022). Sustainable finance is becoming the capital mobilization tool for circular models (Ozili, 2022), although accessibility of finance remains a challenge that requires adapted instruments such as green bonds (Toxopeus et al., 2021; Pinto et al., 2022).

Emerging economies face limited resources, poor infrastructure, and governance issues that hinder sustainable investment. Banks play a critical role in providing long-term solutions for energy transition projects (Soloviov, 2023), and foreign direct investment can catalyze local development (Volpon & Xavier, 2020).

The success of integration depends on appropriate policy frameworks. Central banks are expanding their mandates for sustainability objectives (Timofei, 2024), and cross-sector collaboration is becoming crucial for the circular finance ecosystem (Gambetta et al., 2019; Marin et al., 2024). Green financial instruments provide concrete means for project financing, and the integration of ESG criteria demonstrates market maturity (Li et al., 2024; Muchiri et al., 2022).

Table 1. Dimensions of sustainable finance in emerging economies

Dimension	Success Factors	Key Barriers	Authors
Conceptual	Integrating ESG into decision-making; developing standardized metrics for impact	Lack of unified conceptual frameworks; inconsistent definitions	Ozili (2021, 2023); Migliorelli (2021)
Operational	Tailored financial instruments (green bonds, sustainable loans); digital technologies	Limited access to finance for innovations; high valuation costs	Pinto et al. (2022); Toxopeus et al. (2021)

Institutional	Cross-sector collaboration; expanded role of central banks in sustainability	Limited institutional capacity; limited experience in assessing ESG risks	Timofei (2024); Soloviov (2023)
Market	Growing demand for green investments; increasing regulatory pressure	Volatility of emerging markets; low awareness of sustainability benefits	Li et al. (2024); Durrani et al. (2020)

Source: Author's synthesis based on cited literature

The identified barriers converge into three main categories: structural (limited access to capital, inadequate infrastructure), institutional (low capacity, insufficient regulatory frameworks) and market (volatility, lack of awareness). These require integrated approaches that combine improving financial education, increasing institutional capacity and developing localized financing mechanisms (Durrani et al., 2020; Peng & Zheng, 2021).

Research methodology. The research uses a mixed approach, combining public policy analysis with quantitative data from the banking sector, focusing on liquidity, access to credit and interest rates. The data comes from the National Bank of Moldova, the Ministry of Environment and EU reports, targeting the catalysts and barriers to sustainable finance.

Main results. Research shows that the Republic of Moldova is in an early phase of transition towards sustainable finance, limited by structural constraints. World Bank reports (2024, 2025) identify barriers such as low productivity in non-agricultural sectors, declining dependence on remittances, demographic decline and the impact of the war in Ukraine on economic stability. Policy convergence with the market has had mixed results: the “Moldova 2030” Strategy and the Association Agreement with the EU facilitate access to European financing, but implementation remains fragmented due to the lack of an adapted green taxonomy and reduced institutional capacities for ESG project assessment (IMF, 2024). Energy efficiency pilot projects demonstrate viability, but are limited by insufficient financing and high risk perception by banks. The banking sector is progressing through digitalization and accessibility, but high interest rates and lack of expertise in environmental risks are holding back sustainable financing (European Commission, 2024). The SEI (2025) and UNEP (2024) assessment confirm that limited financial resources, low foreign investment and barriers in waste/water management hinder the circular economy. Poor coordination between the Ministry of Economy, banks and the market underlines the urgent need for strategic alignment to overcome these obstacles.

Discussion and conclusions. The Republic of Moldova is advancing in the transition towards sustainable finance, aligning policy reforms with

banking sector modernization, supported by partnerships with the EU, such as the Association Agreement. However, the implementation of the circular economy is hampered by limited institutional capacity, economic volatility and insufficient coordination between actors. To turn this strategic potential into an operational reality, Moldova needs investments in financial education, expertise in ESG risk assessment and guarantee mechanisms, such as EU funds for green SMEs. The Moldovan experience shows that emerging economies can only progress through an integrated approach, combining coherent policies, practical capacities and private sector engagement. With sustained commitment, Moldova can become a successful model for sustainable transition.

Note: The article was developed within the framework of Subprogram 030101, „Strengthening the resilience, competitiveness, and sustainability of the economy of the Republic of Moldova in the context of the accession process to the European Union”, institutional funding

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AN IN-DEPTH ANALYSIS OF FISCAL INSTRUMENTS TO COMBAT ENERGY POVERTY AT THE EUROPEAN UNION LEVEL

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***Abstract.** The European Union (EU), promoter of spectacular social and environmental development in recent decades, through its policy of substantially combating pollution and achieving climate neutrality by 2050 has led to increasing pressure on Member States to adapt to this environmental legislation. In addition to physical infrastructure, energy infrastructure represents a critical factor in adapting to climate change, but also to the extremely ambitious environmental policies of the European Union. In this context, the possibility of leaving more and more citizens behind, especially the most vulnerable is extremely high. Thus, the article aims to analyze in detail the role of fiscal and budgetary instruments at the European Union level to combat energy poverty. The methodology is comparative, at the level of EU countries, practical, but also theoretical, trying to explore as best as possible the fiscal instruments at the level of European Union countries. The results can be considered contradictory in places, given the lack of decision-making uniformity at EU level and the diversity of particular elements at the level of each member state.*

***Keywords:** energy, energy poverty, government policy, fiscal stability, financial sustainability, combating inequality*

Introduction. The European Union's climate legislation is making steady progress year after year, and the ambition of climate neutrality by 2050 requires that adaptation occur not only in legislation but especially in practice, with challenges that are often difficult to overcome at the local level. Thus, physical infrastructure, including the energy system, requires an integrative investment approach with special implications in all activity plans, the consequences of environmental legislation requiring special measures so that the green transition does not affect more seriously the social categories already

affected by various degrees of social vulnerability. Thus, in addition to the various forms of social inequality and poverty, energy poverty can also be added.

Literature review. The concept of energy poverty requires understanding the overlaps of various forms of poverty, which can sometimes exist even in the absence of necessarily identifying a form of material or income poverty (Boardman, 2010; Sovacool, 2012; Middlemiss & Gillard, 2015; Gouveia, et al., 2019; Bouzarovski, Thomson & Cornelis, 2021; Palma et al., 2022). The concept refers to the inability to benefit from adequate living conditions, especially regarding heating/cooling, food, lighting, practically being identified in the literature as a natural right of any inhabitant of Earth. Regarding fiscal and budgetary policies to combat energy poverty, a number of authors point out that reducing import duties, reducing VAT on energy, climate bonuses, maintaining energy and utility subsidies can prove effective in combating energy poverty and protecting vulnerable categories (Morrisson, 1996; Komives et al., 2005; IMF, 2008; Ruggeri Laderchi et al., 2013; Amaglobeli et al., 2022; European Commission, 2025).

Research methodology. Thus, the article aims to analyze in detail a series of fiscal and budgetary instruments with a role in combating energy poverty at the level of the European Union. The methodology aims to consider both a theoretical, exploratory approach in the literature, but also a practical, comparative approach between countries, with a graphic representation with concrete data and information where they are held.

Main results. The results highlight that, on the one hand, there is no uniformity in the approach to energy poverty from a fiscal perspective at the level of the European Union, probably also against the background of extremely distinct regional particularities between the countries of the European Union, and on the other hand, of inevitable structural shortcomings of each fiscal instrument to combat energy poverty.

At the same time, the fiscal-budgetary situation at the level of each Member State constitutes an extremely important factor in the increase or decrease in the number of fiscal instruments, but also in the depth or intensity of their penetration regarding the energy situation of the affected social categories. Thus, the originality of the study comes from the little-addressed topic of energy poverty, from the specific regional approach at the level of the European Union, as well as from the attempt to identify as best as possible the fiscal instruments and their quality in combating energy poverty.

Discussion and conclusions. National fiscal and budgetary frameworks, economic sustainability, but also extremely different fiscal and budgetary frameworks from state to state often imply that the approach to energy poverty is extremely differentiated at the level of member states, and energy poverty is sometimes treated extremely precariously.

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THE CONCEPT OF SUSTAINABILITY FROM AN ESG PERSPECTIVE

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Abstract. *Environmental, Social and Governance (ESG) principles have become an essential framework for assessing and guiding sustainable development on a global scale. These principles provide a comprehensive perspective through which countries can analyze the long-term viability and societal impact of their development strategies. In the context in which the world is increasingly facing challenges such as climate change, social inequality and governance deficits, the integration of ESG principles has become essential for countries that aim to achieve resilient and inclusive growth. The Republic of Moldova must benefit from the adoption of these principles to shape its future and face the challenges of EU integration.*

The purpose of the research was to analyze the specialized literature on ESG principles and their role in ensuring sustainable development.

The methods used are: monographic analysis, documentary analysis, comparative analysis, historical method and synthesis.

The results of this study consist of substantiating the concept of sustainability through the lens of ESG principles, defining ESG components and their role and impact in ensuring sustainable development, and identifying the benefits that the implementation of ESG principles can bring.

Keywords: *ESG principles, strategic management, green finance, sustainability, development*

Introduction. Environmental, Social and Governance (ESG) principles have become a central pillar of sustainable finance, representing a paradigm shift in how investors and companies evaluate corporate impact and long-term value creation. According to the literature, ESG functions as an investment principle that prioritizes environmental, social responsibility and corporate governance aspects in financial analysis and decision-making processes. Thus, research shows that ESG factors include environmental, social or governance aspects that can have a positive or negative impact on the financial performance or solvency of an entity.

This article was developed within the framework of *Subprogram 030101 „Strengthening the resilience, competitiveness, and sustainability of the economy of the Republic of Moldova in the context of the accession process to the European Union”, institutional funding.*

Literature review. ESG principles were first introduced in the 2004 Report entitled *Who Cares Wins: Connecting Financial Markets to a Changing World*. (World Bank, 2004). Based on ESG principles, companies mainly promote the achievement of the SDGs through investment, management and reporting in accordance with ESG criteria. (Liu, Z, et al., 2022). Thus, in order to address the major challenges of global climate change, resource scarcity and wealth gap, the achievement of the Sustainable Development Goals (SDGs) is gradually becoming the common aspiration of all humanity. (Gerard et al., 2016).

Research methodology. The research used a combination of qualitative and quantitative methods, such as documentary analysis, comparison, grouping, analysis and synthesis. The sources of information included European normative acts, official international documents, as well as specialized scientific literature - articles, monographs and recent studies.

Main results. The Environmental component of ESG principles covers a wide range of issues related to a company's impact on the natural environment. Academic research highlights several essential sub-components within this pillar, including waste and pollution management, resource stewardship, greenhouse gas (GHG) emissions, energy efficiency, and deforestation prevention. In addition, the environmental aspect analyzes a company's energy consumption patterns and its transition to renewable energy sources. The complex nature of this component highlights the extensive impact that corporate activities can have on the planet's ecosystems and resources. Comprehensive strategies that address these interconnected sub-components are essential for achieving environmental sustainability and reducing the negative impacts of business operations on the environment. Fontes, Moreira, and Carlos (2021) demonstrated that green purchasing behavior is strongly influenced by both purchase intention and environmental activity. Therefore, green companies should focus on those that are currently taking environmental action.

The social component of ESG focuses on an organization's responsibilities and relationships with people, encompassing its impact on individuals, groups, and society as a whole, and includes factors related to workplace health and safety, human capital management, future-proofing capabilities such as stakeholder management (Kocmanová, and Dočekalová, 2012), as well as the ways in which consumer engagement and interaction with supplier organizations take place (Kocmanová, and Dočekalová, 2012). Thus, we can see that key sub-components include working conditions, labor practices, employee relations, diversity and inclusion initiatives, product safety standards, community engagement efforts, and data and privacy protection (Ali et al., 2017). Based on a survey and content analysis of 76 empirical research articles, it reviewed the factors influencing corporate social responsibility disclosure in both developed and emerging countries. (Ali et al, 2017),

The results show that firm characteristics, such as company size, industry sector, profitability and corporate governance mechanisms, are the main elements influencing the CSR reporting agenda. Political, social and cultural factors also have a significant impact on the CSR disclosure agenda. Significant differences are observed between the determinants of CSR disclosure in developed and developing countries. In developed countries, the concerns of certain stakeholders, such as regulators, shareholders, creditors, investors, environmentalists and the media, are considered extremely important for CSR information disclosure. In emerging countries, CSR reporting is more strongly influenced by external forces/powerful stakeholders, such as international buyers, foreign investors, international media and international regulatory bodies (Ali et al, 2017). At the same time, another social sub-component is supply chain transparency (Wren, 2022). Cho, Chung, and Young (2019) demonstrate the positive association between corporate social responsibility and firm performance using financial, accounting, and market indicators.

Third, the governance factors in the ESG model refer to structural corporate governance and include: board management structures, corporate business ethics, tax and accounting policies, compliance practices, and cybersecurity issues (World Economic Forum, 2022).

Corporate governance, in the view of some authors, refers to the agency problem and refers to the way of influencing financial decisions made by those in charge of companies. (Dănilă et al, 2022). Regarding the Governance subcomponent, the most common relevant theoretical frameworks include the stakeholder theory (Freeman, 1984). Thus, the Stakeholder Theory is a theoretical framework that proposes that organizations take into account the interests of all parties involved or affected by their activities, not just the interests of shareholders or owners. (Freeman, 1984).

Conclusions. Recent studies confirm the hypothesis that a firm's value is influenced by both its ESG (environmental, social and governance) performance and the intensity of its disclosure of information related to these activities (Zeng et al., 2025). Specifically, ESG disclosure plays a moderately important role in the relationship between a firm's ESG activities and its valuation. Studies show that the stakeholder theory can also be applied. Since its emergence, the stakeholder theory has been central to the subject of corporate social responsibility. (Garcia et al., 2017).

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ACHIEVEMENTS AND PROBLEMS IN FINANCING THE WATER SUPPLY AND SANITATION SECTOR IN THE SOUTH DEVELOPMENT REGION OF THE REPUBLIC OF MOLDOVA

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***Abstract.** This paper provides a detailed analysis of the projects financed from the National Environmental Fund and National Fund for Regional and Local Development during the years 2020-2024 (5 years), which had as their objective the development of the water supply and sanitation sector in the localities of the South Development Region of the Republic of Moldova. The purpose of the study is to examine both the achievements and problems of public financing projects in this sector and to formulate solutions to improve the situation of projects in the region.*

***Keywords:** financing, water supply, sanitation, South Development Region*

Introduction. The results presented in this article were obtained within the framework of the Subprogram 010801 „Increasing ecological security and resilience of geo-ecosystems to current environmental changes” and the Young Researchers Project 2024–2025 „The impact of climate change on water resources management in the Republic of Moldova” (number 24.80012.7007.07TC), implemented by the Institute of Ecology and Geography of the State University of Moldova.

The South Development Region (DR), with an area of 7.4 thousand km², represents about 22% of the territory of the Republic of Moldova and includes 8 districts and 310 localities, of which 13 are urban and 297 are rural, grouped into 200 communes [3, p.6]. According to the „Moldova 2030” Strategy, the South DR continues to be one of the most lagging behind in terms of infrastructure of water supply and sanitation [6].

Literature review. Internationally, the financing of the water and sanitation sector has been analyzed by numerous researchers, who have studied the link between water management, economic development and regional stability [5] and emphasized the importance of institutional reforms and sustainable financing [4]. These studies confirm that investments in the sector have a major social impact, but

require public and international support mechanisms, given the low attractiveness for private capital.

In the Republic of Moldova, the issue has attracted the interest of researchers from the Institute of Ecology and Geography [1, 2, 3] who analyzed the use of water resources in all regions of the country from a geographical and economic point of view.

Research methodology. The general methods used in this study are: statistical and analytical-comparative methods, which were applied to identify and compare the financing trends of the water supply and sanitation sector between regions. The main data sources are: Reports of the Ministry of Finance provided primary data for assessing the financing trends of the water supply and sanitation sector at the regional level [7].

Main results. During the period 2020–2024 (5 years), funding for the water supply and sanitation sector recorded significant increases at the national level, but the distribution of resources between regions was uneven. Center DR consistently benefited from the largest amounts approved and transferred, followed by North DR, while South DR was in intermediate positions. In the first years of the analyzed period, South DR attracted lower funds through the National Fund for the Environment (NFE), but with the migration of funding to the National Fund for Regional and Local Development (NFRLD), the share of resources allocated to the region increased.

Significant differences are observed between the districts of the South DR in the number and amounts of approved financing projects for the water supply and sanitation sector. Districts such as Causeni (16 projects, ≈86 mil. MDL) and Leova (13 projects, ≈71 mil. MDL) benefited from the largest amounts approved, due to the inclusion of large-scale regional projects (main aqueducts, treatment plants), while districts such as Cantemir (10 projects, ≈25 mil. MDL) or Basarabasca (6 projects, ≈33 mil. MDL) attracted lower funding, limited to specific projects. The number of approved projects also differs: some districts submitted more project proposals, but not all were eligible, which generated an uneven degree of coverage of needs. This situation reflects both the different administrative capacity of local authorities to develop and submit projects, and the government's prioritization of localities with a greater regional impact.

A central element of the analysis is the discrepancies between the amounts approved and those actually transferred and used. During the period 2020–2024, the absorption rate of funds in the South DR recorded significant fluctuations: in 2022, the execution level exceeded 100% (≈129%), indicating additional funds during implementation; in 2023, the execution rate decreased dramatically (≈37%), reflecting delays in the development of projects and possible administrative blockages; in 2024, the situation partially recovered, with an execution rate of ≈71%. This volatility raises issues related to budgetary planning and the capacity of local authorities to manage projects on time. In comparison, other regions (especially Center DR) recorded greater stability in the ratio between the amounts approved and those executed.

The reforms implemented by transferring the attributions from the National Ecological Fund to the National Environmental Fund had a significant structural impact on the financing of the sector in the South DR. Among the main effects identified are: (i) the increase in the total volume of financing granted by the NFRLD, which allowed the implementation of large-scale regional projects, previously impossible to achieve through the NEF; (ii) the change in the typology of projects, from punctual and dispersed interventions to integrated projects, with an impact on several localities simultaneously; (iii) the improvement of regional coordination, through the more active involvement of the South DR and the alignment of projects with national strategies. Although the reforms contributed to the consolidation and efficiency of the financing of the sector, they did not completely eliminate regional disparities or administrative bottlenecks, which requires the need for additional measures to strengthen institutional capacities and accelerate project implementation.

Discission and conclusions. South DR has benefited from an increase in funding, but lags behind other regions, especially Center DR. There are large differences between districts in terms of approved amounts and the number of projects, due to uneven administrative capacity. The ratio between approved and executed funding is unstable, indicating planning and implementation problems. The reforms that resulted in the transfer of funding to NFRLD have allowed for large-scale regional investments and better coordination.

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