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**Scientific Coordinator:**

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International Scientific Conference

"COMPETITIVENESS AND INNOVATION IN THE KNOWLEDGE ECONOMY"

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## **PLENARY SESSIONS**

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## **INFRASTRUCTURE AND INTERNATIONAL COMPETITIVENESS: TRENDS AND CHALLENGES<sup>1</sup>**

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**Abstract:** During the last few years, the business and Governments in the region should operate in an extremely uncertain environment caused by the Covid-19 pandemic crisis and the Russian-Ukrainian war consequences. Moldova is not an exception, sharing a common frontier with Ukraine and recording frequent economic declines during the last decade as a reaction to many shocks. Moldovan authorities are more than ever concerned with improving competitiveness and increasing enterprises resilience. Given the importance of infrastructure in consolidating international competitiveness, the Moldovan public authorities continue to invest in developing infrastructures especially: road and telecommunication ones. Many services and programs are provided and implemented for enterprises to become more competitive and resilient to internal and external shocks, to facilitate their internalization. The goal of the present research is twofold: to present the main trends and challenges for improving Moldova’s international competitiveness and the second, to evaluate the impact of infrastructure and services provided by Government for business to increase their competitiveness and to facilitate internationalization. In order to carry out the study a quantitative and qualitative research have been undertaken using national and international statistic data, researches and official reports, the results of the business survey carried out in 2022 within the applied research project 20.80009.0807.38 „Multidimensional assessment and development of the entrepreneurial ecosystem at the national and regional level in order to boost the SME sector in the Republic of Moldova”, financed from the state budget of the Republic of Moldova. The main conclusions of the research states about the modest results of the Republic of Moldova to become more competitive internationally and of the Government to support enterprises to cope with some critical challenges that hinders them to boost productivity, and become more competitive and resilient to crisis. At the same time while the telecommunication infrastructure is becoming better due to many public policy incentives, it is not accessible for business from different regions at the same extent, while the road infrastructure is yet a critical challenge for enterprises operating both in the Chisinau city (the capital and the largest city in Republic of Moldova) as well as in other regions of the county.

**Keywords:** road infrastructure, transport services, telecommunication infrastructure, international trade, competitiveness.

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<sup>1</sup> The paper contains the results of the research projects 20.80009.0807.38 „Multidimensional assessment and development of the entrepreneurial ecosystem at the national and regional level in order to boost the SME sector in the Republic of Moldova” financed from the State Budget carried out within the National Institute of Economic Research of the Academy of Economic Studies from Moldova in 2022.

JEL Classification: H54, F10, L26, O18

## **Introduction**

The competitiveness of Moldova's exports in regional profile is low despite the policies promoted by policy makers to stimulate exports. The Republic of Moldova has an extremely high merchandise trade deficit, which makes the current account strongly unbalanced during the transition to a market economy. At the same time, the very low share of Moldova in world exports, points to the national economy competitiveness challenges.

The national public policy framework of the Republic of Moldova, that support economic development, assigns an important role to strengthening the country's export capacities. One of the goals of the "Moldova 2020 National Development Strategy" was to change the economic development model from one based on remittances, consumption and imports to one supported by investment and exports. The "National Strategy for Investment Attraction and Export Promotion 2016-2020" aimed at "increasing the value and diversification of exports". Thus, accelerating the growth of exports of goods and services is one of the indicators by which will be measured the achievement of the Goal 1 of the National Development Strategy "European Moldova 2030" - "increasing the income of the population from sustainable sources and alleviating inequalities". Given the high importance of physical infrastructure to support business internationalization and for building a competitive and resilient economy, in conditions of its poor quality in Moldova, it represents one of the priority objectives in many strategic development policy documents.

The Sustainable Development Goals refers to structural transformation, industrialization, technological advancement, economic diversification and productivity growth of countries. This is a production and job creation oriented approach. It involves boosting production, employment and per capita income to increase population and reduce poverty. At the same time, it encourages to reduce the dependence of production and foreign exchange inflows from export of primary goods, by using efficiently human and physical capital, the innovative capacity of the business environment, infrastructure and the effectiveness of public policies (UNCTAD, 2018).

Empirical studies made by Rehman F., Noman A., Ding Y. (2020) applying Pooled Mean Group estimator and cointegration techniques like Pedroni and Kao test confirmed the significant positive long-run impact of aggregate and separately transports, telecommunication, energy and financial infrastructure on exports. Other researches like Donaubauer J, Glas A, Meyer B, Nunnenkamp P (2018) concluded in their research paper that infrastructure has significant positive effects on trade, by reducing trade costs. Adversely, "missing infrastructure explains part of missing trade flows". Ben Shepherd and John S. Wilson (2007) also showed using Gravity model simulations that better roads quality is associated with higher intraregional trade flows in Europe and central Asia. Improving roads could increase trade by 50% over baseline.

## **Methodology and data**

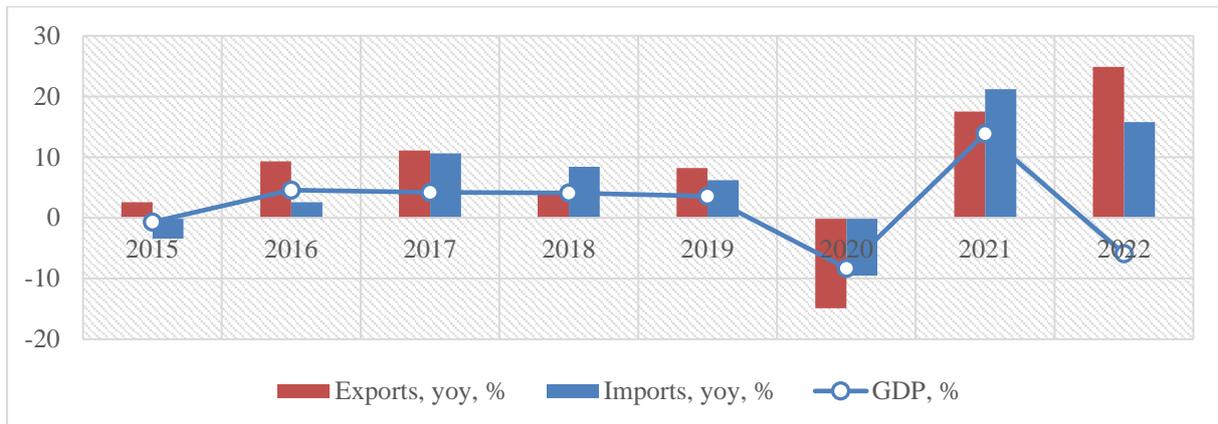
The competitiveness of exports has been assessed within the research based on the share of current account and trade balance deficit to GDP, world export market shares and change in technological

structure of merchandise exports. Both national and international statistics has been used to evaluate the main trends in international competitiveness.

The impact of services provided by Moldovan Government for business to increase their competitiveness and to facilitate internationalization and of the existent infrastructure on doing business has been assessed for the 2022 year, when Moldovan economy has been hit by an economic crisis caused by Russia-Ukrainian war. Also have been analyzed the changes in the business perception aftermath the recession triggered by Covid-19 pandemic. The impact has been assessed using the data obtained from the business survey carried out in 2022 within the applied research project 20.80009.0807.38 "Multidimensional assessment and development of the entrepreneurial ecosystem at the national and regional level in order to boost the SME sector in the Republic of Moldova". The methodology was elaborated within the above mentioned project and has been described in details by Stratan et al. (2021). To evaluate the impact of the infrastructure component and its factors and sub-factors on entrepreneurship, the variation of the 5-point Likert-style scale was used, which includes five possible points for evaluating the factors: i) "Significant obstacle" =-2; ii) "Insignificant obstacle"=-1; iii) "Not an obstacle"=0; iv) "Insignificant incentive (advantage)"=+1; v) "Significant incentive (advantage)"=+2. Based on the results the Coefficient of the entrepreneurial ecosystem's assessment (Kee) have been computed. The coefficient was calculated according to the formula (1):  $Kee = (-2) * \% \text{ sign.obst.} + (-1) * \% \text{ ins.obst.} + (+1) * \% \text{ ins.adv.} + (+2) * \% \text{ sign.adv.}$  where the % represents the share of responses within one of the 4 responses (significant obstacle, insignificant obstacle, significant advantage, insignificant advantage). The values of the Kee can obtain values from „- 2” (minimum - all respondents indicate a significant negative impact of the factor on the development of entrepreneurship) to „+2” (maximum - absolutely all respondents indicate on the significant positive impact of the factor on the development of entrepreneurship). Kee = „0”, if the number of positive evaluations is equal to the number of negative ones, characterizing the neutral impact of the factor on the development of entrepreneurship (Stratan et al., 2021). The questionnaire took place in June-October, 2022 with the participation of 204.

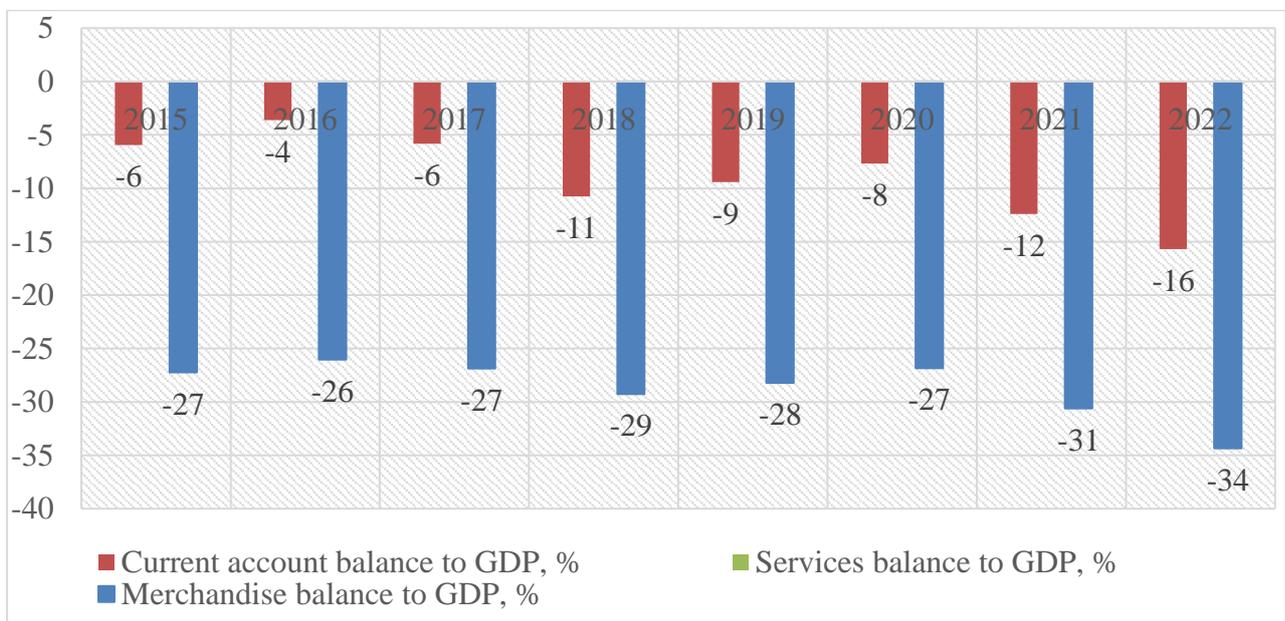
## **Results and discussions**

Moldova is a transition country in Europe that is running rather a consumption lead economic growth model fueled by imports despite government efforts to change it in an exports and investments fueled economic growth model (Toaca Z., Fala V., 2022). The economic openness computed as the share of the sum of external trade to GDP is significant lower comparative to many countries of the same territorial size in Central Europe, accounting for 88% in 2019 and 2021, while in 2020 it declined to 79%. In 2022 uncommonly it increased to 111% being done the accelerated growth of both exports and imports while GDP decreased by 5.9%.



**Figure 1. Dynamics of external trade and economic growth in Republic of Moldova, %**  
 Source: Author’s calculations based on National Bureau of Statistics data

Both exports and imports of goods and services are small in Republic of Moldova if compared to Baltic countries that have roughly the same population number and territory size. At the same time merchandise imports coverage by exports is tinny that causes a huge deficit of merchandise trade balance and of the current account. Merchandise trade balance recorded the highest deficit as a share of GDP in 2021-2022 since 2015. Thus the current account deficit amounted to 2,3 mld. USD or -15,7% of PIB in 2022 exceeding very much the value of the current account balance of many Central and East European countries.

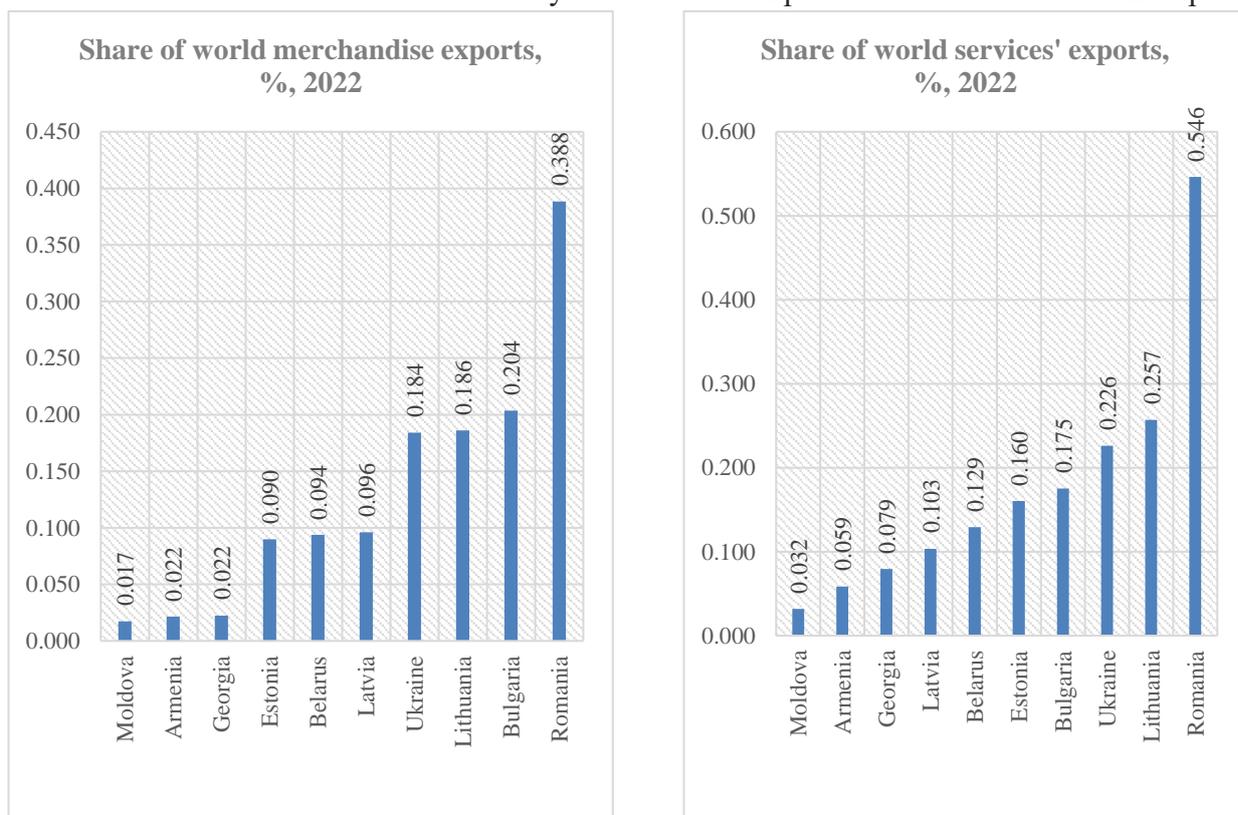


**Figure 2. Share of the current account and trade balance in GDP, %**  
 Source: Author’s calculations based on National Bureau of Statistics and National Bank data

The economy has been hit badly by the Russian – Ukrainian war in 2022, but not foreign trade which seems to have been encouraged by the existing conjuncture of factors. In 2022, merchandise exports amounted to 4335.1 million USD, a value 37.9% higher than in 2021 and imports 9219,1 million

USD, 28,5% more than in 2021. In 2022 merchandise exports have been boosted, especially by re-exports to Ukraine and by exports of agricultural products being done the decline in Ukraine external offer of oil seeds and cereals and the good harvest in 2021 (Bush C., 2023). Re-exports represent 31.6% of total exports, increasing by 1.9 times compared to 2021 thus contributing to exports growth by 20.9%. After the economic recession caused by Covid-19 in 2020, external trade rose very fast. External trade in services also recorded a fast growth in 2022, exports increasing by 39%, and imports by 18% compared to 2021 values, amounting 2275 million USD and 1371 million USD. During 2020-2022 exports and imports of merchandise and services exceeded by almost 4 times the average growth rate recorded in 2015-2019. External trade acceleration was supported by increase in both trade volumes and unit value as the war in Ukraine led to sharp rises in commodity world prices (WTO, 2023).

In contrast to external trade of Moldova, world trade slowed down in 2022, especially because of fall in merchandise exports volume growth rate to 2,7% compared to 9,4% in 2021. At the same time, the value of world merchandise exports increased by 11% to, partly due to spiking prices for energy and other primary products, while services exports increased by 16% yoy (WTO, 2023). The fast growth of Moldovan exports comparative to worlds exports lead to a hike in Moldova’s share in world exports of merchandise and services that is critically small when compared to most countries in Europe.



**Figure 3. Moldova’s share in world exports, %**

Source: UNCTAD Stat

Ukraine involvement in the war, which is a major world producer and exporter of grain, has heightened concerns about regional and even global food security. At the same time, the disruption of agri-food deliveries by Ukraine to international markets lead to a rise in international

prices of these products. This trends created new opportunities for Moldovan agrifood exporters, that have had good harvest in 2021 and could benefit from high international prices. During the last 5 years, on average about 43% of Moldovan gross exports represented agrifood products. Moldova export mainly insulated, sunflower seeds, wines, maize, apples, sunflower seeds oils, car seats etc. (Annex 1). Although, agrifood products represents the commodities that contributes most to Moldovan exports change.

**Table 1. Share of agrifood products in the Moldovan merchandise exports**

	2011	2015	2016	2017	2018	2019	2020	2021	2022
Gross exports, mil. USD	2216.8	1966.8	2044.5	2425.0	2706.2	2779.2	2467.1	3144.5	4332.1
Exports growth, %, yoy	43.8	-15.9	4.0	18.6	11.6	2.7	-11.2	27.5	37.8
Share of agrifood products in gross exports, %	41.2	46.1	45.3	45.6	42.1	42.7	42.1	44.5	43.5
Degree of influence of agrifood products to changes in exports value, p.p.	12.0	-10.1	1.3	11.6	2.2	3.1	-9.5	23.3	31.7

Source: National Bureau of Statistics data

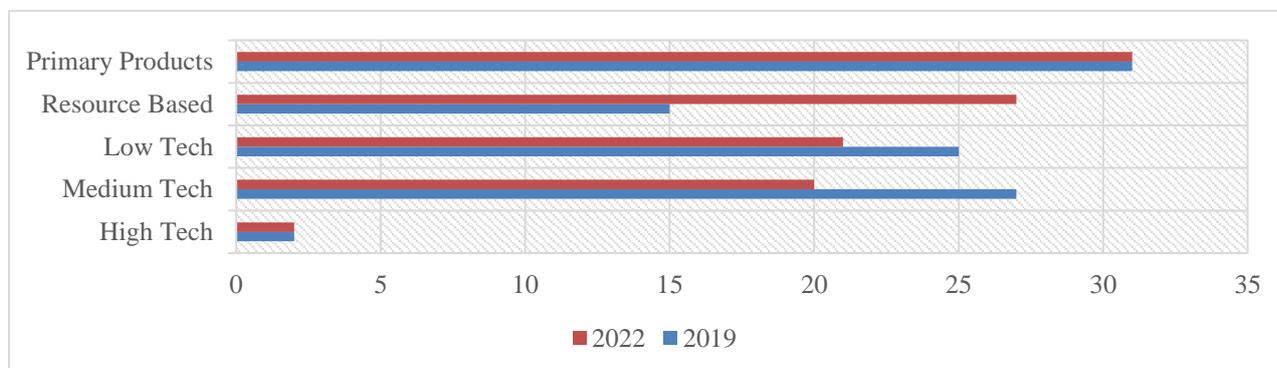
In 2022, exports of agrifood products contributed to merchandise exports growth by 31,7%, especially due to fats, oil, sunflower seeds, cereals and fruits deliveries to external markets. Re-exports of fuels also have boosted exports significantly. But the industrial production decreased in 2022 along with a marked contraction in investment activity.

SITC	Exports growth , %, yoy	
33	Fuels	17.35
42	Fats and oils	8.11
22	Sunflower seeds	4.30
04	Cereals	1.57
05	Fruits and vegetables	1.43
78	Vehicles	1.09
66	Non-Metallic Mineral Manufactures	0.87
08	Feeding Stuff For Animals	0.75
84	Articles Of Apparel	0.72
35	Electric Current	0.70

**Figure 4. Commodity exports growth and top 10 commodity groups that contributed most to Moldova’s exports growth in 2022 compared to 2021, %**

Source: National Bureau of Statistics data

The 2022 crisis changed slightly the merchandise exports structure but didn't made it more value-added intensive. The technological intensity of Moldovan exports decreased in 2022, especially the share of medium tech products dropped compared to 2019 year. Thus high, medium and low intensive products decreased by 10 p.p. in the merchandise exports structure in 2022 comparative to 2019 year.



**Figure 5. Technological intensity of Moldovan exports in 2019 and 2022, %**

Source: World Bank data

Infrastructure is an important factor in supporting private business investment, innovation and productivity; it fosters and lowers the costs of people mobility, goods and services within and between economies. According to the Global Economic Forum the road infrastructure is a basic factor of competitiveness in developing countries, while the recent crisis also emphasized the role of technological infrastructure to increase resilience of economies and international competitiveness. The Logistic Performance Index that is based on a worldwide survey of international logistics operators providing feedback on the logistics “friendliness” of the countries with which they trade rank Moldova the 97-th among 139 countries. Infrastructure and customs administration are the pillars that drag the country down most in the international ranking while the discrepancy in the acquired score comparative to countries in the Central Europe is huge.

**Table 2. Republic Moldova in the Logistic Performance Index 2023**

Economy	LPI	Customs	Infrastructure	International Shipments	Logistics Competence and Quality	Timeliness	Tracking and Tracing
<b>Estonia</b>	3.6	3.2	3.5	3.4	3.7	4.1	3.8
<b>Latvia</b>	3.5	3.3	3.3	3.2	3.7	4.0	3.6
<b>Lithuania</b>	3.4	3.2	3.5	3.4	3.6	3.6	3.1
<b>Bulgaria</b>	3.2	3.1	3.1	3.0	3.3	3.5	3.3
<b>Romania</b>	3.2	2.7	2.9	3.4	3.3	3.6	3.5
<b>Belarus</b>	2.7	2.6	2.7	2.6	2.6	3.1	2.6
<b>Georgia</b>	2.7	2.6	2.3	2.7	2.6	3.1	2.8
<b>Ukraine</b>	2.7	2.4	2.4	2.8	2.6	3.1	2.6
<b>Armenia</b>	2.5	2.5	2.6	2.2	2.6	2.7	2.3
<b>Moldova</b>	2.5	1.9	1.9	2.7	2.8	3.0	2.8

Source: World Bank data

A 2019 World Bank study concluded that the share of companies that consider transport a major barrier to do business in Moldova (14.7%) is higher than the average for European and Central Asian countries (12.6%). In regional profile, but also depending on their size, there are large gaps in the vulnerability of different enterprises to the existing transport infrastructure. Especially enterprises with more than 100 employees consider transport a critical constraint, compared to 14.7% in Europe and Central Asia.

The Republic of Moldova has a public road network with a length of 9488 km, railway lines in general use - 1151 km, a functioning international airport, two inland waterways of international importance category E, a port offering direct access to international waterways and the Black Sea - Giurgiulesti port. The port is a river-sea port located at the confluence of the Danube and Prut rivers, which provided Moldova with its only commercial access to international waters (Bennett V., 2022). In 2022, over 99,7% of merchandise transportation were made by land. Road transport is also the most commonly used means of international shipping with a share of about 77.1% of total exports in 2022 that dropped from 90% in 2020. Because of the Russia-Ukraine war, transshipments through Giurgiulesti port increased in 2022 (GIP, 2023).

Although it's the main mean of merchandise and persons' transportation in the Republic of Moldova, the quality of road transport infrastructure remains unsatisfactory. In 2020 about 46.8% of national public roads were of poor or very poor quality and 23% in a mediocre state. Correspondingly, less than 30% of roads are in good or very good condition. According to the World Population Review Moldova ranks among the world countries with the poorest road infrastructure, with a 2.6 score of the Road Quality Index at a distance of 2p.p. from Baltic countries.

**Table 3. Road Quality Index 2023**

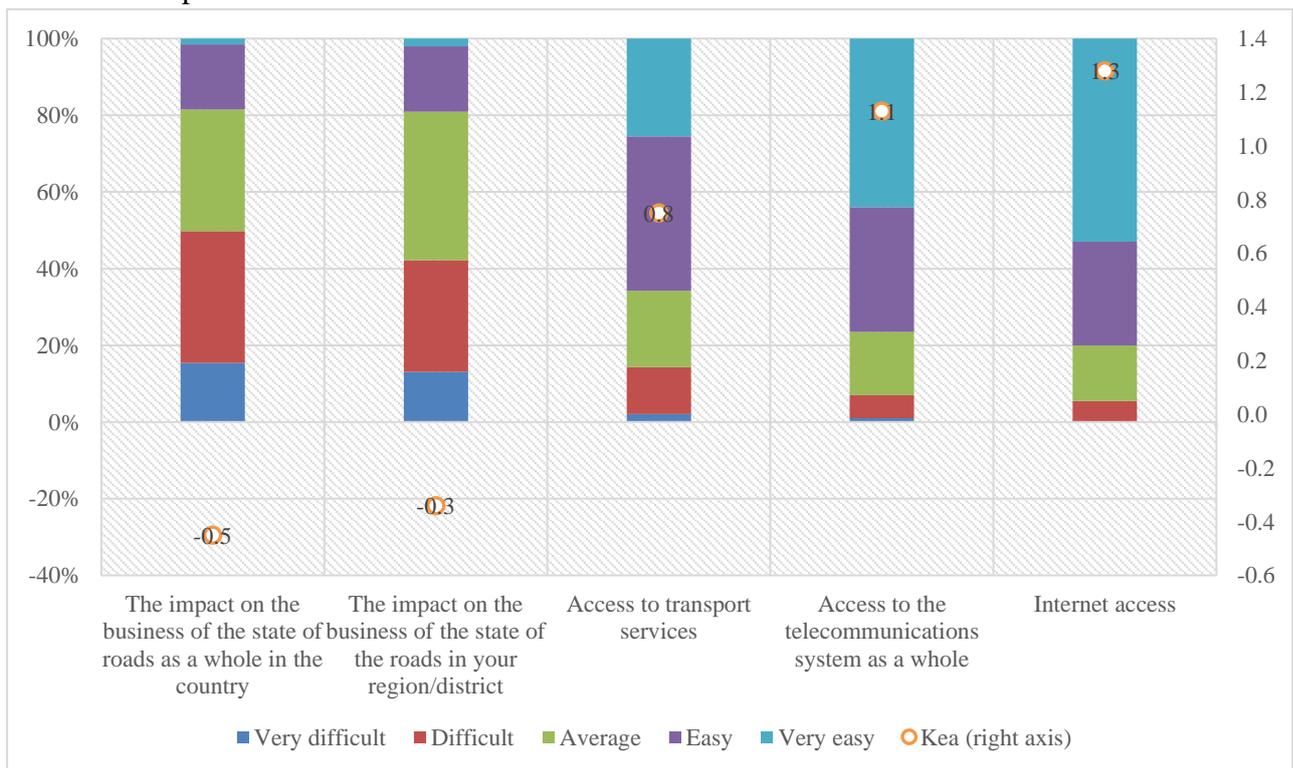
<b>Country</b>	<b>Road Quality Index</b>	<b>Mean Speed Score</b>
Lithuania	4.8	89
Estonia	4.7	88
Georgia	3.8	64
Latvia	3.6	77
Armenia	3.6	57
Bulgaria	3.4	88
Ukraine	3	75
Romania	3	73
Moldova	2.6	67

Source: World Population Review

Moldovan authorities have been implementing many policy documents in order to build a solid public infrastructure that would contribute to increasing the inclusion and of the population and the country's competitiveness. This objective is in line with the National Development Strategy European Moldova 2030. Decision makers have focused their attention particularly on quality of roads, and more recently on the ICT infrastructure. An appropriate regulatory, institutional framework and infrastructure in the ICT area were necessary for companies to cope with the world and regional economic changes and to take advantage of the existing opportunities to become more competitive in the world market. Also it is a must to foster populations social and economic inclusiveness.

Over the last few years, the Republic of Moldova has been recording positive trends in improving telecommunications infrastructure, recording an increase in the score for telecommunications infrastructure from 0.19332 in the E-Government Index (EGDI) 2010 to 0.57600 in EGDI 2022. This allowed Moldova to move into the group of countries with advanced ICT infrastructure. But, from the perspective of its competitive capacity in the regional profile, Moldova's score in terms of quality of telecommunication infrastructure is below the average in Europe (0.8392) and even below the average in Eastern Europe (0.7825) and is significantly lower compared to the other components of the index: Online Services Index (0.7380) and Human Capital Index (0.8613) (UN E-Government Knowledge Database 2022).

Regardless of the geographical location of entrepreneurs, including those operating in the Chisinau municipality and the Centre, the problem of poor road quality remains current and acute. The survey of entrepreneurs in the Republic of Moldova in the year 2022 revealed the overall negative impact of road quality on business development. They are negatively influenced by both the quality of roads in the region where they live and their condition throughout the country. Thus, about half of the responding enterprises consider the condition of roads in the country to have a major negative or negative impact on their business, versus 19% for whom the impact of this factor is positive.



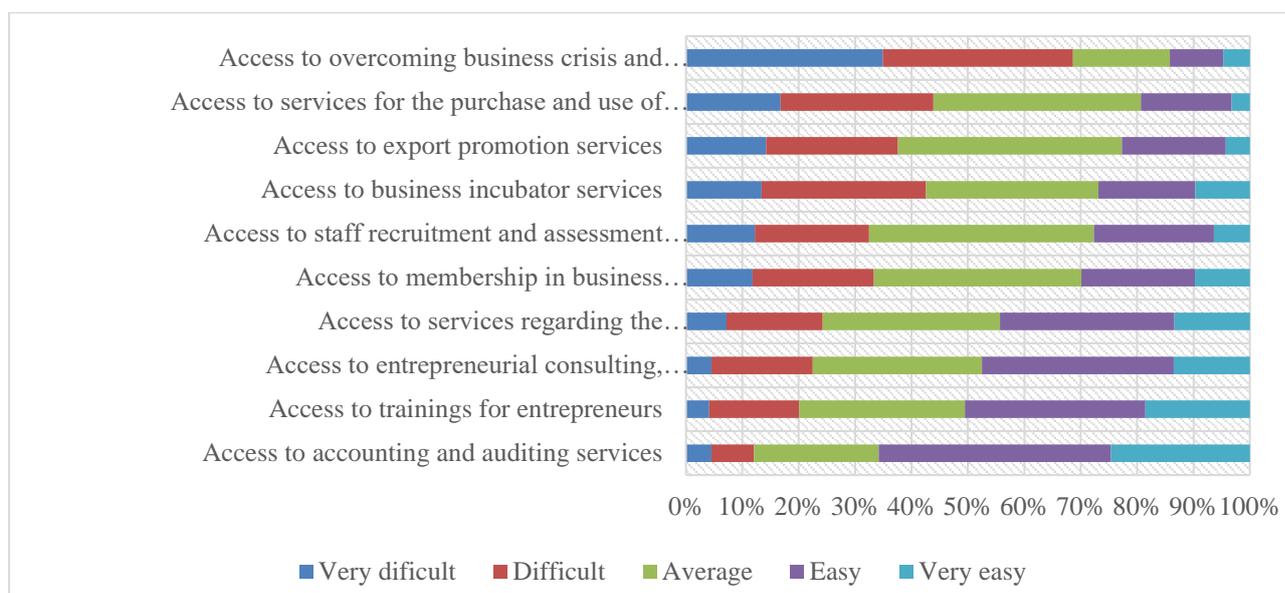
**Figure 6. The impact of infrastructure on business development, % of respondents**

Source: Results of the research projects 20.80009.0807.38 „Multidimensional assessment and development of the entrepreneurial ecosystem at the national and regional level in order to boost the SME sector in the Republic of Moldova”

Unlike roads, telecommunications infrastructure is the best developed component of physical infrastructure in the Republic of Moldova. About 80% of respondents located in Chisinau and

the Centre region consider access to the telecommunications system either easy or very easy, and in the case of internet access, this share rises to over 80%. In the Northern region and Gagauzia, although 1 out of 2 surveyed entrepreneurs consider access to the telecommunication system either easy or very easy, however for 17% of the respondent enterprises in Gagauzia and 26% in the North of the country access to these infrastructure facilities is difficult, with a higher share considering access to the internet difficult. These findings points to the fact that although the Republic of Moldova has made visible progress in terms of developing telecommunications infrastructure, it is not equally accessible to enterprises from all regions of the country. The further entrepreneurs are located from the Chisinau municipality, the less accessible the telecommunications infrastructures. At the same time, more than half of the surveyed enterprises consider that the telecommunications system has improved (51%), including the access to internet (53.9%). Meanwhile, 1 in 10 respondents believe that the situation in the given area has worsened, and 7 in 10 that the state of things has not changed since 2019.

Enterprises operating within Transport and Hotels, Restaurants and Cafes sectors were the most affected by infrastructure quality in 2022. Almost 35% of respondents working in the given areas consider access to physical infrastructure very difficult or difficult. These are followed by the processing industry where about 1/3 of respondents consider infrastructure as a factor influencing negatively or very negatively their business - an important constraint in the process of diversification and industrialization of the national economy, which relies heavily on agriculture. Given the economic crisis in Moldovan in 2022 and the difficult times enterprises should pass through since the outbreak of the Covid-19 pandemic, public authorities and entrepreneurs' associations have intensified their efforts to support entrepreneurs in the country with various services to strengthen their resilience. There have been launched many programs to support enterprises to implement digital technologies, to support internationalization of business by making them more competitive as well as other services to strengthen them during difficult times taking in account their main challenges etc. In spite of this, 34.9% of respondents perceived access to various support services to overcome crises and deal with business insolvency as very difficult, and another 33.7% -difficult, thus accounting for 2/3 of the surveyed enterprises. About a quarter of respondents perceive yet access to services regarding the implementation of digital technologies difficult or very difficult. In the opinion of 43% of the entrepreneurs surveyed in 2021 the situation has improved compared to 2019, versus 8.5% who considers that things have worsened in the given field.



**Figure 7. Access of enterprises to business support services, % of respondents**

Source: Results of the research projects 20.80009.0807.38 „Multidimensional assessment and development of the entrepreneurial ecosystem at the national and regional level in order to boost the SME sector in the Republic of Moldova”

Despite Government sustained efforts, many business support services were rated with a negative Entrepreneurial Ecosystem Coefficient: access to innovation procurement and utilization services (Kea=-0.4), access to export promotion services (Kea=-0.3), access to business incubator services (Kea=-0.2), access to staff recruitment and assessment services (Kea=-0.1), access to membership in business associations and clusters (Kea=-0.1), that means that most enterprises consider difficult or very difficult to access these services. With the exception of services to overcome crisis and deal with insolvency, to support staff recruitment and training the share of enterprises that felt an improvement in accessing different support services for business in 2021 compared to 2019 was higher than of those who reported a worsening situation. But, further efforts are needed to support the association of entrepreneurs in order to strengthen joint efforts in business development, to stimulate the innovative activity of entrepreneurs and the internationalization of their businesses.

## Conclusions and recommendations

After the Covid-19 economic crisis, despite the outbreak of the Russo-Ukrainian war at the eastern border, Republic of Moldova recorded an impressive growth of exports that have led to a slight increase in the world market share, that is very tiny compared to countries in Central and East Europe. At the same time, these trends were supported mainly by occasional rather than sustainable factors. So the fast increase in exports during the 2021-2022 years does not result from qualitative changes in external trade.

Many programs and public services have been offered to enterprises to overcome the crisis, to strengthen their resilience and international competitiveness. Besides sustained efforts have been

made to improve the road and ICT infrastructure that are among the basic factors to increase international competitiveness.

Regardless of the entrepreneurs' geographic location, including those operating in -Chisinau, the problem of low road quality is a critical issue. According to the 2022 enterprise survey data the share of respondents who believe that the quality of roads has worsened far exceeds the share of those who perceived a positive change in this regard. The negative perception persists despite the many projects implemented in the field of road construction and rehabilitation.

On the other hand, the ICT infrastructure has pass through significant improvements that is confirmed by the country's good position in the EGDI 2022 Index and the opinion of entrepreneurs. Over 50% of e interviewed enterprises considers that access to the telecommunications system has improved, including access to the Internet and only an extremely small percentage believes that the situation has worsened. But, telecommunications infrastructure is still less accessible to the business outside Chisinau and the Central region. At the same time, about a quarter of respondents perceive access to services designed to support the implementation of digital technologies difficult or very difficult, despite in the opinion of 43% of the entrepreneurs surveyed in 2021 the situation has improved compared to 2019, versus 8.5% who considers that things have worsened in the given field.

Despite the support provided by the public authorities for increasing the resilience of businesses in times of crisis, 1 out of 3 respondents perceived access to various support services in order to overcome crises and deal with business insolvency as very difficult, and another 1/3 difficult. Many business support services like access to services for the purchase and use of innovations, access to export promotion services, access to business incubator services, access to staff recruitment and assessment services, access to membership in business associations and clusters were evaluated with a negative Entrepreneurial Ecosystem Coefficient.

Further improving of the public infrastructure is a must in order to increase the resilience of businesses and its international competitiveness. Also it is very important to monitor and evaluate the impact of policies promoted in the recent years by the decision makers in order to increase the resilience of businesses to crises and adjust them to the critical needs of businesses, ensuring a wide and non-discriminatory access of entrepreneurs to different business support services.

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**ANNUAL INTERNATIONAL SCIENTIFIC CONFERENCE “COMPETITIVENESS AND  
INNOVATION IN THE KNOWLEDGE ECONOMY”**

**September 22nd-23th, 2023, Chisinau, Republic of Moldova**

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Annex 1.

2019			2022		
<b>8544</b>	Insulated	18.7	<b>2710</b>	Petroleum oils	12.9
<b>1206</b>	Sunflower seeds	7.7	<b>8544</b>	Insulated	11.0
<b>2204</b>	Wine of fresh grapes	5.0	<b>1512</b>	Sunflower-seed oil	8.5
<b>1005</b>	Maize (corn).	4.5	<b>1005</b>	Maize (corn).	7.8
<b>9401</b>	Seats	4.2	<b>1206</b>	Sunflower seeds	7.8
<b>1001</b>	Wheat and meslin.	3.5	<b>2204</b>	Wine of fresh grapes	2.9
<b>3004</b>	Medicaments	3.5	<b>9401</b>	Seats	2.5
<b>0802</b>	Other nuts, fresh or dried	3.3	<b>0808</b>	Apples, pears and quinces, fresh.	2.1
<b>1512</b>	Sunflower-seed oil	2.4	<b>7010</b>	Carboys, bottles, flasks, jars, pot	2.0
<b>0808</b>	Apples, pears and quinces, fresh.	1.9	<b>8703</b>	Motor cars and other motor vehicles	1.7
<b>6204</b>	Women's or girls' suits, ensembles,	1.9	<b>2009</b>	Fruit juices (including grape must)	1.6
<b>2009</b>	Fruit juices (including grape must)	1.7	<b>1001</b>	Wheat and meslin.	1.3
<b>2208</b>	Undenatured ethyl alcohol of an alc	1.6	<b>0802</b>	Other nuts, fresh or dried	1.2
<b>7010</b>	Carboys, bottles, flasks, jars, pot	1.4	<b>2207</b>	Undenatured ethyl alcohol of an alc	1.0
<b>3923</b>	Articles for the conveyance or pack	1.3	<b>3004</b>	Medicaments	1.0
<b>1205</b>	Rape or colza seeds, whether or not	1.2	<b>1205</b>	Rape or colza seeds, whether or not	1.0
<b>6203</b>	Men's or boys' suits, ensembles, ja	1.2	<b>2306</b>	Oil-cake and other solid residues	1.0
<b>0806</b>	Grapes, fresh or dried.	1.1	<b>0806</b>	Grapes, fresh or dried.	1.0
<b>6110</b>	Jerseys, pullovers, cardigans, wais	0.9	<b>2208</b>	Undenatured ethyl alcohol of an alc	1.0
<b>6109</b>	T-shirts, singlets and other vests,	0.9	<b>6204</b>	Women's or girls' suits, ensembles	0.9

## **DIGITAL TRANSFORMATION AND EMPLOYMENT DISRUPTION. A QUALITATIVE ANALYSIS OF THE CHALLENGES AND LIMITS OF ARTIFICIAL INTELLIGENCE ON THE FUTURE OF WORK**

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**Abstract:** The digital transition has become a common topic of debate for specialists, its impact on the way of life of individuals being increasingly complex and controversial. The current stage of the expansion of AI applications in various fields of activity and workplaces has caused debates regarding the replacement / elimination of humans in production and service processes. The current study aims to present a critical analysis of the effects of digital transformation on employment disruption and the role of the workforce in the conditions of increasing digital intensity of companies. Starting from an analysis of the specialized literature, and from discussions on the externalities produced by the digital transformation on the labor market, a comparison is made between the stage of automation/robotization on work and the current stage of the growth of AI applications. Through a combined qualitative analysis, the differences between doing digital and being digital are presented. The results show us significant differences between the two stages, but also the limits of employment disruption. Artificial intelligence will substantially change the working model, but it will not exclude man, it redefines his role and responsibilities in the sustainable development of the digital society.

**Keywords:** digital transformation, employment disruption, artificial intelligence, the future of work.

JEL classification: O31; J21; J81

## **Introduction**

The digital transition is a process that started since the second half of the last century, being facilitated by the rapid modernization of computers and their association with industrial production - from design and processing, to marketing and management at the company level. Digitization and digitalization are processes that have facilitated the development of databases and stimulated complex analyzes based on previous experiences. From replacing humans in performing repetitive tasks, to activities such as intelligent personal assistants, the purpose of AI was to complement and augment human abilities.

The digital transition changed the content of almost all jobs, eliminated some and, at the same time, created new jobs. Human interaction has been adjusted by transferring some communication activities into the virtual space, through the development of decision support systems and smart search systems, in order to ease human work and save time.

The purpose of this work is to identify the effects of digital transformation on employment disruption and the role of the workforce in the conditions of increasing digital intensity of companies. Finally, we have presented some major trends that will redefine the future model of work, the main issue in debate remaining, to what extent generative AI will replace human work and to what extent the association between the results of robotics development and generative AI products / services will replace processes managerial / decision-making at company level.

## **Literature review**

It is obvious that the digital transition determined the increase in labor productivity, stimulated investments in computer-aided technologies, which replaced repetitive work, but also created negative externalities on the labor market, by increasing the skills mismatch between labor demand and supply. At the same time, the increase in the digital intensity of the companies has generated a diversification of jobs in the field of IT specialists, but also augmented the transversal skills of the jobs, precisely to allow the creation of labor relations at the company level in a hybrid system.

The range of externalities produced by the digital transformation on the labor market is increasing, both in the form of costs and benefits. The most obvious effects are on employment, from the diversification of the demand for skills, new professional specializations and new jobs, to the increase in the complexity of work tasks and the complementarity between human work and the assistance of tasks and decisions by AI. Currently, there is no complete inventory of the externalities generated by digital transformation, neither at the level of companies nor at the level of households, the dynamics of the development of digital technologies and the expansion of applications in the generative area of AI, permanently adding other externalities.

Artificial intelligence, like robotics decades ago, will affect jobs and change various industries, char in significant proportions. If automation has replaced jobs and activities that people considered tedious and monotonous, AI applications rather accompany and help to achieve faster and more efficient work tasks, including in operational managerial decisions and for complex analyzes and syntheses. Moreover, their association, respectively robotics that incorporates AI

accelerates productivity in workplaces with manual tasks, repetitive or / and based on past experience.

The specialized literature indicates a sub-thematic diversity of researches associated with "digital transition" and "employment disruption", just as each key term, separately, also associates other specific aspects. A bibliometric analysis, only from the WoS database, shows us that the published works that included the two keywords as a theme have grown significantly in recent years (for example just for “digital transition” from a total of 33788 papers published up to December 15, 2023 in WoS, 2/3 has the publishing year in and after 2020), and this because the COVID-19 crisis has accelerated the digital transition, on both aspects essential: a) at the level of expansion and application of digital communication facilities, the development of some activities in a hybrid system and the optimization of operational decisions and b) the continuation of the reform in the digital field, with the expansion of the facilities for the creation, administration and use of databases of data, but also the necessary transition from "doing digital" to "being digital" (Neeley & Leonardi 2022; Giacosa et al, 2022, Sen, 2023, Vasile 2024).

Moreover, it is appreciated that the main benefit of the pandemic in the field of digital transition was for small companies (EIB, 2022, OECD, 2020, Eurofound, 2021)), which, in order to survive, were forced to discover the value of flexibility in carrying out the activity through digitization, with significant benefits in the field of visibility (being present in the virtual environment has expanded the possibilities of promoting the business), market expansion through online commerce and reorganization of processes within the company (outsourcing of some services and cost savings, time saving, efficiency in running some activities of coordination, testing, evaluation, operative analysis for feed-back for adjustment/problem solving).

### **Method and database**

Starting from an analysis of the specialized literature, and from discussions on the externalities, a comparison is made between the stage of automation/robotization on work and the current stage of the generative AI development (AI applications). Through a combined qualitative analysis, the differences between doing digital and being digital were presented. We combined the statistical analysis of the main indicators that provide information on digital intensity and skills mismatch at the company level with the analysis of the countries' performance in AI development in the last years.

### **Research results and comments**

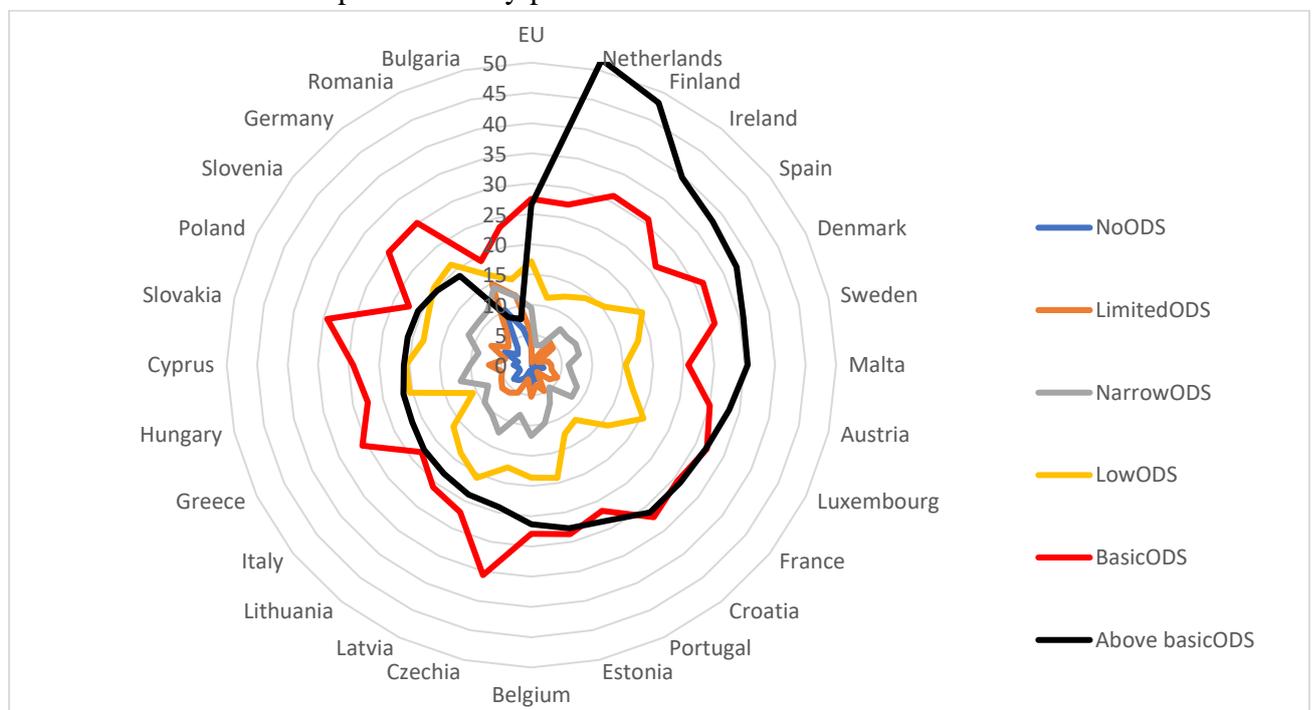
A comparison between the effects of robotization and AI on employment, in terms of level and structure of employees, shows us significant differences between the two stages, but also the limits of employment disruption. Robotization significantly replaced jobs with difficult physical activities, in dangerous conditions, which required long attention/concentration, stress, etc., jobs with repetitive activities, etc., but it also created jobs of supervision, monitoring, control. The (re)employed staff assumed an upgrade of knowledge, acquisition of new skills. Moreover, service activities have been developed for production or service companies by outsourcing some

activities (serviced-based business). Although at the level of some industries, robotization also determined staff reductions, other activities were created and the demand for qualified personnel increased. We can appreciate that robotization has redefined the structure of employment and highlighted the need for continuous staff training, for new skills and in new areas of specialization. Digitization has changed the demand for transversal skills (digital competencies) and specialized personnel in professions specific to the ITC sector. At the company level, the digital intensity has increased, measured both by the purchase of IT equipment and digital programs, but also by the investment in the human resources employed, respectively their training to be able to use digital equipment and technologies.

The digitalization forced by the pandemic has determined a significant increase in staff with basic digital skills and above.

The data provided by Eurostat allow us only a brief picture for the year 2021 of the structure of the personnel on digital skills 2.0. category (the methodology was recently change and a comparison with pre-pandemic situation is not possible. A comparative analysis between EU countries.

A comparative analysis between EU countries indicates significant differences between countries in the case of digital skills above basic, but also the persistence of a significant share of staff with low and narrow ODS (Figure 1). It is obvious that the dynamics of digital transformation will significantly change this structure in the future and, in particular, with the expansion of the use of AI at the level of companies and by public authorities.



**Figure 1 Share of individuals with overall digital skills (ODS),  
by UE member state in 2021**  
Source: Eurostat, (2023)

Artificial intelligence will substantially change the working model, but it will not exclude man, it will redefine his role and responsibilities in the sustainable development of the digital society. Generative AI would complement, rather than substitute, human labor, simply because of the actual limits of tasks able to be performed, which excludes creative innovation. The rapidity of association of some information present in the defined database, which meets a given synthesis-analysis objective, cannot be considered as innovation, or creation of novelty. It won't create anything truly innovative or original like the human can. In addition, the tendency to generate erroneous information significantly adjusts the overall efficiency.

It is noted, on the one hand, that generative AI applications (e.g. ChatGPT) can contribute to increasing work productivity for the information search and synthesis stage, but, on the other hand, the results must then be checked and validated by humans, to avoid information association errors, which, in some cases, can lead to a higher total processing time than the initial one and even reduce the chances of human innovation in the database analysis process, due to the concern to identify and remove mistakes. Therefore, it can generate inappropriate answers and could lower the innovation dynamics.

It is an emerging technology, but with limited applicability in many sensitive areas such as the banking system, health services, in education, in scientific research. The most important limitation is the lack of versatility in the interpretation of information, often ending up giving wrong answers or not being able to answer simple questions, from the basic education area.

So, could be useful tools that can help us with many day-to-day tasks, but, a) It has a tendency to hallucinate, b) does not ensure good protection of personal information, c) limits the ability to develop some skills extremely useful for individuals, respectively searching for information, writing and communicating, summarizing, translating content for different audiences, or structuring information, d) by generating standardized information, in a predefined format for interpersonal communication excludes the aspects that actually define human nature, respectively , empathy, to convey nuances, innovative thinking, fun, personalized relationship-building. The individuals of the future will be less creative and more "standardized" on past behaviors.

AI Watch Index 2021 shows us also in this case significant gaps between countries (Righi et al, 2021). At EU27 level, France and Germany have over 1000 AI players, but the highest AI player intensity is registered in Estonia and Malta, with a ratio of 1.57 and, respectively, 1.02 AI players per billion euro of GDP. The last place is held by Slovakia, for both indicators. It should be mentioned that the gaps between countries are significant in all AI thematic areas. Germany, France, Spain and Belgium had the best performances in 2021. (Figure 2)

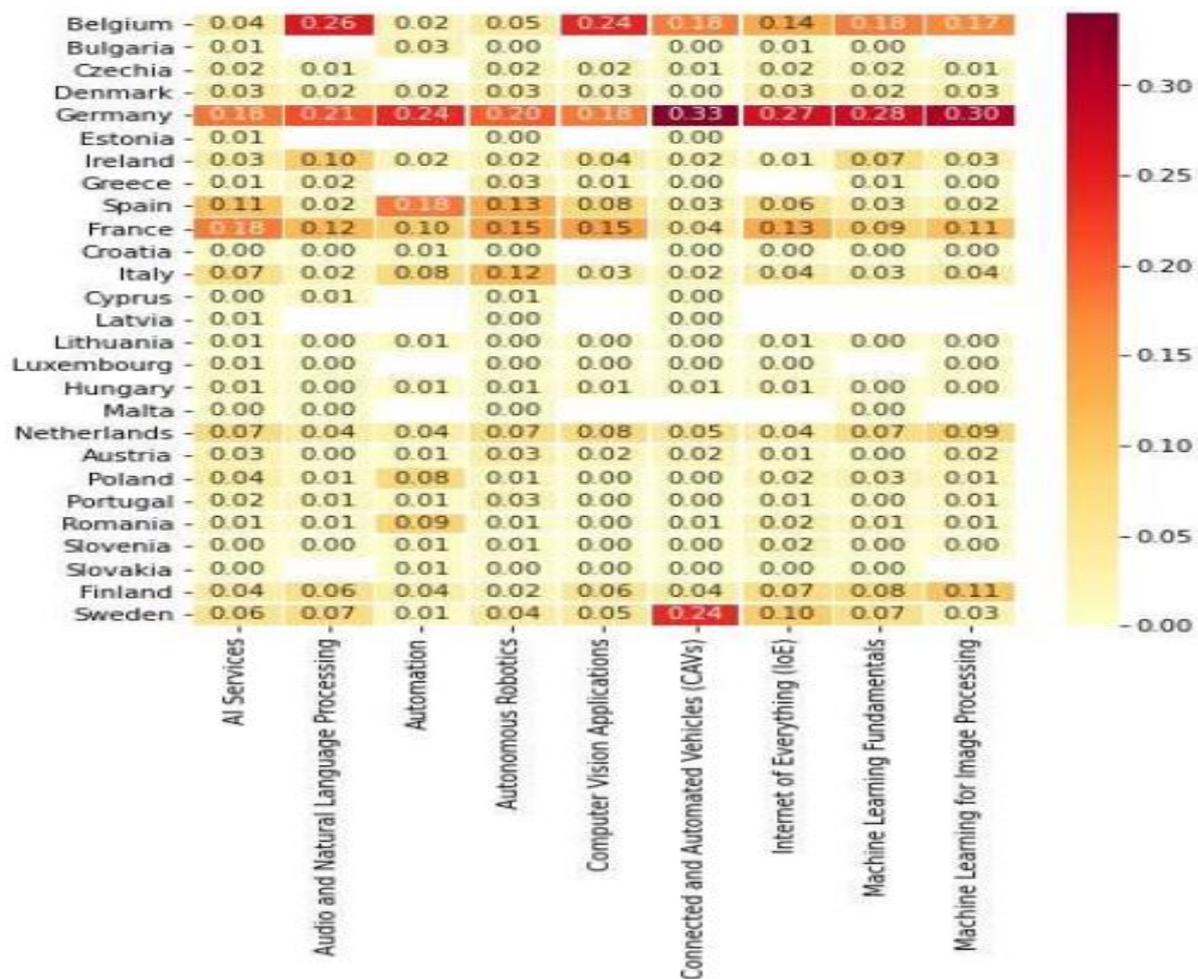


Figure 2 The share of AI activities on thematic area, EU countries, 2009-2020

Source: Righi et al, 2021

The impact of AI expansion on the labor supply is and will be significant, which implies a redefinition of initial and continuing education, respectively of the educational supply. Employability in the future will increasingly depend on the package of AI skills acquired by candidates, which will affect both individual employment opportunities and the human capital needed to support the innovation of the industry, but also of all human activities, from personal services in education and societal services.

### Brief conclusions

The digital transition as a process, although it started decades ago, experienced a significant development during and after the pandemic crisis: a) during the pandemic, the process of quasi-completion of digitization at company level, in households and in communication between individuals and stakeholders was accentuated, including public authorities; b) continued the development of industry 4.0, with an accelerated transition to industry 5.0, with a diversification of generative AI products.

The directions of change that will continue to modify the world of work will consider at least the following aspects:

a) the transition from digital optimization (modernization of existing technologies with digital facilities) to digital transformation (technological change, through new technologies in fields of sciences, which incorporate digital components accompanying the entire production chain). From the work perspective, the activities that assume human-AI complementarity will multiply, and, gradually, human responsibility - coordination and control - will adjust the robotic systems, verify and analyze the results of the activities/tasks performed by generative AI. Digital technology will assist human activity (smart assistant), ensuring time savings in search activities, database and information processing. Human intervention will focus on verifying and interpreting the results provided through the use of AI, the human will remain responsible for innovation and creativity, for the generation of new knowledge.

b) skills mismatch will remain the main problem on the labor market, because the dynamics of the business environment overtakes the development of new skills and knowledge acquired by the new generations of graduates from the initial education system. Learning to learn and being innovative are and remain the basic requirements for the education system.

c) training at the workplace associated with permanent professional development have already become common requirements for employees, in order to remain performing at the workplace. But also the responsibility of the companies will increase, especially on the component of adapting new technologies to the specifics of the company, to the customization of digital applications.

d) the classic model of employment has already been strongly shaken by the pandemic restrictions and the reform will continue, in all its aspects, from the facilitation of work in a hybrid system to the regulation of the right to disconnect, from the rigid measurement of labor productivity to the evaluation of the efficiency of the employee's activity, with a balance between its economic productivity and its social productivity.

Robotization and AI have essentially made work easier and increased economic efficiency, but the threats from the inappropriate use of generative AI should not be ignored, from at least the following aspects:

a) technology facilitates human activities, but it must not generate constraints on responsible human decision-making

b) innovation is a human attribute, with complex aspects associated with the process of generating ideas, products, etc. Generative AI can make associations of ideas, based on information and past data, in new forms, but it does not represent innovation, but a development of algorithms for selection, synthesis and quantitative analysis. Even if the improvement of products associated with generative AI will lead to the reduction of the generation of erroneous information, this risk does not disappear and, therefore, the qualitative analysis of the human is the one that will, in the end, validate the results.

c) the digital transition undoubtedly leads to an increase in economic efficiency, but security and human health must come first, which implies responsibility in assigning decision-making freedom to robots with AI.

d) the dynamics of changing the universe of professions will continue, so the current work model is only a transitory phase in a long process of adaptation/combination of production factors for the application of technologies in order to achieve the object of the companies' activity.

e) the management of household activities and the relationship between individuals and market actors (including the public authority) will be easier, but there is a risk to the security of personal information, which requires a new regulatory framework to allow the observance of moral principles related to personal life.

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## BUILDING ANTIFRAGILE BUSINESSES IN THE REPUBLIC OF MOLDOVA: LEVERAGING DISORDER FOR GROWTH

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**Abstract:** This paper explores the concept of antifragility, as proposed by Nassim Nicholas Taleb, in the context of business management within the Republic of Moldova. The study delves into the potential benefits of businesses adopting an antifragile approach in an environment characterized by substantial economic and political volatility. It employs a qualitative research method to examine Moldova's economic, political, and social climate, highlighting the potential for businesses to thrive amidst disorder.

The paper investigates the principles of antifragility and their application to businesses, contrasting them with the traditional notions of robustness and resilience. It further identifies specific strategies that could enable businesses in Moldova to adopt an antifragile approach, such as diversification, innovation, agility, and network-building.

The study also presents real-world examples of Moldovan businesses that have successfully leveraged disorder for growth. It compares them with businesses that have failed to cope with volatility, emphasizing the differences in their strategic approaches. Moreover, it discusses potential challenges and limitations associated with implementing antifragile strategies in the Moldovan context, exploring how businesses might need to balance antifragility with other business objectives.

The paper concludes by outlining areas for future research on antifragility in businesses, particularly within Moldova. The findings of this study emphasize the potential benefits of developing antifragile businesses in Moldova and contribute to the growing body of literature on antifragility in business management.

**Keywords:** antifragility, business strategies, Moldova, volatility, uncertainty, resilience.

JEL Classification: D21, D81, L21, M10, O12, P31.

### Introduction

Amid the rising uncertainties of the modern global economy, businesses worldwide have been striving to increase their resilience and adaptability. Traditionally, the focus has been on developing robust systems that can withstand shocks, or resilient ones that can recover quickly from adverse events (Aldianto, Anggadwita, Permatasari, Mirzanti, & Williamson, 2021; Saad, Hagelaar, van der Velde, & Omta, 2021). However, the concept of 'antifragility,' as introduced by Nassim Nicholas Taleb in his book "Antifragile: Things That Gain from Disorder," represents a shift in this paradigm (Taleb, 2012).

Antifragility goes beyond robustness and resilience, encapsulating systems that improve their capabilities in response to stressors, shocks, volatility, and failures. Essentially, unlike merely robust systems that resist breaking or resilient systems that bounce back to their original state, antifragile systems thrive under adverse conditions, using these conditions as catalysts for growth and innovation (Taleb, 2012). Antifragile businesses, in particular, leverage the inherent volatility and uncertainty of their operating environments to drive innovation, adaptation, and growth.

The relevance of antifragility to businesses is apparent in any region, but it acquires an added dimension in emerging economies such as the Republic of Moldova. Moldova's business landscape, characterized by dynamic economic, political, and social conditions, poses significant challenges for enterprises. Yet, within these challenges lies the potential for businesses to harness the principles of antifragility and convert uncertainty and volatility into opportunities for growth (U.S. Department of State, 2022; World Bank Group, 2020). By understanding and implementing antifragility, Moldovan businesses could potentially transform their adversity into a competitive advantage.

This paper aims to explore how the concept of antifragility can be applied within the specific context of Moldova's business environment. It investigates how Moldovan businesses can leverage the principles of antifragility to thrive amidst disorder and uncertainty, offering a fresh perspective that goes beyond mere resilience or robustness.

The significance of this research lies in its potential to influence strategic decision-making in Moldova's business sector. While existing literature extensively covers resilience and robustness, there is a dearth of research focusing specifically on antifragility in the context of emerging economies like Moldova growth (U.S. Department of State, 2022; World Bank Group, 2020). Hence, this paper contributes to filling this gap by providing practical strategies for businesses operating in similar volatile environments.

This paper is organized as follows: it starts with a literature review of the concept of antifragility, with a special emphasis on its application within business environments. It then offers an in-depth contextual analysis of Moldova's business environment, focusing on the specific challenges and opportunities present. This analysis sets the stage for a detailed exploration of the principles of antifragility and their relevance to Moldovan businesses. The paper then presents case studies of successful antifragile businesses, both globally and within Moldova, to illustrate the practical application of these principles. We also consider potential limitations and challenges associated with implementing antifragile strategies within Moldova's unique context. Finally, the paper concludes with suggestions for future research and a summary of key insights derived from the study.

## **Literature Review**

The concept of antifragility was first proposed by risk analyst and scholar Nassim Nicholas Taleb in his seminal work "Antifragile: Things That Gain from Disorder" (Taleb, 2012). It was conceived as an extension and a departure from traditional theories on risk, volatility, and resilience in various fields, from economics and finance to engineering and health sciences. Taleb argued that some systems, rather than being simply robust or resilient (capable of resisting or recovering from shocks, respectively), are in fact 'antifragile' — they gain from stressors, shocks, and uncertainty, using these disruptions as catalysts for adaptation, innovation, and growth.

In business management, the theory of antifragility has been employed to explore how firms can thrive in an increasingly volatile, uncertain, complex, and ambiguous (VUCA) world (Sushil, 2015). It complements the notion of 'dynamic capabilities,' a framework that highlights the ability of organizations to reconfigure internal and external competences to address rapidly changing environments (Helfat et al., 2007). Antifragility extends this view by emphasizing that businesses can benefit from the very volatility and uncertainty that they need to adapt to.

Andriopoulos and Lewis relate antifragility to the concept of 'organizational ambidexterity,' which is the capacity of businesses to exploit existing competencies while simultaneously

exploring new opportunities (Andriopoulos & Lewis, 2009). Antifragile organizations, therefore, can balance efficiency in current operations with innovation for future success.

In the field of entrepreneurship, scholars like Sarasvathy have identified antifragile characteristics in successful entrepreneurs, who often navigate uncertainty and create opportunities out of chaotic conditions (Sarasvathy, 2001). Similarly, McGrath and MacMillan present the concept of 'discovery-driven planning,' which, much like antifragility, advocates for iterative learning and adaptation in response to environmental changes (McGrath & MacMillan, 2000).

In terms of organizational culture and leadership, an antifragile approach has been linked to creating a culture of psychological safety and encouraging experimental failure, which drives learning and innovation (Dweck, 2006; Edmondson, 1999).

While these studies provide invaluable insights into the concept of antifragility and its application in business management, the literature still presents gaps, particularly in relation to its application within specific national contexts like Moldova.

Research on business management in Moldova predominantly focuses on general entrepreneurship and small-medium enterprises development (Aculai, Novac, Vinogradova, & Maier, 2014), institutional reform (Aculai, Stratan, & Novac, 2018), and business environment analysis (Stratan, Aculai, & Vinogradova, 2015; Vinogradova, 2021). Although valuable, these studies do not specifically explore the concept of antifragility and its potential implications for Moldovan businesses.

Moreover, while there is literature covering resilience in Moldovan agriculture (Șarban, 2022; Stratan, Moroz, & Lucasenco, 2013) and public policy (Stratan, Novac, & Maier, 2018), the specific investigation of antifragile strategies in Moldova's business sector remains unexplored.

Overall, while the literature offers a compelling starting point for understanding antifragility, there is a clear gap when it comes to applying these principles in the Moldovan business context. The current study aims to contribute to addressing this gap.

### **Contextual Analysis**

In order to apply the concept of antifragility to businesses within a specific context, an in-depth understanding of the environment is essential. The Republic of Moldova presents a unique case, marked by economic, political, and social conditions that are rich with potential stressors, shocks, and volatilities that can catalyze antifragility.

Economically, Moldova is considered one of the poorest countries in Europe, heavily dependent on agriculture, remittances, and foreign aid (World Bank Group, 2023). It has made substantial progress since gaining independence in 1991, but economic development has been hampered by systemic corruption, poor governance, and prolonged political instability (Transparency International, 2022). This fragile economic structure, coupled with geopolitical uncertainties and a lack of diversification, creates a volatile business environment rife with potential shocks and uncertainties.

Politically, Moldova has struggled with maintaining stability due to recurrent political crises, government corruption, and geopolitical tensions between the West and Russia, which have further complicated the nation's European integration aspirations (Freedom House, 2023). This political volatility can influence businesses directly and indirectly, affecting factors like business regulations, access to finance, and market access.

Socially, Moldova is grappling with issues such as population decline due to outmigration, a skills gap in the workforce, and social inequality (UNDP, 2020). These social challenges can impact

businesses, particularly in areas like talent acquisition, market demographics, and consumer behavior.

Despite these challenges, Moldova's context can present unique opportunities for businesses. The economic volatility can push businesses to innovate, diversify their offerings, and explore new markets. The European Union's Deep and Comprehensive Free Trade Area (DCFTA) agreement with Moldova provides local businesses with opportunities to access the EU market, spurring them to raise their standards and improve competitiveness (European Commission, 2023).

Political instability, while problematic, can catalyze businesses to become more self-reliant and flexible in their operations, reducing dependencies on governmental support. In addition, as Moldova navigates its geopolitical tensions, businesses can leverage these shifts to explore different political and economic partnerships.

The social challenges Moldova faces also present opportunities for businesses. For instance, businesses can fill the skills gap by investing in training and development, thereby enhancing their human capital. They can also cater to the diaspora market, which remains strongly connected to Moldova and contributes significantly to its economy through remittances (World Bank Group, 2023).

In the face of these various conditions, Moldovan businesses have the opportunity to embody the principles of antifragility. By embracing the inherent volatility and uncertainty, these businesses can innovate, adapt, and ultimately thrive amidst the disorder.

### **Conceptual Framework**

The cornerstone of the conceptual framework underpinning this study is the paradigm-shifting theory of antifragility. First introduced by Nassim Nicholas Taleb in his 2012 book, "Antifragile: Things That Gain from Disorder", the concept of antifragility delineates a classification of systems that actually improve under conditions of volatility, uncertainty, and stressors, as opposed to merely withstanding or surviving these conditions (Taleb, 2012).

To fully comprehend the implications of antifragility, it is helpful to contrast it with the concepts of robustness and resilience, traditionally used in risk management and organizational theory.

Robust systems are designed to remain unchanged in the face of shocks or stressors; they are made to resist external forces (Holling, 1973). For instance, a robust business might have strong financial reserves to withstand a period of economic downturn without having to lay off employees or close down operations.

Resilience, on the other hand, refers to the ability of a system to absorb disturbances and still maintain its basic function and structure (Holling, 1973). In the context of a business, resilience might be reflected in the ability of a company to bounce back from a crisis, such as a market crash or natural disaster, and return to its pre-crisis state.

While robustness and resilience are undoubtedly valuable qualities in the face of disorder and volatility, they are essentially about surviving in the face of change. Antifragility, however, introduces a fundamentally different perspective: it is about thriving on change and uncertainty. Taleb suggests that antifragile systems benefit from shocks, volatility, and uncertainty, using these conditions as catalysts for improvement and growth. An antifragile business, therefore, is not only able to survive periods of uncertainty, but actually leverages these periods as opportunities for innovation, adaptation, and growth (Taleb, 2012).

Antifragile businesses are designed to be adaptive and flexible, continually learning and evolving in response to stressors (Taleb, 2012). They possess dynamic capabilities (Teece, 2007), enabling them to reconfigure their resources and competencies to address rapidly changing environments.

An illustrative example of an antifragile business strategy could be agile project management, where instead of sticking to a rigid plan, the project evolves in response to changes and feedback (Highsmith, 2009). This allows the business to turn potential threats into opportunities for improvement.

By embracing uncertainty and using it as a catalyst for growth, antifragile businesses can turn traditionally perceived disadvantages into opportunities. This proactive approach to managing uncertainty can open up new avenues for innovation and growth, and provides a powerful mechanism for businesses to thrive in volatile environments.

In summary, the principle of antifragility suggests that in an environment of volatility and uncertainty, the goal should not only be to withstand or recover from shocks, but to profit from these shocks and use them as opportunities for adaptation, innovation, and growth.

### **Antifragile Business Strategies for Moldova**

To foster antifragility in the unique context of the Republic of Moldova, businesses must adopt specific strategies that leverage the inherent volatility, shocks, and uncertainties prevalent in the country's economic, political, and social landscape. Here, we identify and analyze some key strategies tailored to Moldova's context, illustrating how they enable businesses to thrive amidst disorder and uncertainty.

- *Diversification*: Given Moldova's small and volatile economy, businesses can mitigate risks by diversifying their markets, products, or services. Diversification provides multiple avenues for revenue, reducing dependence on any single source (Le, 2019). For example, in response to the challenges posed by the agricultural sector, businesses could diversify into processing agricultural products for export, exploring niche markets such as organic or specialty foods to leverage Moldova's agricultural potential.
- *Innovation and Entrepreneurship*: Innovation is a fundamental principle of antifragility, allowing businesses to turn disorder into opportunities for improvement and growth (Taleb, 2012). Moldovan businesses could foster a culture of innovation, encouraging entrepreneurial activities that harness the creative potential of the workforce to develop novel products, services, or business models. Government initiatives such as the Moldova Competitiveness Project, which supports innovation and entrepreneurship, can be instrumental in this respect (Chemonics International, 2021).
- *Building Human Capital*: With a significant skills gap and brain drain, investing in human capital becomes a strategic priority for Moldovan businesses (Chilari, 2021). By offering training and development opportunities, businesses can enhance their employees' skills, retain talent, and attract diaspora professionals, making the business more adaptive and resilient to changes in the labor market.
- *Strengthening Supply Chain Resilience*: Disruptions in the supply chain can be particularly damaging for businesses. Moldovan businesses can build antifragility by developing resilient supply chains, for example, by diversifying suppliers, increasing inventory buffers, or adopting technologies to improve supply chain visibility and responsiveness (Christopher & Peck, 2004).
- *Exploiting Digital Transformation*: The digital transformation presents enormous opportunities for businesses. Moldovan businesses, even in traditional sectors like agriculture or manufacturing, can leverage digital technologies to improve their operations, reach new markets, and offer innovative products or services (Bughin & Hazan, 2017).
- *Building Strong Networks and Partnerships*: Given Moldova's political instability and the importance of personal connections, building strong networks can provide businesses with

valuable support and resources in times of disorder (Kemoklidze & Wolff, 2020). This could include partnerships with other businesses, collaborations with academic or research institutions, or engagement with diaspora networks.

- *Adopting Agile Management:* Agile management practices, characterized by flexibility, responsiveness, and continuous learning, can be particularly beneficial in volatile environments (Highsmith, 2009). By adopting such practices, Moldovan businesses can become more adaptable and responsive to changes, turning potential threats into opportunities for improvement and growth.

By embracing strategies that foster diversification, innovation, human capital development, supply chain resilience, digital transformation, networking, and agile management, businesses in Moldova can develop antifragility, turning the nation's inherent volatility and uncertainty into opportunities for growth and prosperity.

## **Case Studies**

In this section, we explore real-world examples of antifragile companies in Moldova that have successfully leveraged volatility and uncertainty for growth and contrast these with businesses that failed to cope with shocks. These case studies demonstrate the practical application of antifragility strategies in the unique context of Moldova, and the outcomes they produced.

### **Case Study 1: Tucano Coffee**

Tucano Coffee, an international coffee shop chain born in Moldova, exemplifies the transformative power of antifragility in business. Embracing a world that is profoundly volatile, uncertain, and complex, the company has devised innovative strategies to turn adversity into advantage. At the heart of Tucano Coffee's approach is a commitment to their unique ethos - Love, Peace, and Coffee - which extends far beyond the traditional transactional paradigm of selling beverages. Instead, it creates an immersive and authentic experience that differentiates Tucano Coffee in a crowded marketplace and builds a loyal community of customers (Tucano Coffee, 2023).

A prime example of Tucano Coffee's antifragility is its response to the COVID-19 pandemic. When the global health crisis struck, it unleashed unprecedented levels of uncertainty and volatility. Businesses around the world, especially in the hospitality sector, were hit hard. In-person dining, a significant revenue stream for cafes, came to a sudden halt due to lockdown measures. Despite these challenges, Tucano Coffee found an opportunity to leverage the chaos for growth.

Understanding that agility is a key element of antifragility, Tucano Coffee swiftly transitioned to online orders and delivery services. The move was not merely a strategy to withstand the crisis but a way to transform it into a growth opportunity. This shift allowed the company to continue operating under lockdown restrictions and tap into a new market segment – customers who value the convenience of home delivery. Thus, the disruption caused by the pandemic became a catalyst for Tucano Coffee to expand its customer base and enhance its resilience.

But it wasn't just about shifting the mode of delivery. Tucano Coffee also innovated its offerings to meet the changing needs of its customers. For instance, recognizing that many people were spending more time at home and seeking comfort in small pleasures, the company introduced new products tailored for home consumption. Moreover, they leveraged digital platforms not just for sales, but also to engage with their customers, offering virtual coffee brewing workshops and

online events to nurture the sense of community among their customers despite physical distancing.

Tucano Coffee's ability to pivot rapidly and innovatively during a time of crisis is testament to its antifragile nature. However, it's important to note that this agility didn't emerge overnight. It was the result of a long-standing commitment to a culture of flexibility, innovation, and customer-centricity.

The company's antifragility is also reflected in its approach to geographic diversification. As of 2021, Tucano Coffee has outlets in 11 countries (Tucano Coffee, 2023). This wide geographic spread allows the company to spread its risks and tap into growth opportunities in different markets. For instance, if the business environment becomes unfavorable in one location, the company can still sustain its operations through its outlets in other countries. Moreover, this strategy enables the company to learn from diverse market environments and continuously innovate its offerings.

However, while diversification and innovation have served Tucano Coffee well, these strategies are not without their challenges. For instance, diversification requires careful management to ensure consistency in quality and service across all outlets. Innovation, on the other hand, requires continuous investment in research and development, and not all new ideas will necessarily be successful.

In conclusion, Tucano Coffee's journey exemplifies the principles of antifragility in action. By embracing volatility and uncertainty, the company has been able to not just survive but thrive amidst disorder. Its strategies of rapid and innovative adaptation, as well as geographic diversification, have turned potential threats into opportunities for growth. This case provides valuable insights for other businesses aiming to build antifragility into their operations. It shows that with the right mindset and strategic approach, companies can transform volatility and uncertainty from a source of fear into a platform for growth.

## **Case Study 2: Purcari Wineries**

Purcari Wineries, a Moldovan wine producer with a rich history dating back to 1827, provides an insightful example of how businesses can leverage antifragility to thrive amidst volatility and uncertainty. Despite operating in a region marked by geopolitical tensions and economic instability, Purcari has successfully navigated these challenges by adopting strategies centered around diversification, innovation, and the creation of robust networks and partnerships.

A primary example of Purcari's antifragile approach is the company's diversification of markets. The Republic of Moldova, while renowned for its wine production, has faced its fair share of market volatility, particularly related to political tensions with Russia. In 2013, Russia, which was a significant export market for Moldovan wines, imposed a ban on these imports. The impact on the Moldovan wine industry was significant, with many wineries facing severe economic consequences. However, Purcari was able to weather this crisis, largely due to its strategy of market diversification.

Prior to the ban, Purcari had already established a broad export market that included not only Russia but also the European Union, China, and the United States. When the ban was imposed, the company swiftly shifted its focus to these other markets. Instead of succumbing to the crisis, Purcari leveraged it as an opportunity to expand in other areas, resulting in a net growth of its business (Purcari Wineries, 2023). This instance illustrates the value of diversification as a strategy for building antifragility and turning potential threats into opportunities.

Alongside market diversification, Purcari has also fostered a culture of innovation, another cornerstone of antifragility. The company has consistently invested in modern winemaking technology to improve the quality of its wines, thereby differentiating itself in a competitive market. By aligning its production methods with international standards, Purcari has enhanced its appeal to the global consumer base, reinforcing its market position and brand reputation (Purcari Wineries, 2023).

Additionally, Purcari has built strong networks and partnerships, further bolstering its antifragile character. On a local level, the company has forged strong relationships with grape growers, ensuring a consistent and high-quality supply of raw materials. On a global level, Purcari has developed partnerships with international distributors, thereby securing reliable access to global markets. These partnerships and networks have not only enhanced Purcari's operational efficiency but also its resilience and capacity to adapt to changes in the business environment.

Contrastingly, companies that lack antifragility may find it challenging to cope with similar shocks. For instance, businesses that relied heavily on the Russian market and did not diversify faced significant difficulties following the wine ban. Such companies not only experienced severe financial losses but also found it challenging to regain their footing in the aftermath of the crisis. Their experience underscores the importance of antifragility and the perils of over-reliance on a single market.

Purcari's story is not just a testament to its resilience but an embodiment of its antifragility. Rather than merely surviving disruptions, the winery has consistently transformed adversities into growth opportunities. It has done so by deploying antifragile strategies that revolve around diversification, innovation, and the building of robust networks.

However, while these strategies have served Purcari well, it is worth noting that they come with their own sets of challenges. Diversification, for instance, requires a nuanced understanding of different markets and the ability to cater to diverse consumer preferences. Innovation, too, demands significant investment and a willingness to experiment and take risks. Meanwhile, building and maintaining strong networks necessitates mutual trust and long-term commitment. In conclusion, Purcari Wineries' journey provides valuable insights into how businesses can cultivate antifragility to thrive amidst volatility and uncertainty. Its strategic approach demonstrates how potential threats can be turned into opportunities, and disorder can be the breeding ground for growth. At the same time, it underscores the need for a balanced strategy that takes into account the challenges and complexities associated with antifragility. In a world characterized by unpredictability, businesses like Purcari Wineries show the way forward, illuminating how to not just survive, but thrive amidst disorder.

### **Case Study 3: Simpals**

Simpals is one of the most innovative and successful digital companies in Moldova, known for its diverse portfolio of online products, animation studio, and digital advertisement solutions (Simpals, 2023b). This diverse business model has allowed the company to be agile and adaptive in the face of uncertainty and disruption, the hallmark traits of antifragility.

One of Simpals' most recognizable ventures is "999.md", the largest online marketplace in Moldova (Simpals, 2023a). When the market began shifting towards e-commerce, Simpals swiftly capitalized on the opportunity by providing a platform for local businesses and individuals to sell their products online. The flexibility of the "999.md" platform also enabled Simpals to quickly add new categories and services based on user demand, demonstrating an innovative approach and an agile response to market dynamics.

Simpals also runs an animation studio that produces internationally acclaimed animated films. Despite the highly competitive nature of the industry, Simpals' animation studio thrives due to its creative excellence and innovative storytelling. The success of the animation studio further enhances Simpals' diversified portfolio, enabling it to thrive in diverse market conditions.

Moreover, when the COVID-19 pandemic caused a surge in online activity, Simpals was well-positioned to take advantage of the increased demand for digital services. From swiftly expanding the capacity of "999.md" to accommodate the surge in online shopping to providing digital solutions for businesses transitioning online, Simpals effectively leveraged the disruption caused by the pandemic.

The company's innovative, diversified, and agile approach, coupled with its ability to capitalize on market volatility, underscores its antifragile nature. Simpals demonstrates that embracing volatility and disruption, fostering innovation, and maintaining a diversified business model are vital strategies for building an antifragile business. In this respect, Simpals serves as a positive case study of a Moldovan company that has not only weathered market uncertainties but has also used them as opportunities for growth.

### **Challenges and Limitations of Building Antifragile Businesses in Moldova**

Building an antifragile business model has its unique set of challenges and limitations, particularly within the specific context of the Republic of Moldova. This section will discuss potential difficulties and risks associated with implementing antifragile strategies, as well as explore how businesses may need to balance antifragility with other business objectives given Moldova's unique circumstances.

#### *Economic and Political Volatility*

Moldova is a country characterized by significant political and economic volatility (U.S. Department of State, 2022; World Bank Group, 2020). This instability can present unique challenges to businesses aiming to implement antifragile strategies. For instance, fluctuations in market conditions and abrupt changes in trade policies can disrupt supply chains, making it difficult for companies to consistently deliver on their value proposition. Furthermore, political instability can influence the business regulatory environment, posing challenges to businesses that aim to profit from uncertainty (Abramova et al., 2021).

#### *Lack of Infrastructure*

The lack of modern infrastructure in certain areas, particularly in rural regions, can also pose challenges to businesses seeking to become antifragile. For instance, implementing digital solutions to enhance agility and resilience may be hindered by inadequate internet connectivity or unreliable electricity supplies. These infrastructural deficits may impede efforts to innovate and adapt, thereby constraining businesses' capacity to leverage disorder for growth (Babin, Colesnicova, & Tutunaru, 2023).

#### *Limited Access to Finance*

Access to finance is another significant challenge for Moldovan businesses. Capital is crucial for business agility as it provides the resources needed for innovation, market diversification, and other antifragile strategies. However, due to the high interest rates and stringent collateral requirements of Moldovan banks, many businesses struggle to secure the necessary funding to implement such strategies (Chemonics International, 2021).

### *Balancing Antifragility and Other Business Objectives*

Businesses in Moldova also need to balance antifragility with other business objectives. For instance, while diversification can enhance antifragility, it may also dilute a company's core competencies and focus. Therefore, businesses must carefully consider how to diversify their operations without compromising their strategic direction and competitive advantage (Le, 2019). Similarly, while rapid adaptation and experimentation are crucial to antifragility, they can also introduce risks. New ventures may fail, and pivots can confuse customers and dilute brand identity. Therefore, businesses need to balance the pursuit of antifragility with the need for stability and consistency in their offerings (Blank, 2018).

Building an antifragile business in Moldova involves navigating a unique set of challenges and risks, particularly related to economic and political volatility, infrastructure deficits, and access to finance. Furthermore, businesses need to balance the pursuit of antifragility with other business objectives to ensure their long-term success. However, despite these challenges, the case studies presented earlier demonstrate that it is indeed possible for Moldovan businesses to leverage volatility and uncertainty for growth by implementing antifragile strategies.

### **Conclusion**

As this research unfolds, it is evident that the concept of antifragility can provide a novel and valuable perspective to understand and enhance the resilience of businesses in environments characterized by high volatility and uncertainty, such as Moldova. Despite the contributions of this study, several areas warrant further research in order to deepen our understanding of antifragility and its application in businesses, particularly within the Moldovan context.

First, there is a need for more empirical research on the specific strategies that businesses can employ to become antifragile in the Moldovan context. This study provided a preliminary exploration of potential strategies such as diversification, innovation, and building networks. However, more research is needed to identify and test the effectiveness of other possible strategies. Such studies could be guided by questions like: What types of diversification (e.g., product, market, supply chain) are most effective in enhancing antifragility? How can businesses innovate in ways that not only enhance resilience but also enable them to profit from volatility? Second, this study highlighted some of the challenges and limitations that Moldovan businesses might face in their pursuit of antifragility, such as economic and political volatility, infrastructure deficits, and limited access to finance. Further research could explore these challenges in more depth and investigate how they might be overcome. For example, research could look into how businesses can navigate regulatory challenges associated with economic and political volatility, or how digital infrastructure gaps can be addressed to enable digital transformation.

Third, research is needed on the role of institutions and policies in fostering antifragility. For instance, how might government policies or international trade agreements influence the capacity of businesses to become antifragile? Can institutions play a role in fostering an environment that encourages businesses to adopt antifragile strategies?

Fourth, there is a need for more case studies of Moldovan businesses that have successfully adopted antifragile strategies. These case studies could provide valuable insights into the practical application of antifragility and serve as examples for other businesses.

In conclusion, this paper has shed light on the concept of antifragility and its relevance for businesses in Moldova. Unlike traditional notions of robustness or resilience, antifragility moves beyond merely withstanding shocks or returning to the status quo after disruptions. Instead, antifragility entails leveraging volatility and uncertainty for growth. This capacity to thrive amidst

disorder is particularly relevant for businesses in Moldova, given the country's unique context characterized by significant economic and political volatility.

Through an examination of Moldova's economic, political, and social environment, as well as a review of antifragility literature and case studies, this paper has identified and discussed several strategies that can enable businesses in Moldova to become antifragile. These include diversification, innovation, agility, and building networks. However, the paper has also highlighted the challenges and limitations that Moldovan businesses may face in their pursuit of antifragility.

Ultimately, the concept of antifragility offers a powerful framework for businesses in Moldova to not just survive but thrive amidst uncertainty and volatility. By continuing to explore and deepen our understanding of antifragility, businesses, policymakers, and researchers can work together to foster an ecosystem that encourages and supports the growth of antifragile businesses in Moldova. It is hoped that this research will inspire more studies and practical initiatives in this important and emerging area.

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## THE IMPACT OF BIG DATA MANAGEMENT ON FINANCING STRATEGIES

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**Abstract:** Big data refers to large, diverse, and rapidly generated data, playing a crucial role in obtaining valuable information through analysis. This study investigates the impact of big data management on financing strategies, focusing on improving financial performance. Addressing data security, privacy, and challenges, the study emphasizes the significance of big data analytics in financial decision-making processes. By effectively utilizing big data, companies can enhance financial strategies, gain a competitive edge, and ensure long-term sustainability. Conducted through a review method, the study compiles and analyzes data from various academic sources to explore how big data analytics can be integrated into financial strategies for better risk management, customer relations, and operational efficiency. The findings underscore the potential of big data management in achieving growth and sustainability objectives, providing valuable insights for managers and researchers working on financing strategies. It is expected that this study will bring a different perspective to finance managers and academics.

**Key words:** Big Data, Strategic Management, Financial Management, Financial Strategies, Business Success, Data Sciences

JEL Classification: G17, E22, D24

### Introduction

In today's business world, the importance of big data analytics is increasing day by day in order to improve the decision-making processes of companies and to maintain their competitive advantage. Financing strategies are critical for companies to improve their financial performance, reduce risks and be prepared for future uncertainties. Therefore, the use of data analytics in financial management plays an important role for companies to achieve their goals of sustainable growth and success.

In this study, the effect of big data management on financing strategies will be examined. Big data analytics and data science offers financial managers a broader perspective, enabling them to place solid databases at the foundation of their business decisions. The digital transformation of

financial processes offers companies the opportunity to use big data analytics to increase efficiency, reduce costs, and personalize and improve customer experience.

In traditional financial management applications, while decisions are made with limited data sets and experience accumulated over time, companies can make fast and accurate decisions thanks to big data analytics. Big data analytics transforms millions of data points into meaningful information, giving financial managers in-depth insights into market trends, customer behavior, competitive situations, and other key factors. This enables the creation of financing strategies more effectively.

Financing strategies aim to minimize future uncertainties and anticipate potential risks. Big data analytics enables companies to better identify financial risks and better predict future situations. With big data analytics, companies can continuously monitor economic, political and other external factors and update their financing strategies based on this data.

Big data analytics offers the opportunity to better understand and analyze customer behavior. Companies can understand customer preferences, needs and habits by using big data analytics to provide customers with more personalized financial services. While this increases customer satisfaction, it strengthens customer loyalty and competitive advantage of the business.

It will be discussed the effect of big data management on financing strategies in this study. It is clear that big data analytics improves decision-making processes in financial management, strengthens risk management, increases the ability to provide personalized financial services and increases efficiency. By integrating big data analytics into their financing strategies, companies must embrace digital transformation to gain a competitive advantage and achieve sustainable success.

Big data management can have a positive impact on financing strategies. Financial management and analytics, combined with big data analytics and data science, can help companies make more effective decisions and drive better results. Some important points explaining the effect of big data management on financing strategies are as follows:

- **Improvement in Decision-Making Processes:** The size and complexity of data can be difficult to manage with traditional methods when making financial decisions. Big data analytics can help companies make faster and more accurate decisions. Big data analytics enable them to better understand market trends, customer behavior, competitive situations and other important factors.
- **Risk Management and Predictability:** Financing strategies focus on risk management and seek to reduce future uncertainties. Big data analytics can offer better tools for risk management. Big data analytics enable companies to better identify potential risks and better predict their future financial condition. The opportunity to better understand and analyze customer behavior. In this way, companies can provide customers with personalized financial services and increase customer satisfaction.
- **Efficiency and Cost Reduction:** Big data analytics has the potential to automate financial transactions and reporting processes and increase efficiency. More efficient processes can increase the viability of financing strategies by reducing the costs of companies.

- **Fraud and Abuse Detection:** Big data analytics can be an effective tool in detecting financial fraud and abuse. Data analytics can improve companies' financial security by identifying suspicious transactions and behavior.
- **Improving Investment Decisions:** Big data analytics can support companies' investment decisions. Big data analytics can help make better investment decisions by providing an opportunity to better understand market trends, industry performance and potential opportunities. However, it should not be forgotten that the appropriate infrastructure must be established for the effective integration and use of big data analytics in financing strategies, the collection of accurate data and its secure management. It is also important to pay attention to data privacy and security issues. Successful implementation of big data management may require the collaboration of financial experts, data scientists, and technologists.

### **Big Data and Business**

Davenport (2014) explains how businesses can use the concept of big data and the potential of big data to provide competitive advantage. Brynjolfsson & McAfee (2014) examines how big data, artificial intelligence and other technological advances affect business and their potential impact on future business practices. Chen, Chiang & Storey (2012) discusses how big data analytics can create value for businesses and how effective business intelligence and analytics strategies can be created. McAfee & Brynjolfsson (2012) explains that big data management can lead to a management revolution in businesses and emphasizes the impact of big data usage on business success.

Laptev & Zelenkov (2021) discusses how the use of big data and business intelligence can be integrated into enterprise performance management and its potential to achieve effective results. Wang, Kung & Byrd (2018) examines how big data analytics can be used in the healthcare industry and its potential benefits for businesses. Luo, Xu & Liu (2018) explains how big data analytics can be used in the field of operations management and effective data management for businesses. Big data enables businesses to better understand customer behavior, optimize their operations, and develop new products and services. Big data provides many benefits for businesses (McKinsey & Company, 2011):

- **Big data businesses:** It allows them to better understand customer behavior. This enables businesses to develop products and services that better meet customer needs (Gartner, 2012). It allows them to optimize their operations. This allows businesses to reduce their costs and increase their productivity. It enables them to develop new products and services (Harvard Business Review, 2013). This allows businesses to gain a competitive advantage. While big data provides many benefits for businesses, there are also some challenges. For example, it may require specialized tools and expertise to analyze big data (MIT Sloan Management Review, 2014). Also, big data has privacy and security risks.

Big data is an important opportunity for businesses. However, in order to use big data effectively, businesses need to be aware of these challenges and take the necessary precautions (The Economist, 2015).

- **Big Data and Financial Management;** (Cortez & Silva , 2018) explored the usability of big data analytics in predicting financial distress and its impact on the Portuguese banking sector in particular. (Li, Zhang & Fu, 2017) is based on a study of top-ranked companies in China, examining the impact of big data on business performance. (Bollen & Pool, 2013) discusses how big data analytics can be used to detect data manipulation or misreporting in mutual funds. (Amin & Yang, 2017) examines the applications of big data analytics in financial risk management and discusses how it can contribute to more effective management of financial risks. (Pham, Li & Afsharifar, 2017) explore how it can be effective in predicting stock market trends using big data analytics and support vector machines. (Zhou & Luo, 2019) examines how big data analytics can be integrated into audit processes and improve audit quality. (Chen, Chiang & Storey, 2012) discusses the potential of big data to create value for businesses by addressing the integration of big data analytics into business intelligence and analytics.

### **Financing Strategies in Business**

It is vital for businesses to develop effective financing strategies in order to grow and maintain their competitive advantage. Financing strategies are the set of plans and policies used to meet the capital needs of companies, manage risks, invest and increase operational efficiency. In this article, we will examine the processes of developing financing strategies of enterprises, the main types of strategies and the importance of financing strategies in achieving the growth and sustainability goals of enterprises.

i- **The Process of Establishing Financing Strategies of Businesses:** There are several factors that should be taken into account when businesses create their financing strategies. Determination of financing needs, assessment of risk tolerance, analysis of market conditions and consideration of the competitive environment constitute the basic components of the strategy. Companies aim to optimize their capital structure and support long-term growth by using internal and external resources effectively.

ii- **Basic Types of Financing Strategies:**

a) **Debt Financing:** Debt financing means that companies meet their working capital needs by borrowing from external sources. Borrowing is managed according to interest payments and repayment terms, and can increase the financial flexibility of businesses and support their growth (Sourour & Trabelsi, 2017).

b) **Capital increase** is a strategy used by businesses to increase their financial resources. This can be done through methods such as the issuance of stocks or the distribution of dividends. By increasing their capital, businesses can finance new investments, acquisitions, or debt repayment. This can help them grow their business and improve their financial health. (Liu & Long, 2019).

c) **Profitability and Asset Efficiency:** Profitability and asset efficiency strategies aim to increase the financial performance of companies by using their existing assets and operations more

effectively. This enables businesses to optimize their use of capital and manage their investments more efficiently (Bodie et al., 2014).

iii- **The Importance of Financing Strategies in Growth and Sustainability:**

Effective financing strategies play a critical role in helping businesses achieve their growth and sustainability goals. The right financing strategy can help businesses evaluate entry into new markets, product development, acquisitions and other growth opportunities. In addition, financing strategies help businesses achieve financial stability, resilience to crises, and maintain competitive advantage.

Financing strategies play an indispensable role for businesses to achieve their growth and sustainability goals. Establishing their financing strategies correctly, optimizing their capital structure and increasing operational efficiency will help companies achieve long-term success and competitive advantage.

### **Big Data Management**

Big data management is a process used to collect, store, analyze large data masses and obtain valuable information. The following basic steps and principles are important for a successful big data management:

- **Determining a Data Strategy:** The basis of big data management is to determine a data strategy in line with the goals and needs of the business. The data strategy should set the main objectives such as what data will be collected, how it will be stored, analyzed and used.
- **Data Collection and Integration:** For big data management, it is necessary to collect and integrate large data masses from different sources (sensors, social media, websites, customer data, etc.). Data integration enables data to be combined in a meaningful way to obtain more holistic information.
- **Data Storage and Backup:** It is important that the big data collected is stored efficiently. Technologies such as databases, cloud storage and big data storage systems can be used. It is also critical to back up and secure data.
- **Data Security and Privacy:** During big data management, data security and privacy are of great importance. Data security measures include preventing unauthorized access, ensuring data integrity and protecting sensitive information.
- **Data Cleanliness and Quality:** Big data must be carefully scrutinized for quality and accuracy as it comes from a variety of sources. Data cleaning and organization ensures reliable and accurate results of data analysis processes.
- **Data Analytics and Understanding:** Big data management provides valuable information by analyzing data. Data analytics techniques encompass the process of understanding and discovering relationships, trends, and opportunities within large bodies of data.

- **Real-Time and Fast Processing:** Big data management should provide real-time data analytics and fast data processing capability. It is important to process data up-to-date and quickly so that businesses can make instant and quick decisions.
- **Scalability:** Big data management should be scalable in accordance with the increase in data volume and the growth of the business. Infrastructure needs to keep pace with growth and data processing capacity needs to be increased.
- **Data Access and Sharing:** Having data accessible and shareable by relevant people helps businesses improve their data-based decision-making processes and collaborate.
- **Continuous Improvement:** Big data management should be subjected to a continuous improvement process. Data management strategies should be updated according to technological developments and business needs.

These principles outline a successful big data management. Big data management helps businesses to use big data potential effectively and gain competitive advantage.

### **Big Data Management on Financing Strategies**

Big data analytics can increase the effectiveness of financing strategies by building a stronger foundation in financial decision-making processes. Big data analytics enable businesses to better understand market trends, customer behavior and the performance of their competitors, enabling more informed financial decisions (Zikmund -Fisher et al., 2013).

In the risk management dimension of financing strategies, big data analytics can help companies better identify potential risks and anticipate future uncertainties more effectively. Big data analytics support the analysis and forecasting of financial risks, contributing to better design of risk reduction strategies for businesses (Li et al., 2017).

Big data analytics allows businesses to better understand customer behavior and deliver personalized financial services. Big data analytics help better understand customer preferences and habits and enable financial services to better adapt to customers (Ransbotham et al., 2015). Big data management supports automation and analytical processes used to increase financial efficiency and reduce costs. Automating financial transactions and using big data analytics allow businesses to implement more efficient financing processes and manage their resources more efficiently (Davenport & Harris, 2007).

Big data analytics can play an important role in improving investment decisions. Thanks to big data analysis, companies can make more informed investment decisions by better understanding market trends, industry performance and potential investment opportunities (Kiron et al., 2014). Big data management can be an effective tool in detecting financial fraud and abuse. Big data analytics can increase the financial security of companies by identifying suspicious transactions and behaviors and can be used as an effective measure in the fight against fraud (Khan& Irani, 2014).

### **Conclusion and Evaluation**

Big data management can be used in financial decision making processes of businesses. The impact of big data analytics on financing strategies has emerged as an important factor that can contribute to improving financial performance and achieving long-term sustainability goals of businesses.

Big data analytics has great potential in determining and managing financing strategies. Creating a data strategy in line with the objectives and needs of the enterprises at the stage of determining a data strategy is the first step in effectively integrating big data analytics into financing strategies. The data collection and integration process enables large masses of data from various sources to be efficiently combined and prepared for analysis. Data storage and backup measures ensure that the collected data is stored in a safe and accessible manner and protected against possible data loss.

Big data analytics has an important role in determining and implementing financing strategies. With big data analytics, they can better understand key information such as market trends, customer behavior, competitor performance and operational efficiency to help businesses better manage their financing strategies. In addition, big data analytics also makes important contributions in the field of risk management. With big data analytics, companies can better identify potential risks and predict future uncertainties more effectively.

In terms of customer relations, big data analytics makes it possible to obtain more comprehensive and detailed information about customer preferences and habits. This makes it easier for financial services to better adapt to customers and provide personalized service. In terms of operational efficiency, big data analytics enables businesses to manage their resources more efficiently by automating financial transactions and performing data analysis faster and more effectively.

Big data management has a critical importance in determining and managing financing strategies. Understanding the potential of big data analytics and using this technology strategically is important for businesses to achieve their growth and sustainability goals. Developing and managing financing strategies in a data-driven manner will enable businesses to gain competitive advantage, manage risks more effectively and strengthen customer relations. Therefore, focusing businesses on big data management will help them improve their financial performance and ensure their long-term success.

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## THE ROLE OF THE TOURISM CLUSTERS IN THE DYNAMIC WORLD OF TOURISM

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**Abstract:** The tourism sector is taking up the issue of local growth dynamics and is banking on a territorial organization inspired by clusters to develop destination development policies. A cluster can be defined as a geographically close group of interrelated enterprises and associated institutions in a given field, between which there are common elements and complementarities. This concept is now the subject of much research in tourism and inspires experiences of tourism destination development around the world.

In scientific approaches, the concept of cluster highlights, on the one hand, the role of organizational proximities, built from spatial proximities in the dynamics of competitiveness of tourist destinations. On the other hand, tourism clusters are developing all over the world.

The challenge of this article is therefore to show that the simple transfer of a scientific tool developed in the industrial context to the management of tourist destinations poses a problem. It must be enriched to understand the dynamics of local tourism development and acquire more operational efficiency.

Special specific dimensions should in fact be taken into account, which will be addressed based on the process of co-production inherent in tourist activity, the dynamics of singular proximities in this field of tourism and the characteristics of the embeddedness of tourist activities in the territory. Finally, the authors propose a cluster model more suited to tourist destinations.

**Keywords:** Tourism, cluster, development, regional development, proximity.

JEL Classification: O13, R11, Z32.

### Introduction

In line with the directions taken by industrial policy, the tourism sector is taking up the issue of local growth dynamics and is banking on a territorial organization inspired by clusters to develop destination development policies. Mikael Porter (1999) defines a cluster as “a geographically close group of interrelated enterprises and associated institutions in a given field, between which there are common elements and complementarities”. This concept, which has served as a model in the context

of many industrial development policies, in Europe and North America, is now the subject of much research in tourism and inspires experiences of tourism destination development around the world. The transfer of this concept, which emanates from the industrial economy and the spatial economy, to an activity with a high service content, however, calls for reflection, which this article takes up. The work of Porter (1999) essentially concerns the territorialized organization of a value chain intended to produce market goods, sold on a local or distant market and subsequently consumed without the customer having participated in the design and production of the good. The production of a tourist experience is quite different: it is the act of the tourist who mobilizes resources and services to live his tourist experience on the territory where they are co-invented and co-produced. To take into consideration the specificity of the tourist activity, research must integrate the co-creative and co-productive dimension of tourism, and in fact enrich the concept of cluster. The latter must in particular take into account a singular dynamic of proximity, tourism being mobile and perishable by its nature. It cannot, moreover, abstain from taking into account the diversity of the territorial socio-economic organizations generating the dynamics of growth, that is to say the methods of embedding tourist activities in the considered territories.

We thus propose to revisit the concept of cluster to understand the territorial organization of an activity of co-production of experience. Three entries are available:

- the intensity of co-production and co-creation;
- the quality and intensity of organized proximity;
- and the embedding of tourist activity in the socio-economic space.

This research is essentially conceptual. It finds its origin in a confrontation between management sciences and geography to understand the dynamics of development of tourist destinations.

We underline in particular that the association of the tourist with the co-creation of resources and the co-production of the tourist experience requires the integration at least partial of the latter within the network of constituent actors of the cluster. We question the dynamics of proximities at work and show that the question of proximities, organized and geographical, arises in a singular way: the otherness with which the tourist can be confronted calls for a differentiated intermediation according to his needs and his skills acquired in past experiences. Finally, we question the diversity of the forms of embeddedness of tourist activity. A last part summarizes our proposals in a model enriched with the concept of tourist cluster and underlines the consequences for the governance of these territories. We insist in particular on the fact that the tourism cluster is a place created by and for tourists that is to say by and for their confrontation with the world.

### **Limits to applying the dynamics of local industrial organizations to the dynamics of local tourism organizations**

Torre (2006) observes that “clusters are today considered the basis of local, even national, policies in many countries”. Doesn't the massive use of this concept risk emptying it of its meaning? We propose to rediscover this concept by reducing it to simple elements which found it but also constitute its limit for the analysis of tourist activities. We recall that it is used to describe a productive dynamic linked to network externalities, the local dissemination of knowledge and the quasi-integration of firms. If these elements make it convincing for analyzing tourism, we note that it considers economic activity from a completely industrial perspective: a logic of supply and sequenced value chain. We then recall the proximities at stake in this dynamic of economic development. Research on the economy of proximities is of interest to tourism in the first place: if tourism is mobility, it results in temporary

collocation and a confrontation with otherness which questions the proximities and intermediations at work. Finally, we underline the socio-economic plasticity of the concept of cluster, used to study very diverse industrial organizations. This plasticity seems to us to have to be clarified when we analyze tourist territories with very varied socio-economic configurations and inscribed within rigid administrative territorial limits.

*A dynamic of intermediated proximity*

Work on territorial productive dynamics questions the logic of proximity implemented. The territorial anchoring of activities and geographical proximity are not sufficient to explain the singular dynamics of these territories. Coordination must be considered from an “interactionist” perspective and the researcher must recognize the idea that if there is geographical proximity, there is not necessarily coordination (Zimmermann, 2008).

Rallet and Torre (1995, 2005) proposed to speak of “organized” proximity to evoke a proximity that is not only geographical but also relational. This can be linked to the fact that economic agents recognize themselves in similar or complementary positions, in projects or organizations. We then speak of organizational proximity. It also arises from the sharing of codes, values or representations. We then speak of institutional proximity. This organized proximity is driven by multiple mechanisms. It is not linked to geographical proximity, which is neutral until it is activated, or can even sometimes prevent cooperation. It is rather exchanges, learning, collaborations or competitive behaviors that will encourage it.

The question of proximity arises with quite natural acuity when it comes to considering tourist activities: tourists prepare a trip, which implies relations – at a distance – with local actors, stay on the territory, and therefore interact to varying degrees with local actors, then come back armed with new experiences, new knowledge that they remember and which can bring them back to this territory later on. These three times question the forms of proximity activated or created.

The latter also attest to the need for intermediation. In the dynamics of innovation, the role of intermediation organizations is well known. The same is true in training. Their function can be summarized in four points:

- the connection and the circulation of information between actors in the territory;
- the animation of networks of actors;
- the translation and the interpretation of the proposals of the actors allowing their adjustment;
- and the coordination of actors of a common project, the definition of common objectives, the federation of the means to achieve them.

In his tripolar model, Bernard Soulage (1994) mentions the primordial place of intermediation institutions: they constitute one of the three groups of actors who activate a territorial economic dynamic. They promote networking, the activation of organized proximity, the irrigation of the territory by social networks carrying social capital.

Tourism involves a very large number of actors as diverse as public authorities, private companies, residents and tourists. It brings into play a confrontation with otherness and is fundamentally linked to mobility. It raises obvious questions relating to the connection and coordination of actors, the animation of networks, and the creation of social capital. The cluster organization of tourist territories naturally invites us to question the dynamics of proximity and the key role of network facilitators, intermediation institutions, which activate them.

*A dynamic linked to the socio-economic configuration of the territories*

Courlet (2002) recalls that there are multiple socio-economic configurations of growing territories. Based on the work of Markusen (2000), we can thus highlight four types of agglomerations:

- the first, the Marshallian district, is made up of a dense network of SMEs;
- the second revolves around a large company, which is not necessarily from the local system, and maintains strong relations with a fabric of local companies but also with the outside world;
- the third is marked by the driving presence of a large state facility (administrative or military base);
- the last presents the less dense local network. Consisting mainly of branch platforms of large external companies, it is essentially outward-looking.

Nor can territorialized productive organizations be analyzed by disregarding the specificity of the productive activities concerned. When he speaks of clusters, Porter (1998) does not specify whether the economic dynamics envisaged are specific to certain types of industries or economic activities.

Proximity effects, the form of coordination, the nature of social conventions, or the dynamics of innovation are of course specific to each form of local industrial organization. They generate specific development trajectories and require very different modes of governance. The strategies of local actors, the modalities of interaction and coordination, the economies of agglomeration present singularities which must be taken into account by the analysis of proximities, but which cannot be assumed to be identical according to all local configurations. Moreover, coordination and economic interactions do not necessarily require long-term co-location to be knowledge-creating. The reduction in the cost of transporting goods, people and information facilitates interactions and coordination outside the territories which ultimately can be content with episodic co-location to generate a form of organized proximity.

The embedding of activities in the territories considered, their articulation with the social context, seems here again to question the scientific community: the diversity of tourist territories, of their socio-economic configurations, cannot be satisfied with a hypothesis of harmonious articulation proximity to support a tourism cluster model.

*The intensity of co-production and co-creation*

The concepts of coproduction and servuction are little used in the analysis of tourism, and in particular in approaches to territorial dynamics. In the literature on tourism clusters, the tourist only appears very marginally and only as a consumer. However, he is always, admittedly to varying degrees, actor-producer and designer of his tourist experience. Pascal Cuvelier (1998) thus refutes the use of the concept of consumption in relation to tourism. He replaces it with that of practice which, according to him, better reflects the investment of the individual in the field of tourism.

A major lesson from these analyzes for understanding the productive dynamics that drives tourism clusters is the emphasis placed on the intentionality of the tourist and his ability to mobilize the territorialized constellation of values for the benefit of his project. Tourism clusters are driven by commercial and non-commercial relations that tourists maintain with local actors, businesses, institutions, objects, but also other tourists, during moments of virtual co-presence — preparing for the stay — or actual co-presence. — the tourist stay. Contrary to analyzes in terms of the value chain which sometimes completely exclude it, the tourist on the contrary plays a decisive role in relation to

the other actors who offer but do not have. Consequently, the tourist must be integrated into the cluster.

*The dynamics of intermediated proximities*

However, the dynamics of co-production collide all the more with the extent and diversity of the terrestrial space as the tourist ecumene, inhabited by tourists, is today larger than the ecumene of permanent inhabitants. The tourist is therefore confronted with the greatest possible diversity since the means of transport make it possible to travel the world.

The model of Cuvelier (1998) makes it possible to understand the diversity of the “worlds” of tourism by considering two continuums: the complexity/simplicity of the services offered by the intermediaries and the autonomy/heteronomy of their implementation. The four worlds of tourism thus highlighted reflect different levels in the intensity of the co-production of the tourist experience: autonomy refers to the figure of a tourist who is very active in co-creation and co-production, while the complexity refers to the variety of services implemented and their articulation in a tailor-made tourist experience.

The intermediaries constitute a whole which includes tour operators, incoming agencies as well as the inhabitants of the territory of destination, even the tourists themselves through the abundant stories which teem with recommendations. Proximity-generating intermediation ranges from the dissemination of information to the federation of means, even to the management of the tourist project.

Intermediaries then have the task of reinventing the reality of the host society to make it accessible and compatible with the expectations of the tourist. In addition to the offer of tangible facilities allowing access to the premises (ad hoc management of the back office, behind the scenes), their function is then to create a staging of the host society, a dramatization of the forefront of service. In this sense, they facilitate the interpretation of places by tourists. For their part, professional and institutional players in tourism are seeking to iron out the difficulties that tourists will face. The infrastructures (international hotels and hotel-clubs, means of transport, restaurants) are thus spatial technologies offered so that otherness remains bearable.

On the contrary, in a place that is more familiar to them, because they frequent it regularly or because the otherness is less marked, tourists are able to activate resources, build and produce their own tourist experience. The intensity of co-production is then greater. This proximity tourism is also the majority fact in all countries. Thus, most tourists are in a situation of relative familiarity, which explains the relatively low use of all-inclusive tours, and the situations in which co-production is affirmed are the most frequent.

The “clusterization” of tourist territories cannot therefore avoid questioning the quality of intermediation and the intermediaries who activate proximities as well as their evolution over time. It is therefore relevant, for example, to question the association of major tour operators or hotel groups, essential intermediaries of distant tourist destinations, or that of actors in the local associative life of destinations. It also seems necessary to examine the relative strength and influence of these intermediaries over time, as the tourist location develops. The dynamics of tourist proximities seem to have to be based on a supralocal and multiscale organization.

### **The embedding of tourism in a socio-economic context**

Economic actors are embedded in social and institutional contexts. This is the case for the practice of tourism and the relationships established with the other actors: they are embedded in an environment within which the actors are temporarily co-present and which influences the course of the co-production process. The analysis of tourism clusters as a productive organization thus induces the consideration of different contexts that influence its efficiency.

From the typology of tourist places, it seems possible to us to sketch a table that accounts for the parameters that influence the development of co-presence and therefore the dynamics of tourism clusters. Then in these places different market configurations prevail. Finally, the spatial limits and the extent of the cluster are not given a priori and only by professional and institutional actors but are co-constructed with tourists.

Thus, there are two categories of places: those created by and for tourism and those that have historically been occupied. In the first, there was almost nothing before the eruption of tourism which will urbanize the place. Consequently, tourism stakeholders are in a position to impose their development strategies. This first category is subdivided into counter or station. The first subtype is characterized by closure, materialized by a more or less assertive enclosure, which isolates, vis-à-vis the outside, a space over which is exercised the control of a major actor, master of the game. This is how the hotel-club works. Conversely, the station is distinguished by the openness and by the in situ competition between companies with the more or less marked intervention of a public actor. However, as tourism is the economic engine of the place, the social capital is based on tourism. Local power is often controlled or influenced by tourist interests. The inhabitants, for the most part employed in companies in the sector, are committed to the interests of tourism. Historically, the establishment of the tourist area on the fringes of the territory induces a shift in centrality. Elsewhere, the process led to the secession of the tourist district erected into a municipality in its own right. The construction of organized proximity is facilitated by excluding or relativizing the power of non-tourist actors.

The second category, tourist towns, is distinguished by the diversity of functions. Tourism has indeed invested in places steeped in history where the administrative and economic functions are plural. Tourism stakeholders enter into competition for the sharing of resources with other interests. The economic actors of the other functions can oppose it. Public authorities are not immediately won over to tourism. The very inventory of actors poses a problem between those who are located at the heart of the tourist system and who identify with it, and others, more on the margins, or who claim other affiliations such as the cultural or sporting sphere without forgetting the synergies with the world of business events. The construction of organized proximities therefore comes up against more obstacles.

The concept of cluster, to be relevant in the field of tourism, must therefore, in our opinion, be distorted, also because of the social, economic and spatial contexts in which it is inserted.

### **Proposals for an adaptation of the cluster concept to the world of tourism**

We propose here to enrich the tourism cluster models proposed by the literature by taking into consideration the criticisms that have been made. Our model then questions the governance of these territories.

*For a cluster approach through co-productive dynamics*

In shaping their model of tourism destination competitiveness, Crouch et al. (1999) are based on Porter's diamond model that postulates that the competitiveness of a given industry depends on conditions linked to the business environment, namely factor endowments, demand conditions, related and supporting industries, and firm strategies, intensity and structure of competition. From this diamond was born the concept of cluster.

We consider the tourist destination not as a closed space but as a space linked to the world. The tourist destination only exists because it is a place confronted with the world and this confrontation with the world is made by and for tourists. We have also shown that this place is so open that its borders are defined by this confrontation with the world and the representations of tourists, which leads us to take into consideration local actors but also non-local actors of the place. We consider that the conditions of the factors are indeed local and consist of resources and attractions – natural or created – linked to the place, but co-invented by tourists, while the related activities and support, as well as the conditions of demand escape a strictly local vision.

We show the importance of intermediation players but also that of residents. Finally, this generic proposition must be completed to account for the singularity of the dynamics at work depending on whether the tourists are very far from the destination and whether the otherness is strong or, on the contrary, whether the tourists are in close proximity to the destination. In the first case, the socio-economic networks, which support the dynamics of the cluster, bring together non-local actors and numerous intermediaries. The latter, even if they are companies producing a service, at the same time express the demand and create a link between tourists and local actors. In the second case, tourists are at the heart of cluster dynamics, they make the link between the place and the world. They activate the services to combine them into a tourist stay, thereby participating in the local production of tourist stays.

*Cluster governance*

Our model directly questions the governance of tourist destinations. The cohesion of actor networking systems is only effective if all stakeholders are involved in their governance, whether these stakeholders are local public actors or international private companies. We also show that the governance of tourist destinations must go beyond the governance of territorialized networks, that is to say networks located geographically, because the networks concerned here have the peculiarity of associating non-local actors who participate closely in the local creation of resources and wealth.

If it is risky to commit to recommendations in terms of governance, our model makes it possible to raise the question of the stakeholders. The actors who affect or are affected by the activity of the tourism cluster constitute a large and complex mosaic. Our model shows that these stakeholders go far beyond the local framework. This is the case for businesses but also for all stakeholders in the cluster, including residents and tourists. The co-productive singularity of tourism leads us to question the association of tourists with the governance of tourist destinations. As temporary inhabitants, tourists are difficult to mobilize. However, we now have reliable and powerful technologies that allow one form or another of participation. It is important here to question the use that is made of information and communication technologies to inform tourists, animate networks, develop their skills or a common culture and associate them with the local dynamics of the cluster. Residents, permanent inhabitants, are also stakeholders in the cluster, even if they are not directly concerned by

tourism. In tourist cities, they may even be hostile to tourism, but they are nonetheless stakeholders impacted by tourism. The central actor who carried out the station project, whether public or private, will have a major role in governance which will be more of a focal type. Territorial governance, under the leadership of a public or semi-public actor, will make it possible to coordinate the actors of a tourist city. The governance of the cluster must reflect its socio-economic structure.

## **Conclusion**

We have shown in this article that the concept of cluster was probably too narrow and should at least be enriched to account for the dynamics of tourist territories. Our model insists on the fact that the co-productive dimension of tourism involves integrating the tourist within the cluster. Questioning the proximities at work and the phenomena of intermediation, it shows that a territorial dynamic requires the association of actors who are not necessarily co-present and whose cultures (professional, societal, etc.) are not homogeneous. Finally, we study the heterogeneity of socio-economic and spatial configurations that deserve to be taken into consideration and question us on the bases of the cohesion of the devices.

These first works find their limit in their conceptual character. They call a series of tourism cluster case studies. They open up several research perspectives on the modalities of association of these key actors, temporarily present in the territory, but rarely associated, that are tourists. In this regard, information technologies offer tools favoring the construction of organizational proximity provided, of course, that spaces are open to them. More generally, the governance of destinations is questioned by our work, as well as the trajectories of tourist territories. Destinations change, innovate, renew their organizations and their resources, and this, under the impetus of choice of associated actors, in processes of sorting and of error. The capacity for evolution is linked to the influence of these stakeholders and the games of conflict, cooperation and negotiation around the sharing of territories which drive them.

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## A NEW APPROACH TO SCIENCE ASSESSMENT: USING THE TIMMY INDEX

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**Abstract:** The article analyzes the issue of evaluating scientific research. Evaluation should recognize both quantitative and qualitative contributions, taking into account the objectives, discipline and institutional context. Capitalizing on international experience, primarily European, should be part of the evolution of the system in the Republic of Moldova. All knowledgeable stakeholders should be involved in the transition to new research evaluation systems. In this sense, the use of an indicator for the evaluation of national scientific organizations is proposed.

**Keywords:** evaluation, research, metrics, Open science.

JEL classification: I23, I25, I28.

### Introduction

Evaluation has become an essential part of the research process, essential for measuring policy objectives, making decisions on programme budgets, project selection, funding awards and career development. Since the 2008 financial crisis, economic constraints on public funding have intensified, leading to increased policy demands for the scientific community to measure its wider impact to demonstrate its value to society.

At the same time, there is a growing consensus that the current evaluation system needs to be rethought for an era of Open Science, big data, digitisation and the demand for interdisciplinary methods and skills. There are calls to improve the use of evaluation indicators, to better balance quantitative and qualitative factors, and to broaden the scope of evaluation to reflect the full diversity of inputs, outputs and practices in 21st century science (European Commission, 2016; OECD, 2015).

The aim in the world is to establish a more appropriate set of indicators and approaches to lead to a more equitable and nuanced system. In this context, the European Commission has carried out a consultation and 'co-creation' exercise with research and innovation stakeholders to define principles and boundary conditions for new, improved evaluation systems. In June 2022, the process was endorsed by EU science ministers, leading to an action plan setting out the main lines along which the evolution of evaluation systems should take place (European Commission, 2017; FOSTER).

The main objective of the reform is to move away from the inappropriate use of journal- and publication-based metrics in the evaluation of research, towards a combination of metrics and narratives that reflect the value of research outputs and (researchers' activities) in a more nuanced way. At the same time, the challenge is to benefit from the objectivity of accountable metrics, while

embracing the variety of research outputs and tailoring research evaluation to the objectives of that evaluation.

Inevitably, the key question now becomes: what next in terms of implementation? Can the shift from rhetoric to action be driven by genuine innovation and experimentation, towards an agreed set of defined and pragmatic outcomes? How can we better reach beyond academia to engage the whole research and innovation community? And as Europe embarks on its own transformation, is there really an appetite for change and a willingness to align approaches in the Republic of Moldova?

### **Research methodology**

The study included an analysis of relevant literature in the field (studies, reports, public debates), which was synthesised to establish the main problems in the evaluation of scientific research in Europe and the Republic of Moldova. Following the identification of the main shortcomings of the existing indicators in science evaluation, a composite index was developed, capturing the different impacts of scientific research and experimental development.

As empirical sources were used statistical data, openly available from various institutions in the Republic of Moldova, the National Bureau of Statistics, the Academy of Sciences of Moldova, the Ministry of Education and Research and others.

### **Results and discussions**

#### **What is the best way to evaluate science?**

In the Republic of Moldova, as in Europe as a whole, science needs to move decisively to a point where evaluation is based on a broader view of researchers' achievements, one that looks beyond the number of publications and the prestige of journals. This is the subject of many researchers' studies and the concern of policy-makers.

Mattias Björnmalm, secretary-general at the European Schools Conference for Advanced Engineering Research and Education, argues that in the current system, researchers have to divide their time between "playing the game" by publishing in appropriate journals and working on real achievements (Bazley, 2010). Stephen Curry, chair of the Declaration on Research Assessment (DORA), calls for less emphasis on the number of publications in prestigious journals (Elsevier, 2019).

Arguing that the academic community does not represent the society it claims to serve, Professor Curry highlights the interconnectedness between the need for assessment reform and addressing gender and racial inequalities. "Another factor, I think, that I see both in the UK and in Europe and elsewhere is the links between research evaluation and efforts to address inequalities in academia, which has been given increasing attention" (American Society for Cell Biology, 2013; Hicks et al., 2015).

Regional inequalities also persist as access to research funding varies from country to country. Oleksandr Berezko, President of the European Council of Doctoral Students and Young Researchers, noted that the implementation of open science requires resources and funding, and this creates gaps between European countries. For example, while France is implementing its second open science

plan, in Ukraine the first plan has just been adopted. "If the reform is not implemented properly, it will increase the inequalities that already exist," he warns, adding that co-creation should be at the heart of the reform (Bonn and Pinxten, 2021).

Several authors stress that serving society is among the main goals of science, and the contribution of research should have practical implications. Thomas Palstra of Twente Research University mentions the importance of interacting with citizens to provide solutions in areas that serve them, such as healthcare or disaster relief management.

Speaking of practical ideas on how to support multi-stakeholder interaction, Michael Arentoft, head of the Open Science Unit in the European Commission's research directorate, calls on the private sector to participate in workshops and seminars on research evaluation. He agrees that CoARA is "a learning platform" to equip researchers and research organisations with the right tools (Campbell et al., 2010).

### Timmy Index - a relevant and challenging approach

Focusing in the Republic of Moldova only on the use of quantitative indicators (especially when the score awarded does not take into account the effort made to obtain different types of publications), without a qualitative assessment leads to the rush for publications, which is reflected in such phenomena as low quality publications, segmentation of results obtained in several publications, avoidance of fundamental, in-depth research, publications in pseudo-scientific (predatory) editions, with a reduction in the overall level of quality of scientific research. In view of these findings, new approaches are needed, capturing scientific performance in its totality. To this end, we have developed a new index - the Timmy index. It is named after my dog, who is young, vigorous and hard-boned, measuring everything in bones. The Timmy index shows how many thousands of kilograms of bones can be bought from the income (remuneration) earned in a year by a person working in research. We applied it to the heads of research and innovation organisations, since the data for them are public (figure 1).

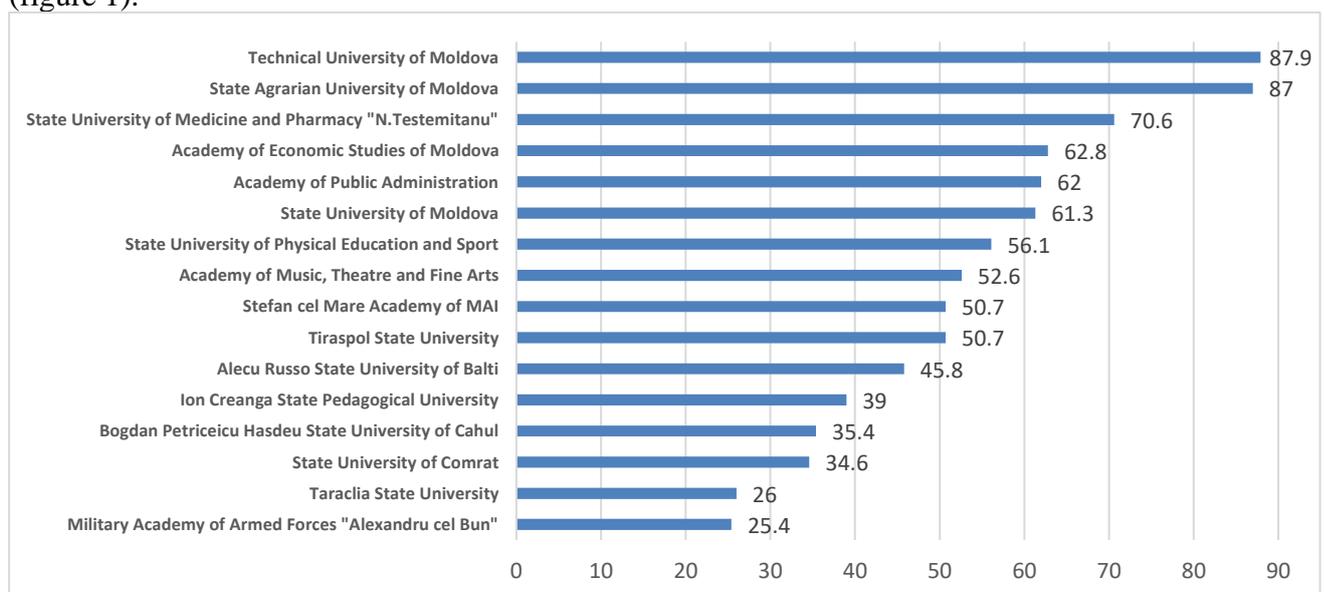


Figure 1. Universities in the Republic of Moldova according to the Timmy Index

Source: developed by the author using ASM and ANI data

In our opinion, it shows very well the scientific performance of the leaders of the institutions and the institutions themselves. In a knowledge society it is obvious that the more knowledge an organisation produces, the higher the remuneration of its leaders by the state.

In this way, there is no need to use complex and numerous indicators, which have many shortcomings. It is known, for example, that bibliometric evaluation has many shortcomings: it cannot capture the impact of research outside the academic community, in economics or in education; not all valuable publications are present in databases (e.g. monographs and many articles in languages other than English in the humanities); it is difficult to use bibliometric indicators to compare researchers between different fields, as there are significant variations in frequency and volume of citations between disciplines, etc. In this way, using only the Timmy index, we can in one shot solve multiple problems - we are once again convinced that everything simple is brilliant.

### **Conclusions**

Our study showed that evaluation reform should rebalance the use of metrics, as the current system relies too heavily on publications from prestigious journals. However, the process should be an evolution rather than a complete replacement of the existing system with a new one.

There is no single perfect system, and respect for diversity is crucial. Evaluation should recognise both quantitative and qualitative contributions, taking into account objectives, discipline and institutional context.

Harnessing international, primarily European, experience should be part of the evolution of the system in Moldova. The transition towards a properly balanced use of qualitative and quantitative inputs is global and many countries are already taking important steps in this direction.

The implementation of any new framework needs to be measured and transparent, giving both early-career researchers and their senior colleagues sufficient time to adapt. Evaluation should encourage the achievement of research objectives rather than create challenges.

All knowledgeable stakeholders should be involved in the transition to the new research evaluation systems. The interests of government funders should be taken into account. Input from private companies employing researchers, journals, publishers, and review experts should also be considered. In general, stakeholders should respect the diversity of contributions and results without compromising quality.

In this sense, the use of the Timmy index meets all the requirements stipulated above and we warmly and confidently recommend it for use in the Republic of Moldova.

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## THE IMPACT OF COGNITIVE-BEHAVIORAL MANAGERIAL COACHING ON HUMAN RESOURCE PERFORMANCE AND EFFICIENCY IN ENTERPRISES

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**Abstract:** Today, companies are under a constantly competitive changing, and globalized market environment. This situation calls for further research into the processes and tools that prepare managers to successfully address these challenges. They must fulfill a dual role: that of factors in making strategic decisions and possess the "soft" skills necessary to manage human resources effectively. The present research analyzes the influence of managerial coaching from a cognitive-behavioral perspective on the company's performance and effectiveness, demonstrating how CBC processes are fundamental tools for all decision-makers in the company. The study considered over the implementation of structured coaching activity is focused on objectives at the management board level, and then is focused on the management teams of the operational sectors, on several transversal teams and several departments and strategic actors during the year 2022 in 5 companies. Here, each activity is being monitored through different research tools. In the second phase, a survey was carried out among companies that implemented CB managerial coaching services to assess the impact of the customized coaching intervention. The analysis of the results reveals a rise in scores pertaining to various facets of leadership behavior, which aligns with the dimensions assessed by the multifactorial leadership questionnaire. Furthermore, after completing the coaching intervention that focused on cognitive-behavioral techniques, there was a noticeable enhancement in perceived effectiveness as an indicator of performance.

**Keywords:** managerial coaching, human resources efficiency

JEL Classification: M12, M54

### Introduction

Managerial coaching entails the utilization of cognitive-behavioral strategies by managers to communicate and engage effectively with their employees. The objective is to offer guidance, support, feedback, and encouragement in order to enhance employees' skills and abilities while also stimulating their intelligence and unlocking their full potential.

Previous research has suggested that the behaviors associated with managerial coaching have a significant impact on various outcomes for subordinates. (Zhao & Liu, 2020; Kalkavan & Katrinli, 2014; Kao et al., 2020). Furthermore, it has been found to positively affect performance among subordinates (Zúñiga-Collazos *et al.*, 2019), enhance workplace well-being, and encourage innovation behavior in corporate environments. (Szabó *et al.*, 2019, Zuberbühler *et al.*, 2020, Dai, 2019).

However, the existing empirical research in this area is limited. Hence, this research seeks to examine the engagement and effectiveness of employees in organizations through the implementation of a CBC intervention for managers.

### **Theoretical background**

#### Cognitive-Behavioral Coaching (CBC)

CBC is rooted in the principles of cognitive-behavioral therapy, which focuses on how thoughts, emotions, and behaviors influence human experiences and actions. (Zhao & Liu, 2020). This coaching approach aims to help individuals identify and modify their negative or unhelpful thought patterns, develop more adaptive behaviors, and ultimately achieve personal and professional growth. Previous studies have demonstrated that implementing a CBC program can result in enhancements in different dimensions of leadership behavior, as evaluated by the multifactorial leadership questionnaire. (Zuberbühler *et al.*, 2020, Dai, 2019)

This coaching approach strives to assist individuals in recognizing and adjusting their negative or unproductive thought patterns, cultivating more adaptive behaviors, and ultimately attaining personal and professional growth. Prior studies have demonstrated that CBC can result in enhancements across multiple facets of leadership behavior, as evaluated by comprehensive leadership assessments. (Cruz & Kim, 2023).

Indeed, the concept of managerial coaching introduces a fresh perspective on the role of managers or leaders. A coaching leadership approach aims to achieve a harmony between direct guidance and collaborative participation when interacting with subordinates. According to Ellinger *et al.*'s study (Ellinger & Kim, 2014), the coaching approach emerged as an alternative to traditional command-and-control managerial relationships. In contrast, managerial coaching focuses on fostering a work environment where supervisors provide support for their subordinates' professional growth and adaptation to new circumstances by offering active guidance, feedback, and assistance. (Li *et al.*, 2022, Dai, 2019, Zhao & Liu, 2020, McCarthy & Milner, 2019)

Managerial coaching involves a collaborative process where leaders provide valuable feedback to their subordinates, offer guidance on task completion, and support them in difficult situations. (Li *et al.*, 2022, Zúñiga-Collazos *et al.*, 2019, Kao *et al.*, 2020). Additionally, it creates opportunities for personal development (Grabara J. *et al.* 2015).

Despite the challenges in its implementation, CBC intervention have been shown to significantly enhance managerial behaviors and facilitate subordinate development, (Ellinger & Kim, 2014) reflecting the potential of coaching as an effective method for professional growth within an organization. Based on the findings, it can be concluded that implementing a CBC intervention has the potential to enhance leadership behaviors. This includes developing skills in managerial coaching, assertive communication, and motivating subordinates. The researchers assessed the improvements

in leadership skills using a multifactorial leadership questionnaire. (Zuberbühler et al., 2020). Additionally, they discovered that after completing the coaching intervention, participants reported increased effectiveness levels, which can be seen as a measure of performance. (Zúñiga-Collazos *et al.*, 2019, Dahling *et al.*, 2015, Kalkavan & Katrinli, 2014). The analysis of this coaching program found that it significantly increased scores in dimensions related to transformational and transactional leadership behaviors, (Rațiu *et al.*, 2016) which are crucial components of effective managerial coaching, highlighting the potential benefits of such developmental interventions for managers within organizations.

The findings indicate that implementing a coaching intervention focused on cognitive-behavioral techniques can lead to improved managerial behaviors and greater effectiveness among managers. It supports the growth and development of subordinates, improves leadership skills, and enhances performance in organizations.

#### Enhancing Efficiency through (CBC)

CBC can have a substantial impact on improving the effectiveness of personnel in organizations. (Ellinger & Kim, 2014). By providing individuals with the necessary guidance, feedback, and support, CBC can help employees improve their skills, knowledge, and performance in their respective roles. (Zúñiga-Collazos *et al.*, 2019, McCarthy & Milner, 2019) The process of CBC promotes a harmonious work environment where feedback is used constructively and opportunities for improvement are continuously established, thereby fostering individual development and boosting overall organizational performance.

The framework of CBC aims to enhance managerial coaching abilities, cultivate assertive communication skills, and foster motivation among subordinates. (Cruz & Kim, 2023). By implementing this coaching methodology, managers are able to effectively assist their subordinates in enhancing their professional performance and adapting to new circumstances. This includes offering constructive feedback, providing recommendations for task completion, and delivering support during challenging situations.

The study suggests that CBC can be an effective method for developing managerial skills and enhancing organizational performance (Szabó *et al.*, 2019, Dahling *et al.*, 2015, Kim & Kuo, 2015, Kalkavan & Katrinli, 2014). The research employed a pre-posttest methodology to assess the impact of a CBC initiative on mid-level managers in charge of overseeing production teams. (Zúñiga-Collazos *et al.*, 2019) The intervention aimed to develop, assertive communication skills, and motivate subordinates, behaviors related to the transformational leadership style. The results showed that the coaching intervention led to an increase in the scores of management behavior dimensions quantified by the multifactorial leadership questionnaire. Furthermore, the successful completion of the coaching intervention led to a notable enhancement in managers' perceived effectiveness, serving as an indicator of their performance. (Ellinger & Kim, 2014, Kao *et al.*, 2020)

These findings indicate that coaching intervention focused on cognitive-behavioral techniques demonstrate significant potential for enhancing managerial capabilities, thus leading to improved organizational outcomes through increased effectiveness, communication, and employee engagement.

#### Enhancing Efficiency through (CBC)

Managerial coaching is a leadership style that prioritizes the creation of a nurturing and empowering workplace atmosphere. In this approach, managers actively guide and support their subordinates to enhance their professional performance, adaptability to new situations, and overall growth. This interaction involves constructive feedback, task completion suggestions, assistance during challenging circumstances, and the provision of opportunities for development. (Rațiu *et al.*, 2016). Despite its numerous benefits for both employees and organizational performance, effectively assimilating managerial coaching skills into real interactions with subordinates has proven challenging. The results indicate that the implementation of CBC can improve managerial behaviors that support subordinate development, as demonstrated by scales measuring transformational and transactional leadership. (Dai, 2019, Rosha & Lăce, 2018) Furthermore, the research emphasizes the potential of coaching as a means of professional development for cultivating skilled managers and leaders. It also underscores its role in comprehending and effectively managing employee attitudes and behaviors within organizations (Ellinger & Kim, 2014, Cruz & Kim, 2023, Rosha & Lăce, 2018) Managerial coaching is a leadership style that fosters a supportive work environment wherein supervisors actively guide, provide feedback, and aid their subordinates in enhancing their professional performance, especially during challenging situations.

Utilizing managerial coaching skills and implementing them in actual interactions with subordinates can pose difficulties, despite the positive effects it has on employee performance, well-being, turnover intentions, and innovation behavior. (Rațiu *et al.*, 2016, Zúñiga-Collazos *et al.*, 2019).

Recent empirical research employing meta-analysis has demonstrated that the utilization of transformational leadership models is associated with favorable outcomes such as increased job satisfaction and commitment among subordinates. (Cruz & Kim, 2023). The impact of this leadership model fluctuates depending on the form of performance, categorized as either contextual performance or task performance. The implementation of coaching as a leadership approach can have transformative effects on managers and leaders. It not only enhances their ability to support and develop their employees but also enables them to effectively manage employee attitudes and behaviors within organizations. (Kao *et al.*, 2020, Zúñiga-Collazos *et al.*, 2019). The purpose of this research was to examine the impact of a CBC intervention on managerial behaviors among mid-level managers.

## **Results**

Given the tailored design of the CBC intervention to meet specific developmental needs and contextual characteristics within the organization, it is expected that the results will effectively demonstrate behavioral changes at leadership levels.

The objective of the CBC intervention is to examine the impact on mid-level managers.

The sample consists of 48 individuals in mid-level management, with a range of ages from 25 to 52 years. ( $M = 35.21$ ;  $SD = 5.97$ ), 77.09% males and 22.91% females.

**Procedure:** The CBC intervention was conducted over a period of 12 months, involving a total of 10 coaching sessions for each participant.

A CBC intervention was administered to the group, primarily aimed at honing their managerial skills, improving assertive communication abilities, and enhancing the motivation of subordinates.

The program consisted of three stages:

*Pre-assessment:* To evaluate their leadership behavior dimensions, participants underwent a pre-test where the Multifactor Leadership Questionnaire was utilized. MLQ has 45 elements (12 clusters) that identify and measure leadership behaviors and managerial effectiveness.

*Coaching Intervention* The second stage commenced with a group coaching session where the fundamentals were discussed and participants were introduced to CBC techniques. These techniques focused on identifying and challenging negative thought patterns, setting goals, and implementing behavior change strategies.

An instrument utilized in this stage was an Observation Sheet, which facilitated an in-depth exploration of managers' situations and thinking through the proposed performance indicators. Participants engaged in a series of coaching individual sessions, focusing on cognitive and behavioral strategies to improve their leadership skills. This stage included multiple discussions, role plays, and exercises aimed at building confidence, improving communication skills and investigating various leadership styles that can facilitate a conducive workplace environment for subordinates.

*Post-Assessment:* Following the conclusion of the coaching intervention, participants underwent a post-assessment using the MLQ to evaluate any modifications in their leadership behaviors and managerial effectiveness that occurred as a result of the intervention.

## **Method**

The findings revealed a noteworthy enhancement in the participants' scores on inspirational motivation ( $t = 9.63$ ,  $p < .001$ ), individual consideration ( $t = 11.82$ ,  $p < .001$ ), and contingent reward

( $t = 10.86, p < .001$ ). Our findings provide supporting evidence for increasing managerial effectiveness by implementing such a coaching intervention. Furthermore, the participants reported higher levels of perceived effectiveness ( $t = 8.21, p < .001$ ), indicating that they felt more confident and competent in their leadership roles and responsibilities within the organization before-coaching intervention. In summary, the findings of this research underscore the efficacy of CB managerial coaching in enhancing leadership behaviors and managerial performance.

Observation Sheet data demonstrated measurable behavioral modifications in managers. For instance, the frequency of effective communication with team members showed a noted improvement. Prior to the program, only 45% of managers were regularly communicating clearly with their subordinates. Post-program, this figure increased to 78%, indicating a significant positive behavioral change.

In addition, clearly articulating expectations for subordinates increased. Pre-program data revealed that only 38% of managers were routinely setting clear expectations for their teams. This percentage rose to 72% post-program, demonstrating another area of substantial growth. The overall improvement in these areas indicates that the behavioral changes have positively influenced the work environment. It is worth mentioning, though, that more extensive empirical research with larger participant groups would offer a clearer understanding of the potential effects of a coaching intervention.

**Table 1 Variables assessed before the intervention**

Variables	Average	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. bIA	3.13	0.540	1											
2. bIB	3.33	0.340	0.547	1										
3. bIM	3.17	0.590	0.168	0.035	1									
4. bIS	3.20	0.460	0.094	0.545	0.302	1								
5. bIC	2.82	0.310	0.025	0.270	0.216	0.388	1							
6. bCR	3.40	0.400	0.539	0.750	0.213	0.376	0.254	1						
7. bMBEA	3.21	0.425	0.254	0.043	0.062	0.721	0.462	0.711	1					
8. bMBEP	1.33	0.430	-0.201	-0.573	0.565	-0.140	-0.186	-0.643	-0.592	1				
9. bLF	0.49	0.296	0.111	-0.542	0.385	0.101	-0.079	-0.271	-0.206	0.653	1			
10. bEE	3.32	0.665	0.574	0.885	0.021	0.253	0.140	0.565	0.495	-0.303	-0.682	1		
11. bEFF	3.33	0.480	0.755	0.616	0.176	0.087	-0.089	0.641	0.111	-0.210	-0.511	0.782	1	
12. bSAT	3.35	0.450	0.739	0.608	0.298	0.268	0.106	0.515	0.302	0.422	0.326	0.834*	0.874	1

**Source:** own work

The results revealed statistically significant improvements in the participants self-rated managerial effectiveness after completion of the CBC intervention.

Following the CBC intervention, notable changes were observed in the post-intervention scores. Specifically, there was an increase in transformational leadership styles, with the largest increases seen in Individual Consideration (bIC to aIC: 2.82 to 3.04) and Contingent Reward (bCR to aCR: 3.40 to 3.66) dimensions, as shown in the data. (tab.no.1, tab.no.2) The satisfaction with leadership (aSAT) also improved significantly following the coaching intervention (from 3.35 in bSAT to 3.48 in aSAT). There seems to be a trend towards a decrease in active management behaviors, illustrated by the change from bMBEA 3.21 to aMBEA 2.83. However, the statistical analysis does not confirm this observation as statistically significant. When considering self-assessed effectiveness (bEFF to

aEFF: 3.33 to 3.50), results suggested that coaching had a positive effect on perceived leadership effectiveness. (tab.no.1, tab.no.2).

**Table 2 Variables assessed after the intervention**

Variables	Average	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. aIA	3.31	0.532	1											
2. aIB	3.46	0.436	0.554	1										
3. aIM	3.50	0.400	0.731	0.826	1									
4. aIS	3.36	0.451	0.800	0.627	0.839	1								
5. aIC	3.04	0.187	0.263	0.117	0.136	0.000	1							
6. aCR	3.65	0.366	0.554	0.625	0.839	0.739	0.136	1						
7. aMBEA	2.83	0.931	0.121	0.208	0.225	0.569	0.248	0.095	1					
8. aMBEP	1.46	0.590	-0.467	-0.570	-0.759	-0.738	-0.081	-0.797	-0.324	1				
9. atLF	0.85	0.843	-0.840	-0.676	-0.816	-0.844	0.178	-0.651	-0.204	0.764	1			
10. aEE	3.55	0.549	0.775	0.795	0.938	0.693	0.134	0.518	0.148	-0.588	-0.778	1		
11. aEFF	3.51	0.541	0.836	0.746	0.873	0.689	0.192	0.534	0.102	-0.515	-0.694	0.982	1	
12. aSAT	3.48	0.443	0.869	0.704	0.947	0.886	0.125	0.660	0.285	-0.658	-0.827	0.955	0.952	1

**Source:** own work

In summary, most of the data changes point towards a broad improvement in leadership skills and behaviors following the coaching intervention. The results provide insights into the efficacy of the CBC intervention, demonstrating positive effects on both transformational leadership behaviors and perceived leadership effectiveness.

## Discussions

The results of the study demonstrate the effectiveness of CBC in improving leadership behaviors and managerial effectiveness.

These findings underscore the potential of CBC to foster transformational leadership behaviors and enhance managerial effectiveness, which may lead to increased performance and better capitalization on employees' potential to drive organizational success. The research asserts that implementing CBC programs may contribute substantially to encouraging transformational leadership behaviors, thereby heightening managerial efficiency and potentially leading to improved performance and better utilization of employees' potential. However, the study also indicates areas for improvement such as proactive managerial behaviors that didn't show any statistically significant increase post intervention. It is evident that CBC has the potential to develop managerial skills, improve assertive communication, and enhance the motivation of subordinates, especially as an increase in leadership behaviors was found in the treatment group post intervention, suggesting that such programs effectively foster transformational leadership behaviors.

In conclusion, the study supports the effectiveness of CBC in improving leadership behaviors and perceived managerial effectiveness.

Our research aimed to evaluate the efficacy of a customized CBC intervention for managers, focusing on enhancing their leadership skills. We examined transformational and transactional leadership behaviors, as well as overall effectiveness and satisfaction with their leadership among participants.

The results of our analysis using the generated data indicate that the coaching intervention had a noticeable impact on transformational leadership behaviors, specifically in the areas of Individual Consideration and Contingent Reward, which both saw significant increases. These findings align with the purpose of the intervention, aiming to enrich the managers' range of leadership behaviors and increase their adaptability to varying contexts. The rise in the IC dimension, specifically, is noteworthy as it emphasizes individualized support and encouragement of creativity and innovation within a team. This aligns well with contemporary leadership theory that values leaders who can promote creativity, challenge the status quo, and adapt to change. The shift in the CR dimension suggests that individuals may have become more adept at recognizing and rewarding performance. Notably, we have not observed a significant decrease in active management behaviors, it suggests that the coaching intervention does not necessarily reduce the managers' focus on problem prevention and correction but may help them complement these methods with transformational strategies.

Participants' self-assessed leadership effectiveness and satisfaction improved evidently after the intervention. This heightened self-perception of efficiency is bolstering as it enhances not only the leaders' confidence in their abilities but could also potentially influence their teams' perceptions of their leadership skills, a likely boost to team morale and performance.

### **Conclusions**

The positive shifts in transformational leadership behaviors and improved self-perception of efficacy following a CBC intervention, as suggested by this study's hypothetical model, underscore the potential value of such interventions in enhancing managerial leadership skills and adaptability.

Further empirical research is needed to validate these findings and explore the specific mechanisms through which CBC can promote effective adoption of managerial behaviors and contribute to organizational performance. It should be noted that the adoption of transformational leadership skills, as well as a decrease in emotional exhaustion, is significantly fostered when managerial training closely aligns with real-life contexts, underlining the importance of designing coaching intervention that are tailored to the specific needs and challenges faced by managers in their organizational roles. Moreover, individual coaching with a theoretical foundation can yield positive outcomes in cultivating desired managerial behaviors including transformational leadership, reinforcing the importance of leveraging such strategies in organizational contexts. The findings of this study suggest that CB managerial coaching can have a significant impact on leadership behavior and perceived effectiveness. The coaching program implemented in this study successfully improved leadership behavior dimensions, as assessed by the multifactor leadership questionnaire. The findings indicate that CB managerial coaching has the potential to enhance performance and effectiveness within an organization's human resources department. Additionally, post-intervention results revealed a significant increase in managers' ability to empower their teams, which aligns with previous research demonstrating positive effects of individualized coaching on the adoption of specific managerial behaviors.

The implementation of the coaching intervention in this study led to enhanced dimensions of leadership behavior, as evidenced by the scores obtained from the multifactor leadership questionnaire. This was accomplished by enhancing the skills of managerial coaching, assertive communication, and motivating subordinates.

Additionally, the study emphasizes the significance of aligning coaching intervention with real-life contexts. This approach minimizes the cognitive effort required for managers to assimilate and transfer the knowledge gained during training to their day-to-day professional interactions. When coaching interventions mirror the challenges and complexities faced by managers in their roles, they are more likely to yield successful outcomes. Furthermore, the study underscores the value of incorporating cognitive-behavioral techniques into managerial coaching intervention. The data generated for this exercise has suggested promising evidence that CBC intervention could act as instrumental mechanisms in the enhancement of leadership skills. The increases in transformational leadership behaviors, specifically in Individual Consideration and Contingent Reward areas, suggest the role such coaching intervention could play in fostering leadership that is more responsive and rewarding towards team members.

Equally significant is the improvement in self-perceived leadership effectiveness and satisfaction, which can have potential cascading benefits on overall team dynamics and performance.

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## **SHIFTS AND TRENDS IN THE FIELD OF COMPARATIVE MANAGEMENT**

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**Abstract:** The purpose of my study on comparative management is to analyse and understand the differences and similarities in management practices, strategies, organizational culture and other aspects related to management in different countries, regions or cultures. This type of study aims to provide a broader perspective on how organizations operate in a global context, identify patterns and trends in management, and provide knowledge that can assist in decision-making in a diverse environment.

An important novelty is the adaptation of comparative management to the increasingly common virtual work environment nowadays. How to coordinate and manage teams located in different geographical locations, considering cultural aspects and differences in working styles, becomes a crucial aspect.

Major events, such as pandemic, have had a significant impact on the global organization’s activity. How strategies, personnel policy and operations are adapted to such changes becomes an important research topic in this field.

How leadership styles are perceived and applied in different cultures can vary significantly. This can influence how decisions are made, communicated and teams motivated in different regions. Overall, the evolution of leadership styles may reflect changes in society, the business environment and management theories. Today, leadership styles are constantly evolving, with an emphasis on adaptability, diversity and team development. The research conducted in Sibiu's companies emphasized the importance of agile and adaptable leadership styles, especially for small businesses. The capacity to swiftly adjust to changes and demonstrate flexibility can significantly impact the outcome, distinguishing between accomplishments and shortcomings.

The main benefit of the study is to provide a broader perspective on how organizations adapt to cultural, economic and social diversity in the global environment and to provide valuable knowledge for improving the organizational performance.

**Keywords:** management styles, leadership, corporate culture

JEL Classification: M41, M21, O12

### **Introduction**

Comparative management studies differences and similarities in management approaches across cultures, offering valuable insights for organizations to adapt for global diversity. (Burke, 2010).

Effective cultural management, recognizing and appreciating diverse cultural norms and values, plays a pivotal role in organizational success, fostering an inclusive work environment promoting morale, productivity, and innovation (Strycharska & Ogórek, 2019). As the global marketplace becomes more interconnected, managing cultural diversity adaptively becomes increasingly crucial.

### **Cultural dimensions and management styles**

Comparative management understands culture's crucial role in shaping management practices. Hofstede's theory (Hofstede, G., 1980), highlighting aspects like individualism vs. collectivism, power distance, and uncertainty avoidance (Masuda *et al.*, 2020), provides a comparative framework for management styles in different countries, underlining the influence of cultural differences on organizational behavior and management strategies. How leadership styles are perceived and applied in different cultures can vary significantly. This can influence how decisions are made, communicated and motivated across regions.

Different leadership styles refer to the various approaches that leaders and managers adopt when exercising their authority, making decisions, communicating, and engaging with employees. These styles can differ greatly based on factors such as the leader's personality, organizational culture, and operational context (Frățiciu L. *et al.*, 2015).

Here are some of the most popular leadership styles (Agarwal, 2020):

1. Autocratic: Leader makes decisions without much team involvement.
2. Democratic: Encourages team participation in decision-making.
3. Charismatic: Leaders inspire and motivate, relying on charisma.
4. Transformational: Motivates employees to exceed expectations and emphasize organization's vision/values.
5. Transactional: Focuses on rewarding performance and ensuring compliance.
6. Laissez-faire: Gives high autonomy to employees in decision-making and task management.
7. Collaborative: Emphasizes collaboration and open communication.
8. Results-Oriented: Focusses on achieving goals and performance. Each style has pros and cons. Effective leaders can mix styles, relying on context, culture, and specific purpose.

Each leadership style has advantages and disadvantages (Cob *et al.*, 2021), and an effective leader can combine several styles depending on the situation and the needs of the organization and team. The right choice of style depends on the context, culture and specific purpose.

### **Institutional context and management practices**

Another important aspect of comparative management is the examination of institutional factors that shape management practices. Institutional theory suggests that formal and informal rules,

norms and regulations within a society influence management behaviour and organizational structures.

In Peng and Heath's (1996) research, for example, they explored the impact of institutional factors on management practices in China. They found that China's unique institutional context, characterized by *guanxi* (personal connections) and the influence of the Communist Party, significantly influenced management practices such as decision-making processes and organizational structures which is also available in Romania.

In the paper, we tried to emphasize the following 7 objectives regarding:

***01. Understanding cultural diversity:*** One of the main purposes of comparative management is to understand how culture influences management practices in different countries or regions. The study helps highlight how cultural values, norms and behaviours affect business decisions and how teams and relationships are managed in organizations.

***02. Identifying best practices:*** By comparing how organizations operate in different contexts, the study of comparative management can help identify best practices in various areas of management, such as leaders, strategies, human resource management, and innovation.

***03. Adapting Global Strategies:*** The study of comparative management provides critical insights for organizations with global operations. Companies can use learnings from one country to adapt strategies and practices to the specifics of other markets or cultures.

***04. Improving the operational efficiency of work teams:*** By analysing how organizations in different countries approach operations and processes, opportunities for streamlining and optimization can be identified depending on the specific context.

***05. Anticipating Challenges and Opportunities:*** The study of comparative management can help organizations anticipate and prepare for challenges and opportunities specific to each market or region. This may include issues related to legislation, culture, infrastructure and others.

***06. Developing leadership skills:*** By understanding how leaders adapt to the demands and expectations of different cultures, the study of comparative management can help develop leadership skills to function in a global environment.

***07. Contributes to the deepening of managerial theory and practice:*** The study of comparative management adds new knowledge to the field of management, contributing to the development of theories and revealing new trends and patterns in management practices.

In conclusion, the main purpose of the study undertaken is to provide a broader perspective on how organizations in Sibiu County adapt to cultural, economic and social diversity in the global

environment with the aim of providing valuable knowledge for improving organizational performance.

### Sampling

One of the decisive arguments in choosing as a unit of observation the organizations, consisted precisely in the positioning they have in relation to the organizations in the other three categories, from the point of view of the comparison criterion of expenses, in average value, with staff per employee. Considering that one of the important factors is enterprise size, we considered the class of enterprises with a number of employees between 50 and 249 to be representative because the cultural diversity of employees is the greatest<sup>2</sup>.

**Survey unit.** The survey unit, who answers the questions of the questionnaire, is represented by the employees of the companies chosen to be subjected to the study, selected preserving the proportions related to age, gender, level of training or occupied position.

### Characterization of the sample of surveyed individuals.

SC Co is a respected, 20+ year company in Sibiu, specializing in mechanics and automation with a commitment to product quality, professional development, and environmental stewardship, using modern equipment for manufacturing both locally and internationally. 157 employees, of which 58 women and 99 men, of which 5 women and 14 men had managerial duties, were selected from this organization to complete the survey questionnaire. in total 19 managers and the remaining 138 being persons without managerial duties.

The empirical research used selection data obtained from the observation of a sample for which the selection volume was 512 individuals of which 222 men and 190 women, aged between 18 and 67 years old.

**Table 1. Distribution of the sample according to gender and position**

Gender	Non-manager			Manager			Total	
	no.	weight	weight in total	no.	weight	weight in total	no.	weight in total
Men	125	0.39	0.30	65	0.69	0.16	190	0.46
Women	193	0.61	0.47	29	0.31	0.07	222	0.54
Total	318	1.00	0.77	94	1.00	0.23	412	1.00

Source: the author

### Research. Description and analysis of results

Using the data collected through the survey carried out on the 412 respondents selected from among the employees of medium-sized companies whose activity is carried out in the territory of

<sup>2</sup> Statistical Yearbook of Sibiu County in 2022

Sibiu county, in this section, we will present the results regarding the absolute frequencies of each type of possible answer, taking into consideration, on respectively, those questions of the questionnaire that were specifically designed to achieve the objectives.

The question: How important is intercultural leadership to you? is directly correlated with O1 and respectively O6, that of establishing what is the level of commitment of individuals, to their professional activity, to work, in general. Analysing the observed data, structured in table 2 as follows, we can find that for the researched sample, the lowest level of commitment to work is not found in any of the employees, even the next level '2' and respectively the average level '3', are very poorly represented, reaching only 1% respectively 5% of the total.

**Table 2. How important is intercultural leadership to you?**

Position held		Level of importance From Non-important '1' to Very important '5'					Total
		1	2	3	4	5	
non-manager	no.	0	4	11	79	224	318
	weight	0.00	0.01	0.03	0.25	0.70	1.00
manager	no.	0	0	8	18	68	94
	weight	0.00	0.00	0.09	0.19	0.72	1.00
Total	no.	0	4	19	97	292	412
	weight	0.00	0.01	0.05	0.24	0.71	1.00

**Source:** Processing by the author, using observed statistical data.

We can note, however, that the most employees, both those who make up the operative staff (70% of the total non-managers category) but especially among the managers (72%), state that they are involved in the work or the professional activity they carry out.

In order to achieve O4, to determine the situation regarding the level of organizational commitment of individuals, the question was formulated: How much do you think that intercultural diversity and inclusion influence the performance of the entire company?

**Table 3. How much do you think intercultural diversity and inclusion influences the performance of the whole company?**

Position held		Level of importance From Non-important '1' to Very important '5'					Total
		1	2	3	4	5	
non-manager	no.	4	4	65	77	168	318
	weight	0.01	0.01	0.20	0.24	0.53	1.00
manager	no.	1	0	8	18	67	94
	weight	0.01	0.00	0.09	0.19	0.71	1.00
Total	no.	5	4	73	95	235	412
	weight	0.01	0.01	0.18	0.23	0.57	1.00

**Source:** Processing by the author, using observed statistical data.

As can be seen from table 3, the vast majority of employees, 80%, are aware of the importance of intercultural diversity and inclusion. It is found, however, that a percentage of 90% of managers have the highest levels, 4 and 5, to express their organizational commitment.

The question: How much do you think innovation and technology influence the performance of the entire team? aims to achieve O4, to ascertain the situation regarding the performance level of the work teams.

**Table 4. How much do you think innovation and technology influence the performance of the entire work team?**

Position held		Level of importance From Strongly disagree ‘1’ to Strongly agree ‘5’					Total
		1	2	3	4	5	
non-manager	no.	2	1	42	77	196	318
	weight	0.01	0.00	0.13	0.24	0.62	1.00
manager	no.	1	2	2	14	75	94
	weight	0.01	0.02	0.02	0.15	0.80	1.00
Total	no.	3	3	44	91	271	412
	weight	0.01	0.01	0.11	0.22	0.66	1.00

**Source:** Author's creation, use observed statistical data.

According to the structured results in table 4, it is found that a percentage of 88% of the respondents show the two highest levels of appreciation of innovation and technology, it should be noted that regarding the category of employees who do not hold manager positions, the share of those who show a high and very high level of commitment within the work team, is 88% compared to 80% categories the same share among managers.

The question: How do you assess that the level of education influences the performance of work tasks? pursues O5 but also O3 of adapting employees to the challenges and opportunities of the global environment.

The detailed results in table 5 show that the majority of individuals in the sample (76.0%) show that the level of education influences a lot (36%) or a lot (40%) in the performance of collective work tasks. It is noted that, for the category of employees in management positions, the cumulative percentage of those who frequently request support has a higher value (82%), a result that can be attributed to the fact that they have a training better professional that justifies the need to be involved in supporting the members of the work team.

**Table 5. Does education influence teamwork to accomplish work tasks?**

Position held		Level of importance From Verry little ‘1’ to Verry much ‘5’					Total
		1	2	3	4	5	
non-manager	no.	2	1	74	114	127	318
	weight	0.01	0.00	0.23	0.36	0.40	1.00
manager	no.	0	1	12	33	48	94
	weight	0.00	0.01	0.13	0.35	0.51	1.00
Total	no.	2	2	86	147	175	412
	weight	0.00	0.00	0.21	0.36	0.42	1.00

**Source:** Processing by the author, using observed statistical data

Question introduction: How do you consider the company's adaptation to global changes? was determined by the need to detail O2, the need to ascertain the situation regarding the adaptation of employees to the global environment.

**Table 6. How do you consider the company's adaptation to global changes?**

Position held		Level of importance From Satisfactory '1' to Very good '5'					Total
		1	2	3	4	5	
non-manager	no.	2	36	33	78	169	318
	weight	0.01	0.11	0.10	0.25	0.53	1.00
manager	no.	0	3	17	33	41	94
	weight	0.00	0.03	0.18	0.35	0.44	1.00
Total	no.	2	39	50	111	210	412
	weight	0.00	0.09	0.12	0.27	0.51	1.00

**Source:** Processing by the author, using observed statistical data.

As can be seen from table 6 the cumulative percentage value from columns 4 and 5, for all respondents, is 78% and for the category of managers, it is 79%, proving that employees in general, but also those with coordination functions and management, realizes the importance of adapting the company to global changes to achieve individual or collective performance.

The question: Does cultural diversity enable effective collaboration and communication? it was introduced to explain how, in the socio-political context of the period during which the empirical study was conducted, as well as the instability of the economic environment, employees were forced to cope with frequent changes. We would have expected that cultural diversity would not allow for effective collaboration and communication.

Table 7 shows that 69% of non-managers and 80% of managers stated that the way in which cultural diversity allows for effective collaboration and communication meets their expectations to a great or very great extent. The values regarding how satisfied the respondents are, with the methods of communication, indicate an approximately uniform distribution of the answers, the frequencies obtained for the 5 degrees of satisfaction, having relatively symmetrical values, both for the non-managers category and for the managers category.

**Table 7. Cultural diversity enables effective collaboration and communication**

Position held		Level of importance From Lower '1' to Verry High '5'					Total
		1	2	3	4	5	
non-manager	no.	5	48	44	81	140	318
	weight	0.02	0.15	0.14	0.25	0.44	1.00
manager	no.	3	8	8	33	42	94
	weight	0.03	0.09	0.09	0.35	0.45	1.00
Total	no.	8	56	52	114	182	412
	weight	0.02	0.14	0.13	0.28	0.44	1.00

**Source:** Processing by the author, using observed statistical data.

From the analysis of the information at the company level, it results that the performance of the surveyed individuals is validated by the direct superior, as good or very good, in a proportion of 72%, for non-managers and 77% for those in management.

Regarding how the company can increase the level of performance, the respondents (85% of the operative staff and 87% of the managers) consider that their level of knowledge and skills is consistent with the position held, but a significant proportion (34 % of operatives and 49% of management), appreciate that in the last period, characterized by rapid changes, they were requested at work, with tasks that exceeded their skills necessary to achieve performance, moreover, this situation is also confirmed by the percentage values corresponding to those who believe that, at the present time, for faster adaptation to the new workplace challenges, they would need professional development, team-building (68% non-managers and 71% managers).

### **Conclusions. Improvement in management practices to increase performance**

From the analysis of the information obtained and processed in this study, we can conclude according with O7 that managers must adapt their leadership styles and apply appropriate management methods that consider the following elements:

**1. Cultural diversity and inclusion.** In transnational companies, leaders must understand and utilize cultural diversity, adopting styles that foster communication and collaboration among diverse teams. This emphasizes the growing importance of managing cultural diversity and developing related skills in global organizations.

**2. Adaptation to global changes.** Transnational firms must adapt to global changes using flexible leadership styles to adjust strategies based on market needs. Major events significantly impact operations, requiring strategic adaptation. Agile leadership promoting collaborative, flat structures and innovation are crucial in dealing with global complexities and rapid changes. Adopting leadership styles that promote flexibility and innovation can bring significant benefits.

**3. Innovation and technology.** Innovation is key to competitiveness, requiring leaders to foster a culture of risk-taking and exploration of new ideas. Implementing technology in management can highly influence the strategies of how different cultures handle innovative changes and technology adoption.

**4. Intercultural leadership.** Effective leadership is key in managing diverse teams across cultures. Comparative management studies reveal the effectiveness of varied leadership styles in different contexts. They emphasize assertiveness, flexibility, and understanding of cultural differences as vital when managing cross-cultural teams.

**5. Delegation and autonomy.** Leaders in large firms must understand that they cannot control everything. By delegating responsibilities and giving teams autonomy, creativity, learning and

initiative are stimulated. This can improve the efficiency and adaptability of the organization. This can also be achieved through effective communication.

**6. Effective communication.** In large and transnational organizations, communication can become difficult. Agile leadership styles promote transparent, open and frequent communication between different levels of the organization. This ensures consistency, coordination and shared understanding of direction.

**7. Leaders-catalysts.** To increase the performance of companies, it is necessary to adopt an agile and adaptable leadership style because it is important for leaders to be catalysts of change and innovation. These leaders should inspire, motivate and facilitate collaboration to achieve the organization's goals.

**8. Organizational learning.** In a large company, continuous learning becomes essential. Agile leadership styles promote organizational learning through reflection, constant evaluation, and adaptation of practices based on accumulated knowledge.

Cultural dimensions, institutional factors, transferability of management practices and cross-cultural leadership are important topics of study for those interested. Understanding these factors can help organizations navigate the complexities of managing in a globalized world and develop effective strategies for the smooth running of international operations.

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## **ECONOMIC AND SOCIAL EFFICIENCY OF TOURISM INDUSTRY**

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**Abstract:** The tourism activity, like any other type of economic activity, is one that consumes human resources, which produces effects with a strong social character. The tourism industry trains a vast human and material potential, with profound implications for the economy, society and international relations. Under these conditions, the economic efficiency of the industry is closely related to its social efficiency. The efforts it engages and the effects it produces in the economy, prove public and private interest in relation to the factors influencing tourism, its leverage effect and particularities of economic legitimacy, which are related to this industry.

It is suggestive that the economic and social advantage generated by tourism has led many developing countries, such as the Republic of Moldova, to increase their efforts in the development and consolidation of this branch.

Due to the fact that it is necessary to correctly assess the impact caused by tourism on the national economy, through this article, the authors will establish the limits of the research area, identifying the opportunities that can accelerate the development of this branch, as well as the constraints that stop this process.

At the same time, the correct quantification of tourism from a statistical point of view will allow the evaluation of the real dimensions of this industry, to establish its impact on the Gross Domestic Product.

Based on the above, the respective study supports the scientific approach regarding the role of tourism in the economic and social cohesion on tourist destination countries, which are involved in international tourist flows.

**Keywords:** tourism, tourism economy, economic efficiency, social efficiency, tourist destination, tourist consumers.

JEL Classification: M1, Z3

## Introduction

Tourism evolves and develops under the influence of numerous factors, different in nature and role, which manifest themselves with different intensities, with positive or negative effects, with upward evolution or involution. All these factors determine for each country, the extent and structure of the trends of the tourist phenomenon.

The specialized literature abounds with numerous references to the respective factors: economic, technical, social, demographic, psychological, educational, natural, political, etc., which influence the development of tourism, but we, in this research, will focus on two of them: the economic and the social factors.

The exact assessment of their efficiency covers a particularly vast area, assuming a varied, dynamic, and differentiated research methodology. But regardless of the methodology used, effectiveness studies, in our opinion, must reflect:

- degree of tourist satisfaction with the functional means made available;
- degree of satisfaction of the economic stakeholders of the tourism market in relation to the profit margin obtained;
- the degree of satisfaction of the state with the contribution made by tourism to the formation of the Gross Domestic Product.

All the mentioned, led the authors to carry out a scientific research in the respective field, because the economic and social efficiency is the foundation on which the tourism economy is based.

## Research methods

When preparing this article, the authors used 3 research methods, as follows:

***The fundamental research*** allowed the study of the evolution of tourism through the prism of the efficiency-effect relationship, at the same time reflecting the attested trends in the researched field. The investigations in the form of theoretical studies that led to the formulation of some scientifically argued practical conclusions were included in the fundamental research.

***The research for development*** aimed to identify those restructuring mechanisms that can contribute to the improvement of this industry in the context of sustainable development. In order to address the diversity of problems encountered by the tourism activity, a rich literature of specialized and general interest was used, a variety of scientific research tools, comparative analyses, which highlight the complexity of tourism as a generator of economic and social benefits on a national level.

***Applied research*** had the task of selecting the necessary information for directing the practical activity, in order to increase the methodical work. The selected information provides practical support in knowing the functioning mechanisms of tourism as a socio-economic activity of great complexity, in the conceptual clarifications and the appropriation of the main economic categories in the field, as well as in highlighting the determining factors, trends and forms of manifestation of programs and policies in tourism.

Going through the stages of documentation and research also meant highlighting the complexity of the concept of sustainable development of tourism, making connections with other fields of activity.

**The purpose of the research** is focused on the description of the problem related to the economic and social efficiency of tourism, in order to create a theoretical and practical scientific support, necessary for the future development of this industry.

**Relevance of the article.** Since tourism can become an important source of income for the National Public Budget of the Republic of Moldova, and taking into account the economic and social aspects of this industry, we consider it appropriate to carry out extensive scientific research on this subject.

### **Introduction**

The efficient organization of tourism through the rational use of natural and human resources is a strategic objective for most states of the world, which really want to become a top tourist destination.

Like any component of the global socio-economic system, tourism, in order to function and fulfill its mission, must consume resources and produce effects, all of which are materialized through concrete results.

The specificity of this field, reflected in the variety and nature of the resources consumed, the complexity and multitude of the processes carried out, gives the efficiency some particularities, both in terms of the meaning and the ways of evaluating the measurement indicators.

Speaking about efficiency and its meanings, it is also necessary to mention the relationship between it and the factors of production consumed: the nature of work, capital. Thus, in order to examine the socio-economic efficiency of tourism, a complex analysis of the effects produced by tourism is required, based on all the variety of resources consumed.

### **Description of the research topic**

The continuous increase in efficiency must represent a desire of the time for all kinds of activity. It is a general objective law that acts in socio-economic structures, reflects essential cause-effect relationships in any type of reproduction and is determined by the development of production forces. Tourism is no exception to this requirement.

Efficiency, as an expression of the law of the economy of time, assigns to the development of production and the provision of services, in the broadest sense, quantitative determination, and through the social form of production and services provided through the use of resources in general, qualitative determination.

The dialectical unity of the quantity and quality of activity is a measure of socio-economic development. In the opinion of the group of authors, reflected in the “Tourism Economy” manual, efficiency “*must be understood as a process, action, result of a set of technical-economic events, and the effect as a consequence of the process, of the action*” [Neacșu N, Baron P., Snak O., 2006].

Measuring efficiency is done by relating the effects to the efforts put into the process or action.

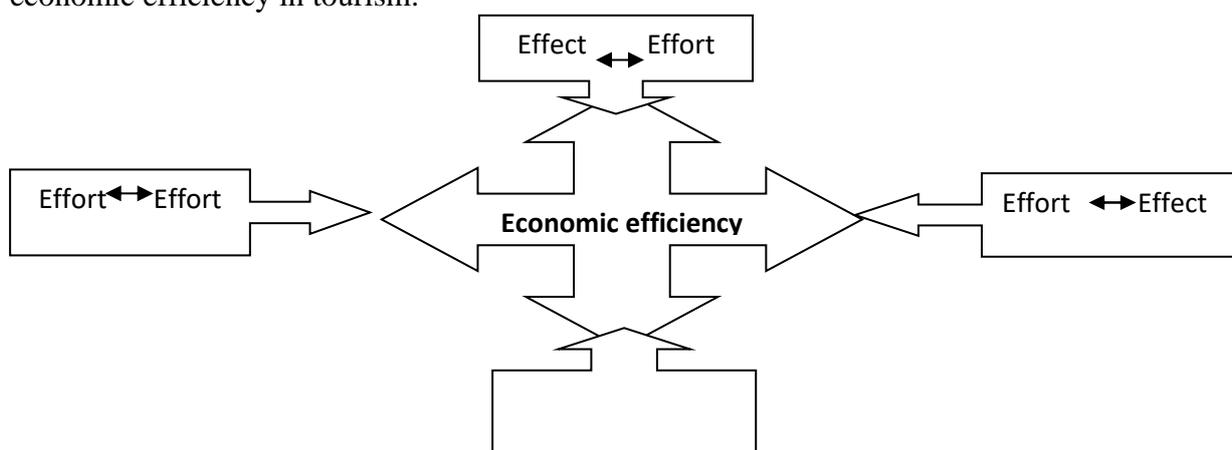
Most economists determine economic efficiency as the ratio of the effect to either the resources consumed or the resources used to achieve the effect.

The problem of efficiency appears everywhere where social work is spent and human, financial and material resources are consumed, however, in the tourism activity, in addition to comparing the effects with the efforts that determined them, other elements must also be taken into account in order to appreciate the efficiency such as: the structure of resources and results, looking not only at performance but also at the effects towards society.

It is well known that any economic activity must correspond to concrete needs of society, respond to real requirements of people's material and spiritual life. In this sense, the tourism activity has multiple tasks in terms of economic and social efficiency. Next, the authors of this study will reproduce the notion of economic and social efficiency of tourism.

**Economic efficiency in tourism** consists in determining the revenues obtained as a result of the investments made in the technical and material endowment of the industry (accommodation units, public catering establishments, leisure structures, tourist facilities, commercial premises with tourist production, etc.), conditioned by the duration of the recovery of the money invested, the yield and the profit margin obtained. It has a complex character because it expresses the result of a set of activities specific to tourism: internal, inbound and outbound.

**Social efficiency in tourism** represents the contribution that accommodation units, public catering establishments, leisure structures, tourist facilities, commercial spaces with tourism production, etc., offer to the training of a certain number of people in the respective industry, as well as the amount of income achieved, distributed to society for its community development. Starting from the unitary structure of effects and efforts, **four types of relationships** reflected in **Figure 1** are built to measure economic efficiency in tourism.



**Figure 1. Measuring economic efficiency in tourism through the effect-effort ratio**

Source: Adapted by the authors

Indicators of the **effect-effort** or **effort-effect** type are partial indicators, which reflect the efficiency of using different components of effort.

The indicators built through the **effect-effect** ratio provide information on the profitability of the services and the proportions formed between the different components of the results.

With the help of the effort-effort type indicators, the proportions between the effort components are reflected.

Thus, the action of the tourism activity manifests itself on a multitude of levels, from stimulating economic growth to improving the social structure, from capitalizing on natural and human resources, to improving living conditions.

Next, in **Table 1**, we will show the **ten** most important socio-economic effects of tourism.

*Table 1. 10 Socio-economic effects of tourism*

<b>Nb.</b>	<b>Effects</b>	<b>Impact</b>
1.	Tourism boosts the global economic system	Tourist circulation implies an increased consumption of specific goods and services, which determines the stimulation of the production of the industries with which tourism enters into relations.
2.	Tourism contributes to the diversification of business and the achievement of added value	Through its multiplier effect, tourism ensures revenue in its value chain. In addition to the traditional tourist services with which the industry operates: transport, accommodation, food and leisure, tourism favors the development of trade, agriculture, construction and telecommunications.
3.	Tourism contributes to the growth and diversification of exports	The goods and services that foreign tourists consume in a tourist destination country during the trip can be considered as exports for the visited country.
4.	Tourism alleviates regional imbalances	In the context of the economic implications, an important function that the tourism activity has consists in its contribution to the development of an area less rich in resources with high economic value, unable to ensure the development of strong enterprises or industries, but with important and attractive tourist resources, natural and anthropogenic. Thus, territorially, this can be a solution for the prosperity of disadvantaged areas.
5.	Tourism allows superior exploitation of natural and human resources	Many elements such as: the splendor of the landscape, art monuments, historical remains, etc. they find their best use, sometimes even the only one, through tourism.
6.	Tourism contributes to ensuring a balanced monetary circulation	Domestic and receiving tourism, through the expenses made by tourists, returns to circulation a part of the income obtained by them.
7.	Tourism contributes to balancing trade balances of payments	Through the receipts made from the export of tourist services, tourism contributes to reducing the gap and ensures the balancing of the balance of payments.
8.	Tourism creates jobs in the regions where it develops	Along with the development of the technical-material basis of tourism, it contributes to the creation of new jobs, involving the native population in various activities. Tourism also has the positive effect of stabilizing the active population in the rural environment and reducing the phenomenon of migration to the urban environment.

9.	Tourism generates foreign exchange flow into the country	Through the foreign exchange receipts, the inbound tourism contributes to the achievement of the foreign currency, the consolidation of the national currency and the free convertibility.
10.	Tourism intensifies and diversifies connections	International tourist traffic is an effective way of establishing contact between nations and peoples, thus contributing to the maintenance and consolidation of peace, as well as to the cultivation of a climate of mutual understanding between people. The thirst for information, the concern for knowing the life, economy, history and culture of various nations will be satisfied to an increasingly important extent precisely through direct contact with the reality of those who wish to know it.

*Source: Adapted by the authors after* [Pirvu R., 2015], [Neacșu N, Baron P., Snak O., 2006].

Tourist activity is extremely diversified. It presupposes the existence of several types of tourism market actors: tour operators, retail travel agencies, professional associations, tour offices, tourist information centers - between which economic relations of collaboration are established in order to fulfill and achieve the statutory goals. At the same time, the tourist activity cannot be practiced without adequate regulation from the state.

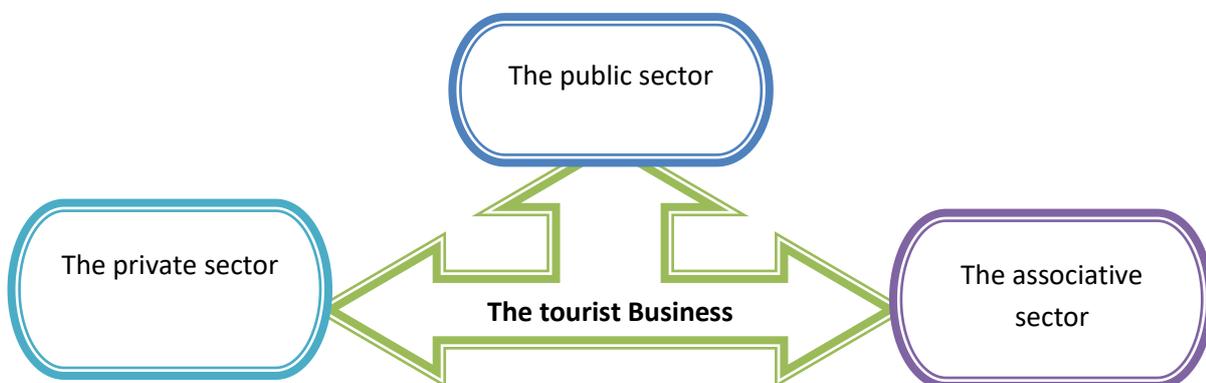
Organizations that are involved in the development and strengthening of tourism as a industry of the national economy are presented in **Figure 2**.



**Figure 2. Organizations**

*Source. Adapted by the authors*

Participants in the tourism business can also be grouped into three categories: the public sector, the private sector and the associative sector. Schematically they are presented in **Figure 3**.



**Figure 3. Participants in the tourism business**

*Source: Adapted by the authors*

*The public sector* is represented by specialized central administrations, second-level local authorities and other organizational structures financed by the state budget, whose major role is to support the development and promotion of tourism within national, regional or local policies.

*The private sector* is made up of service providers (transport companies, accommodation units, public catering establishments, leisure structures, excursion offices, tourist information centers), tour operators and retail travel agencies whose main purpose is to obtain of profit.

*The associative sector* is represented by non-governmental organizations (NGOs) and professional associations or business support organizations and trade chambers, whose aim is to promote meetings and exchanges between professionals in the tourism industry, the provision of information, the development of studies, legislative and normative expertise, which can be the basis of decisions adopted by the authorities public.

Maintaining close cooperation and coordination between the public, private and associative sectors through the process of planning, organization and implementation is essential for achieving common goals. That is why, as authors of this study, we believe that the creation of a government body, which would be assigned the role of implementer of the state policy in the field of tourism, is necessary and vital for the further development of the industry. In these conditions, joint efforts of all the participants in the tourism business can be done in an aggregate way, and the goal pursued will be to create a favorable framework necessary for the sustainable development of the tourism industry through the lenses of the economic and social aspects, taking into account the environmental and digitalization component as well.

Aggregating the efforts of all participants in the tourism business can contribute to obtaining beneficial results for the tourism industry both at the microeconomic and macroeconomic level, and the goal being to increase the economic and social efficiency of tourism, as GDP share too

If we are to analyze efficiency through the economic theory lenses, then, we consider that it “*represents the ratio between the results obtained and the force that contributed to determining the yield necessary to obtain these results, based on a responsible entity*”.

At the same time, **at the microeconomic level**, the determination of efficiency can be presented as “*a process of reviewing the stability of the main lines of action focused on the establishment and fulfillment of objectives, but also on the quality of the management system, as well as the knowledge, skills and abilities of human resources and to all factors of major importance for the organization, on which they exercise their activity*” [Popa C., 2022], but **at the macroeconomic level**, according to the authors, measuring efficiency can be presented as “*a process of ascertaining the level of economic development of a state, in which its policies: budgetary-fiscal, monetary-credit, economic, inflationary, external, social, etc. ., are rationally trained in obtaining surplus value, by increasing the Gross Domestic Product of the country in a certain period of the economic cycle*”.

Efficiency must be found in everything related to the micro and macroeconomic development of a state. Efficiency must also be found in making investments, in technological changes, in behavior, in organization, in institutional management, etc.

For most developing countries, especially those with low GDP/capita, it is not possible to achieve real human development without economic development, and economic development cannot be achieved without economic efficiency. Thus, in developing countries, the level of income is too low to, on the one hand, generate the human resources necessary for the sustained growth of the economy and, on the other hand, to ensure a minimum acceptable standard of living.

Economic efficiency is a necessary condition, but also a result of economic growth. Development takes precedence over economic growth, in the sense that the latter cannot continue in the long term without technological innovation and without structural changes, which are only possible in a developed country.

One of the main indicators whose evolution provides information on economic growth is the real Gross Domestic Product (GDP), i.e. GDP in current prices (of the year for which the calculation is made), corrected with price changes. The total level of real GDP is also the most available macroeconomic indicator for measuring activity at the level of a national economy and is particularly relevant for economic growth in tourism-developed countries, where the tourism industry has a significant share of economic results.

If we are to carry out an analysis of the tourist activity in the Republic of Moldova, based on the data presented by the detailed tourism agencies and tour operators from the Republic of Moldova to the National Bureau of Statistics, then the picture looks like it is reflected in **Table 2**.

**Table 2. Share of organized tourism in the Gross Domestic Product**

<b>N/</b> <b>o</b>	<b>Year</b>	<b>Turnover</b> <b>in tourism,</b> <b>(million lei)</b>	<b>Sales</b> <b>volume</b> <b>inbound</b> <b>tourism,</b> <b>(million lei)</b>	<b>Sales</b> <b>volume</b> <b>domestic</b> <b>tourism,</b> <b>(million lei)</b>	<b>Total</b> <b>volume of</b> <b>national</b> <b>tourism</b> <b>sales,</b> <b>(million lei)</b>	<b>The gross</b> <b>domestic</b> <b>product of</b> <b>the Republic</b> <b>of Moldova,</b> <b>(million lei)</b>	<b>Share of</b> <b>tourism</b> <b>in GDP,</b> <b>(%)</b>
1.	2018	2191,10 lei	75,4 lei	136,10 lei	211,50 lei	192509,00 lei	0,11%
2.	2019	2509,19 lei	82,4 lei	134,60 lei	217,00 lei	210378,00 lei	0,10%
3.	2020	782,80 lei	7,3 lei	56,50 lei	63,80 lei	205432,00 lei	0,03%
4.	2021	2351,50 lei	17,0 lei	133,20 lei	150,20 lei	241900,00 lei	0,06%
5.	2022	3320,20 lei	34,5 lei	194,80 lei	229,30 lei	272560,00 lei	0,08%

*Source: Adapted by the authors based on NBS data* [<https://statistica.gov.md>]

It is obvious that the tourism industry, through its multiplier effect, drives through a chain effect the development of other complementary sectors such as: transport, HORECA, trade, crafts, logistic services, etc.

In these conditions, connected to tourism and approached in a broader vision, the multiplier measures the changes produced in the level of incomes, employment results and the balance of payments, caused by the change in tourist expenses.

Taking into account the complexity of the tourism activity, the multitude of its interdependencies with other industries of the economy and the diversity of action plans, on the one hand, and the general

significance of the indicator, on the other hand, we can speak of a multiplier effect of the expenses made by tourists and a multiplier effect of investments [Platon N., 2017].

However, for the correct reflection of statistics on the impact of tourism on GDP, in our opinion, it is necessary to implement and use the account of Tourism Satellite Account, based on UNWTO recommendations [www.unwto.org]. According to the UNWTO, “*a tourism satellite account is a set of definitions, classifications integrated into tables, organized in a logical way, which allow a picture of the economic impact of tourism in terms of demand and supply*”.

At the moment, most European countries have already introduced the Tourism Satellite Account, the Republic of Moldova being lagging behind in this regard. In this sense, the tourism industry in the Republic of Moldova does not benefit from the real reflection of the effective sectorial indicators achieved in the total national economy [Platon N., 2018].

We are of the opinion that the lack of such relevant, real, current and correlated information in the field of tourism makes it difficult to carry out conclusive analyzes of the state and evolution of the tourism services market, of demand and supply, of seasonality and other determining factors of the development of this sector. Hence, big data analysis tools are crucial to monitor dynamics and real impact of tourism industry over inclusive economic growth and social development of the country.

## **Conclusion**

The variety of activities in the field of tourism and the links between them and other industries of the national economy have made tourism a real industry, whose role is in a steady the rise.

Tourism, being at the intersection between business (economic) interest and sustainability needs, is influenced by economic and social challenges, consequently generating innovative approaches in management.

However, in the Republic of Moldova, the dimensions of the tourism industry are still unclear, due to the fact that there is no relevant statistical information and one umbrella regulatory institution. Under these conditions, the relationship of tourism with the multiple industries of the national economy led the authors to research this topic, to establish its interdependence with other industries and to estimate the real share of tourism in the GDP.

We are convinced of the fact that the correct and complete reflection of the share of tourism in the GDP of the country, as well as the quantification and aggregation of the results obtained by this industry in the context of efficiency, could motivate the private sector to invest significant sums in this industry, generating as a consequence both economic and social benefits.

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## THE STUDY ON THE CONSUMPTION AND QUALITY OF BEER ON THE CONSUMER MARKET OF THE REPUBLIC OF MOLDOVA

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**Abstract:** Beer is a low-alcohol drink. It is obtained by alcoholic fermentation of malt wort using brewer's yeast, and with the addition of hops. The purpose of the paper was studying the degree of compliance of the beer sold on the consumer market of the Republic of Moldova with the requirements of the Government Decision of the Republic of Moldova no. 473 and Law 279 on consumer information on food products. The research object was 7 types of beer (local and imported) purchased in different commercial networks and supermarkets of Chisinau. The analysis of the data obtained as a result of scientific research shows that out of 7 studied products, 4 correspond to the organoleptic and physic-chemical requirements according to HG 473 (Bohemian beer, Zlata Praha beer, Velkopopovicky Kozel beer, Velkopopovicky Kozel Cerny beer). The other 3 products showed deviations in foam height. At the same time, we note that the labels of all 7 products fully comply with the requirements of Law 279 (on informing the consumer about food products) and contain all the mandatory references.

**Keywords:** beer, quality, organoleptic analysis, physical and chemical analysis, information on the label

JEL Classification: L15

### Introduction

Beer is one of the oldest and most popular drinks, with a relatively low degree of alcoholization and which, due to its pleasant taste and refreshing effect, is considered the national drink of many nations. The etymology of the word beer originates from the Latin "bibere" and has the meaning of drinking. Beer is a fermented beverage made primarily from four ingredients; water, barley malt, hops and yeast. Each of these ingredients imparts its own taste and aroma characteristics to the finished product [6].

Like other types of alcohol, beer can give you a pleasant feeling. Low alcohol content is good because it reduces the risk of negative effects on our body. Even more interesting, the Indiana Alcohol Research Center found that certain flavor components of beer can trigger the production of dopamine, making you feel good.

Beer is a drink with a lower alcohol content compared to wine. It is obtained by alcoholic fermentation of malt wort using brewer's yeast, and with the addition of hops. It is allowed to partially replace the malt for brewing beer with unmalted grains, taking into account that the total mass of the substituted malt does not exceed 30%.

The content of ethyl alcohol in most types of beer is 2.8-7.9% vol., the content of beer wort extract is 8-20%, carbon dioxide - min 0.35%.

Beer provides between 300÷780 kcal/l, depending on its alcohol content. Due to its high content in water (91%÷92%) and its content in mineral elements, beer satisfies the feeling of thirst and covers the losses in trace elements that occur through sweat.

Currently, in Europe, the largest producer of beer is Germany, followed by Great Britain, Belgium, the Czech Republic, etc. According to the information available to the public, in the last 10 years it is considered that the "daily norm" of consumption of alcoholic beverages is: 30 grams of strong alcoholic beverages (vodka/cognac/brandy); 150 milliliters of wine and 250 milliliters of beer [5].

The information presented on the Beer consumption map, figure 1, shows that the Republic of Moldova does not refer to countries with a high consumption of beer and in 2022 this quantity was 0-40 liters per capita/year.

The biggest beer consumer in Europe is the Czech Republic with 135 liters of beer. In this figure we can see a very interesting geographical pattern. Central Europe is clearly the biggest consumer of beer. The Czech Republic, Austria, Poland and Germany are not only the biggest beer consumers in Europe, but also in the whole world. Romania is the largest consumer of beer outside of Central Europe and is number 5 in Europe, figure 1, [3].

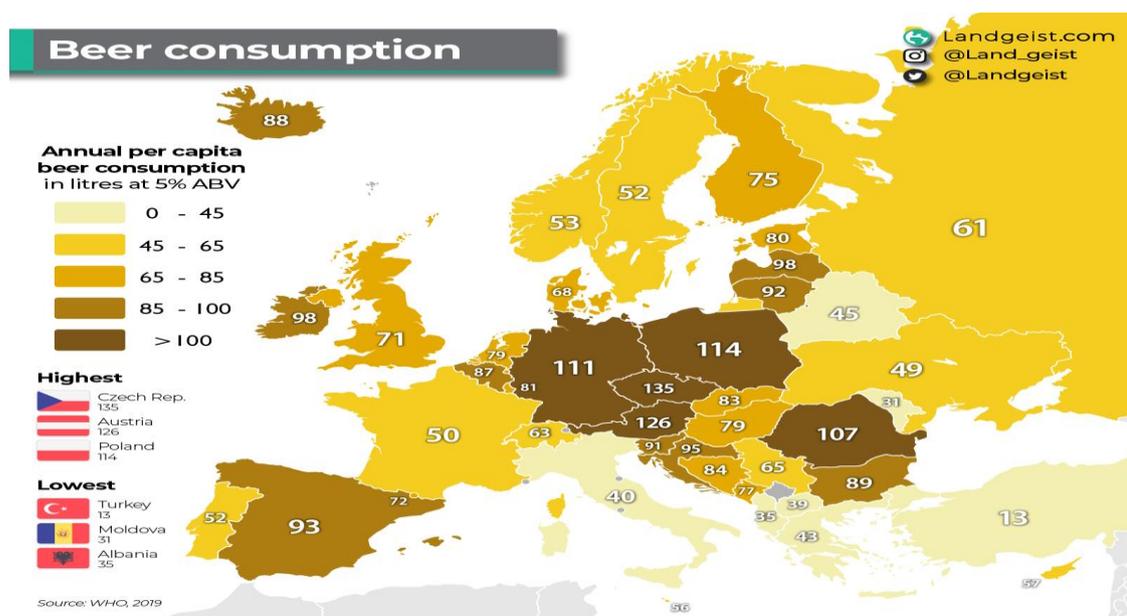


Figure 1. Beer consumption in Europe (in liters, alcohol concentration 5% Vol), capita/inhabitant/year

Source: <https://landgeist.com/2022/03/18/beer-consumption-in-europe/> [3].

Depending on the specifics of the production process, the food industry produces the following diversifications of beer [2]:

- beer with an alcohol content: 2.8-7.9% vol.;
- non-alcoholic beer – beer with a volume fraction of alcohol of max. 0.5% vol.;
- wheat beer – beer with a wheat malt content of min. 50% of the total amount of malt used in the composition of the raw material;
- filtered beer - beer obtained by the method of artificial separation of particles and yeasts from the drink;
- unfiltered beer – beer that has not passed the stage of separating particles and yeasts from the drink;
- pasteurized beer – beer subjected to heat treatment (pasteurization);
- unpasteurized beer – beer that is not subjected to heat treatment (pasteurization);
- blond beer – beer with a color of up to 2.5 color units or up to 31 EBC units (European Brewing Convention);
- brown beer – beer with a color of 3.0 color units or more than 36.0 EBC units.

The quality of beer in the Republic of Moldova must meet the requirements: Government Decision No. 473 for the approval of the Technical Regulation "Beer and beer-based beverages" [2]. This document establishes the terminology, the minimum quality conditions, the requirements regarding the production process, labeling, the rules and procedures for assessing conformity, as well as for supervising the manufacture and placing on the market of domestically produced and imported beer.

So, according to Government Decision No. 473, *beer* is a foamy alcoholic drink, saturated with carbon dioxide, obtained by fermentation of beer wort prepared from malt for the manufacture of beer, hops and/or hop products, water and brewer's yeast without the addition of ethyl alcohol, flavorings and taste additives.

It is allowed to partially replace the malt for brewing beer with unmalted grains, provided that the total mass of the substituted malt does not exceed 30%.

The addition of sugar or sugar syrups is allowed provided that their mass does not exceed 3% of the mass of the substituted malt.

The beer intended for placing on the market must correspond to the organoleptic and physico-chemical characteristics for each type of beer, established in the related standards and company standards for each specific name, and the characteristics indicated in annexes in Government Decision No. 473 for the approval of the Technical Regulation "Beer and beer-based beverages"

When labeling beer, the requirements of Law no. 279 *Regarding consumer information on food products* must be followed.

The information for the consumer must be presented through text and/or marking on the product's packaging and/or labels and indicated in the state language. When selling the import product on the domestic market, it is allowed to present the information in other languages, placing its translation in the state language next to it. For production intended for export, the information is presented according to the contract.

The beer packaging must contain the following information [1]:

- the country of origin (for beer manufactured in the Republic of Moldova, the mention Made in Moldova is indicated);
- the name and address of the manufacturer and/or importer, distributor;
- the name of the product;
- the name with which the beer is placed on the market;
- type of beer;
- the inscription "pasteurized" for pasteurized beer;
- list of ingredients;
- the extract content of beer wort, % (except for non-alcoholic beer, special beer and beer-based drinks);
- the minimum volume fraction of alcohol, % vol.; for non-alcoholic beer - the maximum volume fraction of alcohol, % vol.;
- the volume, l;
- nutritional value (in g) and energy value (in kcal) per 100 g of beer;
- date of manufacture;
- the validity period or consumption limit date;
- storage conditions;
- other information that does not contravene the legislation in force.

*The purpose* of the work is studying the degree of compliance of the beer sold on the consumer market of the Republic of Moldova with the requirements of the Government Decision of the Republic of Moldova no. 473 and Law 279 on consumer information on food products.

*The research object* was 7 types of beer (local and imported) purchased in different retail chains and supermarkets from Chisinau:

- sample 1. Blond beer Carlsberg, pasteurized, alc. 5.0% vol, 0.45l, Î.C.S Carlsberg SRL RM
- sample 2. Blond beer Chisinau, pasteurized, alc. 4.5% vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery
- sample 3. Blond Beer Bohemian, unpasteurized, alc. 4.5% vol, 1.5l, Rivex SRL
- sample 4. Blond beer Zlata Praha, pasteurized, alc. 5% vol, 0.5l, SRL Oboloni, RM
- sample 5. Blond Beer Velkopopovicky Kozel, alc. 4.0% vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery
- sample 6. Special brown beer Velkopopovicky Kozel Cerny, alc. 3.7% vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery
- sample 7. Brown wheat beer Franziskaner WeissBier Dunkel, alc. 5% vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery

### **Research methodology of quality of beer**

The determination of quality of beer was carried out according to the methods of scientific knowledge recognized in commodity science: organoleptic and physic-chemical analysis. Standardized indicators of quality of beer were studied according to the documents in force - Government Decision No. 473 for the approval of the Technical Regulation "Beer and beer-based beverages" [2].

Thus, we analyzed the following characteristics: organoleptic indicators - appearance, taste, aroma, physic-chemical indicators: foam characteristic (height and persistence); acidity; pH and color index.

Analysis of the information on the labels - according to the requirements of Law 279 on consumer information on food products.

### Research results

Checking the information on the labels shows that all the mandatory information (according to Law 279 on consumer information on food products) is present on the product labels.

The results of organoleptic and physic-chemical determinations are presented in tables 1 and 2.

**Table 1. The results of organoleptic research**

Indicators	Characteristics according to the HG 473		Real characteristics						
	Blond beer	Brown beer	sample, no*						
			1	2	3	4	5	6	7
Appearance	Clear, foamy liquid, without sediment and foreign inclusions.		+	+	+	+	+	+	+
Taste	Taste of malt and hops, with bitterness corresponding to the type of beer.	Full malt taste and pronounced nuance malt of caramel, with pleasant bitterness, corresponding to the type of beer	+	+	+	+	+	+	+
Aroma	Aroma corresponding to the type of beer, pure and without foreign odors.		+	+	+	+	+	+	+

\*Sample 1. Blond beer Carlsberg, pasteurized, alc. 5.0%vol, 0.45l, Î.C.S Carlsberg SRL RM

Sample 2. Blond beer Chisinau, pasteurized, alc. 4.5%vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery

Sample 3. Blond Beer Bohemian, unpasteurized, alc. 4.5%vol, 1.5l, Rivex SRL

Sample 4. Blond beer Zlata Praha, pasteurized, alc. 5%vol, 0.5l, SRL Oboloni, RM

Sample 5. Blond Beer Velkopopovicky Kozel, alc. 4.0%vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery

Sample 6. Special brown beer Velkopopovicky Kozel Cerny, alc. 3.7%vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery

Sample 7. Brown wheat beer Franziskaner WeissBier Dunkel, alc. 5%vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery

The results of organoleptic research show that all samples of beer comply with the requirements of Annex No. 1. of Government Decision 473. None of the beer samples deviates from the norms in appearance, taste or aroma.

**Table 2. Results of physic-chemical research**

characteristics	According to GD 473		Real characteristics						
			sample, no. *						
	Blond beer	Brown beer	1 blond	2 blond	3 blond	4 blond	5 blond	6 brown	7 brown
foam height, mm, min	30	30	27	23	37	34	33	37	23
foam persistence, minutes, min	20	20	28	30	30	27	32	30	30
color index, un.c.	0,2-2,5	>2,5	1,3	1,4	1,4	2,5	2,5	3,5	2,8
pH	3,8-4,8	3,8-4,8	4,1	4,3	3,8	3,8	4,5	4,5	4,1
Acidity, un.a., max.	2,5-5,0	2,8-5,5	2,8	2,5	2,9	2,5	2,5	2,8	2,9

\*Sample 1. Blond beer Carlsberg, pasteurized, alc. 5.0%vol, 0.45l, Î.C.S Carlsberg SRL RM

Sample 2. Blond beer Chisinau, pasteurized, alc. 4.5%vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery

Sample 3. Blond Beer Bohemian, unpasteurized, alc. 4.5%vol, 1.5l, Rivex SRL

Sample 4. Blond beer Zlata Praha, pasteurized, alc. 5%vol, 0.5l, SRL Oboloni, RM

Sample 5. Blond Beer Velkopopovický Kozel, alc. 4.0%vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery

Sample 6. Special brown beer Velkopopovický Kozel Cerny, alc. 3.7%vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery

Sample 7. Brown wheat beer Franziskaner WeissBier Dunkel, alc. 5%vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery

Analyzing the obtained results, we find that Sample 1, sample 2 and sample 7 (Carlsberg blonde pasteurized beer, Chisinau Blond pasteurized beer, Franziskaner Weiss Bier Dunkel brown wheat beer) do not meet the requirements of Government Decision 473 according to the *foam height indicator*. The other varieties of beer comply with this indicator.

At the same time, we note that in all 7 types of beer no deviations were recorded in terms of foam stability, acidity, pH and color.

Besides that, research on the sensory evaluation of beer was carried out. The scoring method (25 points) was applied [4] in order to analyze the following characteristics: transparency, color, taste, aroma and foam characteristic by measuring its height and persistence.

The conditions of sensory analysis are presented in Table 3.

**Table 3. Sensory analysis of beer (25 points)**

indicators	Number of points			
	excellent	good	satisfactory	unsatisfactory
<b>Transparency</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>
<b>Color</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>
<b>Taste</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>
<b>Hop bitterness</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>
<b>Aroma</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>Foam characteristic</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>
<i>-foam height, mm, no less</i>	40	30	2	<20
<i>-foam persistence, mm, no less</i>	4	3	2	<2
<b>Total, points</b>	<b>22-25</b>	<b>19-21</b>	<b>13-18</b>	<b>&lt;12</b>

Source: <https://znaytovar.ru/new65.html>

The obtained results showed that the beer assortments taken for the sensory analysis obtained between 15 and 25 points.

The *excellent rating* was obtained by: sample 5 (Blond beer Velkopopovicky Kozel, alc. 4.0% vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery) and sample 6 (Special brown beer Velkopopovicky Kozel Cerny, alc. 3.7 % vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery).

The *good rating* was characteristic for the following 3 types of beer: sample 1 (Carlsberg - blond pasteurized beer, alc. 5.0% vol, 0.45l, Î.C.S Carlsberg SRL RM), sample 3 (Bohemian - blond unpasteurized beer, alc. 4.5% vol, 1.5l, Rivex SRL) and sample 4 (Zlata Praha - blond pasteurized beer, alc. 5% vol, 0.5l, SRL Oboloni, RM).

The *satisfactory qualification* was given to samples no. 2 (Blond pasteurized beer – Chisinau, alc. 4.5% vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery) and no.7 (Brown wheat beer - Franziskaner WeissBier Dunkel, alc. 5% vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery). These two samples scored less due to poor foam.

## Conclusions

Commodity research was carried out regarding the compliance of beer with the current requirements of Government Decision 473 and Law 279.

The analysis of the data obtained as a result of scientific research demonstrates that out of 7 studied products, 4 types of beer (blonde Bohemian beer, Zlata Praha, blonde Velkopopovicky Kozel beer, special brown Velkopopovicky Kozel Cerny beer) meet the organoleptic and physic-chemical requirements according to Government Decision 473. The other 3 products showed deviations in foam height.

All 7 products correspond to the requirements of Law 279 and contain all the mandatory mentions.

In the sensory analysis, sample 5 (blonde beer Velkopopovicky Kozel, alc. 4.0% vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery) and sample 6 (special brown beer Velkopopovicky Kozel, alc. 3.7 % vol, 0.5l, Î.M. Efes Vitanta Moldova Brewery) obtained a maximum number of points (25).

**References:**

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## THE DRIVING FORCES OF THE MATERIAL RESOURCE EFFICIENCY IN EUROPE

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**Abstract:** During the last decade, use resources in a sustainable way and their efficient management throughout the lifecycle, has benefited from increased attention within the European Union, presenting itself as a smart way of addressing environmental, climate, economic and safety objectives. The starting point of the paper is the question of what are the major factors and concerns that lead the policies of material resource efficiency in each country. The analysis aimed to identifying the major factors who were reported by each country and that lead to the efficiency of material resources and the existing concerns. The most countries reported a combination of three or four categories, although some other countries mentioned more, significant variations being recorded in their response. Efforts are therefore needed in the coming years to demonstrate the benefits of material resource efficiency as a synergistic approach to reducing environmental pressures, addressing economic challenges and combating climate change, and which have been recognized and require greater attention in the future. The overall picture that results is that the economic benefits of improving the efficiency and circularity of resource use are increasingly recognized and acted, indicating the need to be aware of the importance of the efficiency of material resources and the opportunities it promotes and supports.

**Keywords:** sustainable development, efficiency of resources, major factors, concerns.

JEL Classification: Q42, Q56.

### Introduction

During the last years, the sustainable use of resources has been given special attention within the European Union policy, identifying itself as an intelligent way of approaching the objectives of economic efficiency, environment, climate and safety.

Our starting point is the question - what are the major concerns that can ensure the efficiency of material resources at the level of the EU/each member state?

As a first action, countries set themselves the goal of identifying major drivers and concerns; there were significant differences, ranging from the support of one or two driving forces, such as "environmental protection" or "economic development", to a detailed analysis of local conditions, followed by an analysis of material resource efficiency policies that can ensure the solution of the problems in the respective country.

### The major factors of the efficiency of material resources

The reported factors can be grouped into:

- factors related to economic interests, such as increasing competitiveness, ensuring access to raw materials and energy and improving production efficiency;
- factors related to environmental, climate and safety concerns, such as reducing environmental pressures, preventing environmental degradation or reducing greenhouse gas emissions;
- factors aimed at regulatory requirements, such as national/EU level regulations, compliance with international objectives and commitments;
- other factors (drivers).

Most countries reported a combination of three or four categories, although some mentioned more. Each one presents a series of sub-factors (sub-drivers):

1. Economic interests consider:

- increasing competitiveness;
- secure supply of raw materials and energy;
- reducing dependence on imported resources;
- job creation and employment;
- increasing the use of secondary raw materials and material closing loops;
- creation of new market opportunities/ecological jobs;
- improving the performance of the energy sector;
- improving production efficiency;
- ensuring the economic growth impulse;
- reducing exposure to volatile prices;
- concerns related to the lack of resource.

2. Environmental, climate and safety concerns take into account:

- reducing pressure on the environment (including environmental pollution and degradation);
- efficient waste management;
- reduction of greenhouse gas emissions;
- sustainable use and management of resources;

- reducing the use of resources;

- protection of human health.

3. The regulatory requirements consider:

- compliance with EU legislation/objectives;

- compliance with national legislation/targets;

- compliance with international commitments.

4. Other factors consider:

- reducing the social impact/addressing social concerns;

- supporting sustainable consumption and production and supporting consumers to make optimal decisions.

➤ *The economic interests*

The predominance of economic factors indicates that countries consider the use and efficiency of resources as an essential issue from an economic and strategic point of view - doing more with less - is considered primordial. As a significant action, the European Green Deal was established (European Commission, 2020), which is the basis of a competitive and efficient EU economy from the point of view of resource use, with the primary targets: zero net greenhouse gas emissions greenhouse until 2050; recording an economic growth dissociated from the use of resources; the equitability of citizens, sectors and regions.

The need to increase competitiveness is the most recurrent driver for countries that support a special economic interest, regarding the efficiency of the use of resources, either with the aim of maintaining a top position among competitors, or due to the target of surpassing the performance of other countries.

The supply of raw materials and energy was identified as another significant decision factor, reported by countries to reduce dependence on imported resources; most countries refer, in a general way, to access to raw materials in the future, other countries (Denmark and Turkey - mentioning fuels or water) are more specific.

Many countries focus on new job creation in green sectors/job creation in general as one of the drivers of their material resource efficiency policies. Some - including Belgium, France, Germany, Latvia, the Netherlands and Portugal - have identified material resource efficiency as a strategy to provide a new boost to economic growth.

Overall, two other objectives: increasing production efficiency and improving the performance of the energy sector were and are also considered a driving force in material resource efficiency policies.

For many countries, these two categories were often implicitly recognized when security of supply concerns were mentioned.

Countries such as Belgium, France, Germany, Latvia, the Netherlands and Portugal have identified the efficiency of material resources as a strategy to ensure a new impetus to economic growth. Others, for example Denmark, claim that the efficiency of material resources in this sector is determined, first of all, by saving costs.

➤ *Environmental, climate and safety concerns*

The predominance of economic interests that also take into account environmental, climate and safety concerns are a strong engine for the development of material resource efficiency policies. The objective of mitigating pressures on the environment, climate and safety concerns, reducing pollution and degradation is one of the most targeted.

A broad spectrum of factors include the following:

- competitiveness, a key factor that emphasizes policies to reduce the costs of energy, materials, water and waste management;
- national economic and social development ambitions are based on the recognition of the existence of the fossil fuel shortage, the impact of climate change and the need to fundamentally change the way finite resources are used;
- the strategic objectives and regulatory requirements in the EU which are the basis of the approaches regarding the efficiency of the use of resources;
- energy policy which is driven by three primary objectives: supply security, environmental protection and cost competitiveness; there is a need for greater energy independence by increasing the use of renewable alternative energies that would ensure security of supply;
- the sustainable availability of raw materials, which stands out as an important factor for continued prosperity in an extremely open economy with a growing industrial sector.

In most countries, economic interests have overtaken environmental issues, although some (Lithuania and Sweden) state that environmental concerns are more pronounced.

Depending on the way of action of the countries, the scarcity of resources, the security of supply and the exposure to the high costs of resources, stand out as problems that can be addressed through an optimal use of material resources, which - in turn - will facilitate and environment protection, climate and safety.

On the other hand, concerns have been reported about human health and living standards as a policy factor for the rational and efficient use of resources, including a better state of the environment, mitigation of climate change, a transformation of the whole of Europe to operate in conditions of equitability and reliability.

➤ *Regulatory Requirements*

Compared to the first two categories, regulatory requirements (representing 10% of all drivers) have a limited role in stimulating resource efficiency policy development. However, two particularly important regulatory factors reported by countries are compliance with national regulations and EU requirements.

There are strategies aimed at the years 2030/2025, in the field of energy/climate neutrality and regarding sustainable development.

The current regulatory framework for material resource efficiency is still limited. At the same time, the importance given to energy and waste policies shows that EU policies provide a strong boost, where the regulatory framework is strong and/or includes targets.

Guiding principles taken into account:

- combining environmental needs with economic opportunities, innovation and social responsibility;
- recognition of the country's global responsibility in the national resource policy;
- reducing the dependence on primary resources in economic and production practices and strengthening the closed cycle management;
- ensuring the long-term use of sustainable resources and increasing quality.

➤ *Other drivers*

- the need to reduce the social impact and to address social concerns;
- sustainable consumption and production as a driver and the need to help consumers make better choices;
- public, business or media pressure does not appear to be a prominent role as a driver.

**Conclusions**

Reducing dependence on imports and ensuring stable access to resources have proven to be some of the most important concerns, necessitating the intensification of efforts regarding EU raw materials initiatives.

Currently, countries have identified the concept of the circular economy and closing material loops as a policy factor for material resource efficiency, following the Commission Communication on the circular economy, as early as 2015, "Closing the loop - An EU Action Plan for the Circular Economy".

While resource efficiency is considered primarily an economic issue with a strong ecological component, its potential to benefit health and well-being also needs to be highlighted and properly illustrated in practice.

Efforts are needed to demonstrate the benefits of material resource efficiency as a synergistic approach to reducing environmental pressures, addressing economic challenges and combating climate change that have been explicitly recognized and require greater attention in the future.

The relationship between resource efficiency and innovation, education and social considerations is certainly another important aspect of reflection from the perspective of achieving intelligent and inclusive growth.

It is indicated the need to continue the activity to increase awareness of the importance of material resource efficiency and the opportunities it promotes and supports, to build a competitive economy, with low GHG emissions and resistant to climate change and inclusive

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## WATER ACTIVITY IN CULINARY PRODUCTION

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**Abstract:** Water activity is a fundamental property of aqueous solutions, and by definition is the ratio of the vapor pressure of the water in the substrate to that of pure water at the same temperature.

The concept of  $a_w$  has been very useful in food preservation and on that basis many processes could be successfully adapted and new products designed. Water has been called the universal solvent as it is a requirement for growth, metabolism, and support of many chemical reactions occurring in food products.  $a_w$  has its most useful application in predicting the growth of bacteria, yeasts and moulds.

The purpose of the research is to study the water activity in various culinary preparations, and to determine the influence of the thermal treatment used (frying, baking, boiling), the concentration of sugar and salt on the  $a_w$  and the shelf life of the products.

The research methods used were the following: the experimental method that was carried out with the LabSwift- $a_w$  device, manufactured in Switzerland, which has a precision of 0.01 and the bibliographic research of scientific sources and the comparison of the results obtained.

**Key words:** water, water activity, moisture of food products, food safety

JEL Classification: L66

### Introduction

The activity of water specific to a food varies according to its moisture content, so that for different foods, the same value of water activity corresponds to different humidity values. This index shows the availability of water of a product for chemical, biochemical reactions, state change or growth of microorganisms. Thus, enzymatic or nonenzymatic color changes, stability of different substances in

food (lipids, vitamins, biologically active substances and a.) depend on fluctuations in water activity values.

Water activity is an intrinsically necessary parameter in food safety and represents the ratio between the partial pressure of water vapour on the surface of the food and the partial pressure of water vapour in the ambient environment in equilibrium at the same temperature. A storage temperature change of 10 degrees Celsius causes a change in water activity from 0.03 to 0.2 depending on the type of product.

The analyzed topic is of major importance in the food industry, because it significantly influences the organoleptic qualities, stability and acceptability of natural and processed food products. For example, several researchers have shown that such products as chips and expanded corn with water activity values between 0.35 - 0.50, values that would allow a guaranteed long-term storage, actually lose in time of preservation their specific properties: crunchy effect and friability.

The bibliographic study confirmed that there is a database on water activity values for several industrialized products, namely: flours, groats, cereal mixtures with various additions of fruits, berries, seeds; biscuits, canned fruits boiled with sugar; fruits, vegetables, meat, dehydrated fish, powdered milk, powdered eggs, etc. and little data on water activity for culinary products in public catering.

The purpose of the research is to study the activity of water in various dishes and semi-culinary preparations, as well as to determine the influence of the applied heat treatment (frying, baking, boiling), the concentration of sugar and kitchen salt on the value of water activity.

### Basic content

The metabolic activity of microorganisms is decisively dependent on the water available from food. A decrease in water activity has important influences on the growth of microorganisms. Different types of microorganisms exhibit different optimal growth values. Studying water activity offers the possibility of controlling microbial growth and can provide useful information on the shelf life of food and its storage without the risk of external contamination. Based on the above, culinary production depending on humidity and water activity can be classified into 4 categories of vulnerability to storage: very high ( $a_w > 0.95$ ;  $W = 60-95\%$ ), high ( $a_w = 0.90-0.95$ ;  $W = 40-60\%$ ), mean ( $a_w = 0.50-0.90$ ;  $W = 15-40\%$ ) and low ( $a_w = 0.20-0.50$ ;  $W = 5-15\%$ ) (Table 1).

### Classification of culinary production by $a_w$ 's values

Level of water and moisture activity (%) of products	Production name	The most likely causes of spoilage of products during storage
Very tall $a_w > 0.95$ $W = 60 \dots 95$	Vegetable semi-finished products, meat, fish Liquid preparations (soups) Funds and sauces, side dishes from boiled and fried vegetables. Meat, fish, etc.	The development of bacteria, molds, yeasts Biochemical enzymatic processes under the action of own enzymes

Tall: aw=0.90 W=40...60	French fries side dishes. Hardened vegetables	Development of molds, yeasts
Medium: aw=0,50...0,90 W=15...40	Frie fries side dishes. Articles of unleavened dough (except scalded), finishing semi- finished products, dried fruits, frozen. Dried vegetables, crechers, crisps, articles of tender dough and puff pastry	Meloidin formation reaction Development of yeasts, osmophilic molds, fermentative processes
Reduced: aw=0,20...0,50 W=5...15	Food concentrates, groats, flour. Dried products by sublimation.	Lipid oxidation reaction and non-enzymatic brownification.

**Source:** Tabunșic, Olga. *Fundamentals of technological processes in public catering units*. Chisinau : AESM, 2019, p. 229

Analyzing bibliographic sources (2) it was found that different methods of heat treatment lead to obtaining finished culinary products with different values of water activity. For example, boiling vegetables in water practically does not influence the amount of water activity, but boiling in superheated steam diminishes water activity. This phenomenon is explained by higher water losses and, respectively, lower losses of mineral salts and carbohydrates during steam processing. Also, in the process of passing vegetables, a large amount of water is lost and the value of water activity decreases. In the process of frying potatoes, the value of water activity decreases in direct proportion to dehydration of the product. Experiments have shown that during heat treatment of natural meat products, regardless of the method applied, boiling or frying, the value of water activity in the finished product changes insignificantly. But for preparations made from minced meat, for example scorch, the water activity in the finished product decreases and will have different values depending on the quantity and ratio of additions (bread, potatoes, onions, etc.).

Creams and sauces prepared on the basis of different fats have different values of water activity. One of the factors influencing the value of water activity is that butter practically does not bind water.

The semi-prepared dough of bread type and scalded dough subjected to baking have quite high values of water activity, and those obtained when baking from puff pastry and tender dough have average values of water activity. The decrease in water activity in these doughs is explained by higher water losses during baking (about 13%) and structural changes in proteins and starches, plus higher sugar content.

Regarding sugars, we can mention that the value of water activity influences both the amount of carbohydrates and the molecular structure of carbohydrates. Thus, reducing larches have the property of adding more water than sucrose. Lately, more and more consumers prefer confectionery and pastries with lower sugar content. Reducing the sugar content by about 20% of the quantity prescribed in the recipe of preparations obtained from tender doughs and puff pastry, lead to an increase in aw and respectively to the reduction of the shelf life of products from 9 days to 3 days. In such cases, in order to extend the shelf life, it is recommended to use the constituents.

***The research methods used were as follows:***

➤ **Experimental methods:**

1. **Determination of water activity.** The preventively prepared samples are shredded, placed in special capsules and subjected to analysis by the Swiss-made LabSwift-aw apparatus having an accuracy of 0,01. Depending on the chemical composition of the products, the type of water bond, the concentration of sugar and salt, the device provides data at a different time.

2. **Determination of humidity.** The humidity was determined by the classical method of drying in the oven to constant mass. The results obtained are presented in Table 2.

➤ **Bibliographic research of scientific sources and comparison of the results obtained.**

**Object of study:** as object of study served following 17 dishes and semi-dishes:

1. Soft dough biscuits dusted with powdered sugar;

2. Soft dough biscuits without powdered sugar;

3. Sponge cakes with butter;

4. Classic sponge cakes;

5. Nut sponge cakes;

6. soft cookie dough;

7. Cream charlotte with walnuts;

8. Cream charlotte;

9. Syrup for syruring;

10. invert sugar syrup;

11. icing syrup;

12. French fries;

13. French fries with salt;

14. Potatoes cut salted, fried bars;

15. Cut potatoes French fries;

16. baked potatoes;

17. Mashed potatoes.

The research results are presented in Table 2.

**Table 2 Values of water activity, analyzed culinary production**

<b>Name of the preparation</b>	<b>Ingredients</b>	<b>a<sub>w</sub></b>	<b>W (%)</b>	<b>Level a<sub>w</sub></b>
Tender biscuit dough	Flour (50%), butter (26%), sugar (17%), egg (6%), baking soda(0.04%)	0,684	25	Medium
Cookies without powdered sugar	Flour (50%), butter (26%), sugar (17%), egg (6%), baking soda(0.04%)	0,330	10	Reduced
Biscuits sprinkled with powdered sugar	Flour (50%), butter (26%), sugar (17%), egg (6%), baking soda (0.04%), powdered sugar(1%)	0,284	10	Reduced
Classic sponge	(22%), starch (5%), sugar (27%), egg (45%), vanilla (0.03%)	0,624	25	Medium
Walnut sponge	flour (22%), starch (2%), sugar (27%), egg (45%), nuts (5%), vanilla (0.03%)	0,633	25	Medium
Butter sponge	flour (21%), starch (5%), sugar (26%), egg (43%), butter (4%), vanilla (0.03%)	0,623	25	Medium
Cream charlotte	butter (38%), sugar (34%), milk (22%), egg (6%), vanilla (0.03%), divine (0.14%)	0,698	25	Medium
Cream charlotte with nuts	butter (33%), sugar (34%), milk (22%), egg (6%), nuts (5%), vanilla (0.03%), divin (0.14%)	0,696	24,6	Medium
Invert syrup	(68%), water (30%), lemon salt (2%)	0,422	30	Reduced
Icing syrup	sugar (73%), water (27%), vanilla (0.03%)	0,591	25	Medium
Syrup syrup	sugar (48%), water (47%), divin (5%), vanilla (0.03%)	0,708	50	Medium
French fries	cut bars, sunflower oil	0,789	46,7	Medium
Cut potatoes, french fries with added salt	Potatoes cut bars, sunflower oil, salt	0,783	46,7	Medium
French fries	Sliced potatoes, sunflower oil	0,476	21,5	Reduced
French fries with salt	Mashed potatoes, sunflower oil, salt	0,535	21,5	Medium
Mashed potatoes with butter	Potatoes, butter	0,817	55	Medium
Baked potatoes	Sliced potatoes	0,815	30	Medium

Source: Developed by the authors

## Conclusion

1. According to a<sub>w</sub> values, the analyzed culinary production falls into the following groups:

a). **Products with low level of vulnerability to storage:** baked biscuits from tender dough sprinkled with powdered sugar, baked biscuits from tender dough without powdered sugar, invert sugar syrup, fries fries without salt.

b). *products with medium level of vulnerability to storage*: fries with salt, sugar syrup for glazing, butter bread, classic bread, walnut bread, tender biscuit dough, charlot cream with nuts, charlot cream, sugar syrup for syringing, french fries bars with salt, french fries bars without salt, baked potatoes, mashed potatoes with butter.

2. Biscuits made from the same tender dough with powdered sugar have a lower water activity than those without sugar, therefore they will be stored without modification for a longer time.

3. The cutting form influences the activity of water. Fries that have been cut into straw have lower values than potatoes that have been cut into bars and treated by the same method.

4. The finished potato preparations obtained by baking and boiling have a higher water activity than by frying. This is explained by the addition of more water by the fat soaked by potatoes.

5. Invert sugar syrup with lower sugar concentration and higher humidity than syrup for syringing, has lower water activity, due to the fact that reducing sugar has the property of binding more water than sucrose.

6. The substitution of 5% butter according to the recipe with 5% of nuts (i.e. butterfat that practically does not attract water with another fat of vegetable origin) did not give a significant change in water activity in either creams or cakes.

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## THE STUDY OF THE IMPACT OF SHOCK TACTICS IN ADVERTISING UPON CONSUMERS IN REPUBLIC OF MOLDOVA

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**Abstract:** Advertising can appeal to the rational side of consumers, it can convey information and elicit cognitive reactions, however the most interesting aspect of advertising is the emotional aspect that affects the feelings of the audience. Striving for exceptionalism and persuasion, advertisers tend to use dramatic emotions, they create messages that would shock consumers and increasingly resort to breaking social norms and established morals, so that their advertising messages break through the traditional advertising clutter and reach the existing or potential customer. Since the 1980s, shock advertising has gained interest among both advertising industry specialists and academics. For the national context, shock advertising is a new, less studied field, but one that is attracting increasing attention from both theorists and practitioners in the field who are looking for innovative methods of communication. The aim of this article is to analyze how Moldavian consumers react to various shock tactics in advertising, that is argued by the need to understand how it could help companies create a competitive advantage and what are the benefits and risks of using shock tactics in various contexts in our country. For this study authors used mixed methods of research (qualitative and quantitative), including two focus-groups and a survey with a sample of 600 people. The results show that there are differences in reactions due to demographic factors, such as age and sex, but also cultural factors such as religion. Moldavian consumers are not very tolerant to shock advertising and disgusting images, religion taboo and cruelty were perceived as most offensive. In the same time consumers reacted more positively to the use of shock tactics in social advertising in comparison with the commercial context, considering it more effective in attracting attention and influencing consumers to act.

**Keywords:** shock tactics, advertising, consumer reactions, focus-group, survey

JEL Classification: M1, M3

### Introduction

Advertising has become an integral part of everyday life, due to the abundance of advertising messages, it is impossible to pay attention to or retain them, so over time, consumers learn to ignore

most ads they are exposed. Studies show that an average person is exposed to more than 5,000 promotional messages every day, but remembers only 11% of the ads, and the remaining 89% go unnoticed by consumers.

Research focusing on shock advertising can be traced back to the early 1980s, the methods of ad implementation that could cause shock are those that show "antisocial behavior, use of indecent language, nudity, racism, sexism, or executions that include excessively personal subjects" (Kerr et al., cited by Evans A.,2014). The US Advertising Standards Agency (ASA) found that advertisements containing elements of violence, sexual references or nudity, gender stereotyping, charity and public service advertisements raised the most complaints of harm and offence to the public. Shock advertising is an attempt to "surprise an audience by deliberately violating common norms or values and individual ideals in order to capture the attention of a target audience" (Dahl et al.,2003).

For the national context, shock advertising is a new, less studied field, but one that is attracting increasing attention from practitioners in the field, who are looking for innovative methods of communication. The importance of studying shock advertising is argued by the need to understand what reactions it can provoke among Moldavian consumers, how it could help companies create a competitive advantage, and what benefits and risks of using shock tactics in different contexts might be. Studies have focused on defining the elements and features of shock advertising, with the common emphasis that must break social norms in ways that are intentional and unexpected by consumers. Analysis of theoretical framework for shock advertising has shown that it could be more interesting than other types of advertising, and the shock experienced because of exposure to the advertising message captures attention, helps recall and recognition. The author used mixed method of research, involving qualitative focus-groups and quantitative survey to analyze cognitive and affective reactions of local consumers toward shock advertising.

## **THEORETICAL ASPECTS OF SHOCK TACTICS IN CONTEMPORARY ADVERTISING**

### **Theoretical review of the shock advertising concept and its impact on consumer behavior**

When discussing such a type of advertising, a term - shock advertising - is particularly common in practice. However, a review of the scientific literature reveals that marketing academics and practitioners use different terms to define shock advertising. Other terms with the same semantic meaning that are mentioned in the literature by researchers are: irritating, non-traditional, offensive, taboo, provocative, shocking and controversial. These concepts refer to the same marketing objective of provoking shock among the target segment through the type of promoted products and the way of promotion using emotional appeals.

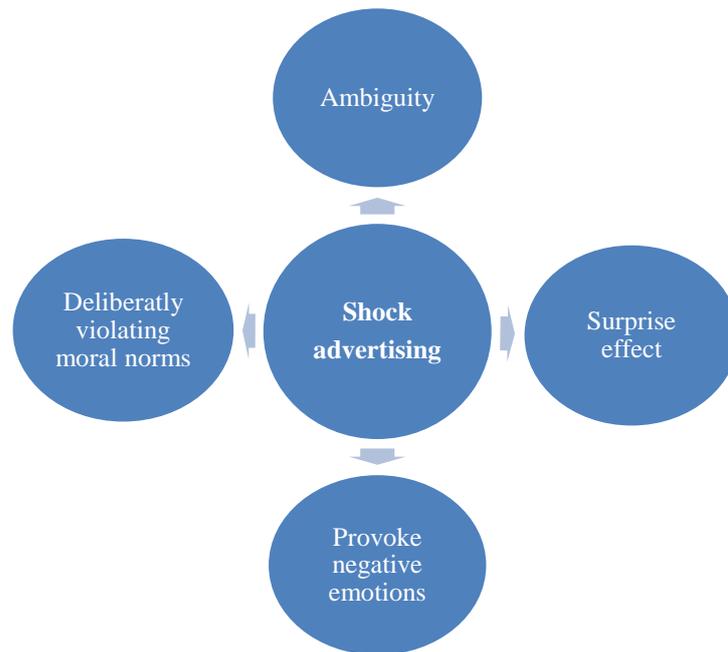
Shock advertising is advertising that conflicts with established expectations, norms and behaviors (Stiensmeier and Pelster, 2008). Dahl (2003), one of the most cited authors on shock advertising, defined it as "a deliberate attempt to surprise an audience and thereby violate societal norms and values and personal ideas in order to capture the attention of a target audience".

Offensive advertising is commonly viewed as advertising that intentionally, rather than unintentionally, horrifies and upsets viewers (Gustaeson and Yssel, 2008). Venkat and Abi-Hanna defined it as one that calculatedly offends its audience. Authors Gerard Prendergast, Wah-Leung Cheung and Douglas West (2009) use the concept of offensive advertising to refer to 2 types of advertising: one which promotes products that may offend and another which uses offensive ways of promoting products.

Controversial advertising has been described as "an advertisement that suddenly captures the viewer's attention by creating a buzz (effect of controversial discussion), violating moral or social norms, traditions and customs" (Skorupa, 2014). Pflaumbaum (2011) conceptualized shock advertising as one that challenges various taboos in order to surprise the target audience and create negative reaction. Javed and Zeb (2019) referred to definitions by Dahl and others, but proposed their own definition of "shockvertising" stating that it is advertising that suddenly grabs the attention of the audience and creates the resonance or buzz marketing effect and may go against social norms, customs, traditions or cultural values.

Nigel K. LI. Pope, Kevin E. Voges and Mark R. Brown (2014) have referred to shock advertising using the term provocative advertising, which they define as characterized by an intentional attempt to gain attention through shock and which operates through three characteristics: distinctiveness, ambiguity, and violation of social norms and cultural taboos. Parry (2013) noted that shock advertising includes terms and formulations such as "advertising provocation", "violent advertising" (Andersson, 2004), "advertising taboo" (Sabri and Obermiller, 2012), "offensive advertising" (Waller, 2005) and "sexually referenced advertising" (Sengupta and Dahl, 2008).

From the concepts analyzed in the theoretical field it can be concluded that not all the terms used in the description of shock advertising are identical, however many common aspects and characteristics are found, which allow these terms in the paper to be used as synonyms, among them are violation of social and moral norms, creation of surprise effect to cause the highest level of shock. The message used is ambiguous and confusing, leading to group discussions and creating a buzz to attract greater attention among the public. Another common element mentioned in these notions is - provoking negative emotions among consumers, which arises because of violation of ethical and moral norms in society. Consumers' negative reaction to shock advertising may be partly since no one gives the reason or explanation why the shock tactic is used, which creates confusion and greater interest.



**Figure 1. Distinctive elements of shock advertising**

Source: authors own study or based on literature review

Based on the relevant literature review, the author proposes the following definition: “shock advertising” is a form of advertising that is designed to create a strong emotional impact on the audience by intentionally and unexpectedly violating social and moral norms, values, and norms to attract people's attention, differentiate itself, achieve a higher level of message recall, as well as persuade them to perform an action.

There are different types of shock ads, such as those using shocking or violent images, those containing vulgar or offensive language or those dealing with taboo or controversial subjects. The aim may be to draw attention to a product or service by creating a strong emotional impact on the audience, or to raise awareness of an important social or political issue.

Shock advertising, like traditional advertising, can be used in a variety of media and communication channels, depending on the marketing objectives and target audience. Here are some examples of media where shock advertising is frequently used

1. Television: Shock ads are often used in TV commercials, where they can reach a large number of viewers in a short period of time. They can be placed in commercial breaks of news programs, popular TV shows or major sporting events.

2. Internet: Shock ads can also be used on online platforms such as websites, social networks or YouTube. These can be distributed through paid advertising campaigns or through organic content such as viral videos.

3. Outdoor: Shock ads can also be placed on billboards or in crowded public places such as subway stations or airports. This type of advertising is aimed at passers-by and can attract attention through the large size of posters or the use of powerful images.

4. Print media: Shock advertising can also be used in newspapers or magazines, where advertisements with strong images or striking messages can be placed.

It is important to note that, regardless of the type of media used, shock advertising must be strategically placed and relevant to the target audience to generate the desired impact. Researching consumers' emotional response to their product, service, idea, or advertisement is the bulk of advertising research. According to the approach proposed by most researchers, to achieve an optimal psychological effect, advertising should evoke strong positive emotions in the audience. However, sometimes the opposite situation can occur, for example, advertising might encourage consumers to buy a product even though it provokes unpleasant and irritating emotions, fear, or anger. Ortega-S (2011) mentions that negative emotions still encourage consumers to make the purchase to release the negative emotions they feel after exposure to the advertising message. Most people are certain that shock ads are created for the sole purpose of attracting attention, which is true, but for people to change their thinking, their deep and strong emotional reaction must be provoked.

According to Williams (2009), shock ads are successful because they affect the most sensitive part of the audience and their emotions. The author states that shock tactics acquire an increasingly strong emotional form. Studies mentioned that people do not try to remember information that provokes negative emotions, consumers still tend to dismiss a shocking emotional appeal by deciding "I'm not that bad" or "This issue is not about me". Shock advertising, showing the emotional consequences to other consumers comparing to just showing the problem to the audience, is the latest and most effective trend.

To increase advertising recall, recognition, and recall of information, specialists often use comparison, identification, and contrasts. According to the phenomenon of selective retention, human memory registers certain elements of a product's advertisement, which help to keep the advertised phenomenon in memory of consumers for a longer period of time. One of the tasks of advertising is to achieve artificial association and to reinforce new images in the consumer's memory.

Studies conducted at Ogilvy's research and development center in 2009 show that ads that people like, boost sales more than those that irritate them. To influence consumers to buy, they need to be compelling, showing new possibilities that would come with one or another product purchased. Therefore, advertising specialists should combine skills from psychology, philosophy, and sociology, and advertising should affect not only the mind, but also the feelings. Society has become more complex, forcing companies to constantly look for new ways to capture the public's attention. The advantages and disadvantages of shock advertising are identified in the figure 2.

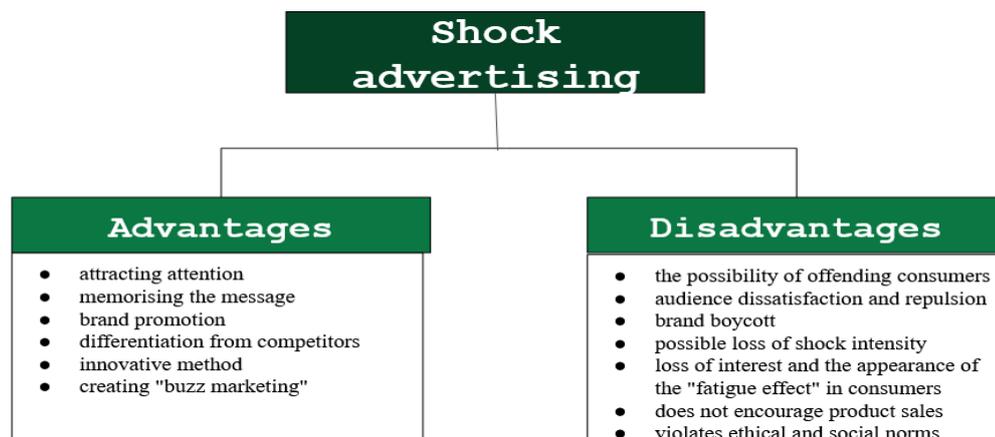


Figure 2 Advantages and disadvantages of the use of shock advertising

Source: author own study or based on literature review

The biggest challenge for ad creators is that shock advertising could be an absolute success or total failure, it all depends on consumer reaction. Analysis of theoretical approaches to shock advertising has shown that it is considered to be more interesting than other types of advertising, and the shock experienced as a result of exposure to the advertising message captures attention, helps recall and recognition. In the literature, there are numerous criticisms of shock advertising and the effectiveness of its use. It is noted that the effort to shock consumers may result in a degree of dislike of the advertisement and an increased level of dissatisfaction or revulsion, subsequently creating a negative dissonance towards the advertised product or company brand among end consumers. It is considered that after a period of time, shock advertising becomes less controversial method, that no longer works, because it loses its shock value and needs to be replaced with new methods (Urwin and Venter, 2014). The shock in the advertisement could alienate consumers and create brand distaste, which could lead to brand boycotts (Klara, 2012; Hodge, 2007). In two experimental studies, Lee et al. (2020) demonstrated that when a well-known brand is promoted using shock tactics, consumers will evaluate brands associated with a socially accepted product (as opposed to a controversial product) less favorably.

The ineffectiveness of shock tactics is explored in the study by Andersson et al. (2004), who argue that shocking advertising can create a negative image of the brand in the consumer's mind, which can lead to lost sales. Shock advertising is more suitable for increasing brand awareness than for promoting sales, Sandikci (2011) argues that shock advertising creates brand awareness in the short term, but in the long term the impact has not been sufficiently studied. Isaac A. in 2016 published an article in The Guardian, which states that repeated use of shock advertising leads to a decrease in shock intensity and target segment detraction, thus the fatigue effect can occur.

### Types of shock tactics in contemporary advertising

The literature shows that the following three types of offensive tactics are most commonly used in advertising: a) sexual references, b) appeals to fear and c) violent stimuli. A more in-depth analysis of the emotions triggered by shock advertising was carried out by Dahl et al. (2003) who identified seven types of shock tactics (the term used in English sources is "shock appeals"): disgusting images, sexual references, profanity or obscenity, vulgarity, indecency (ethical rudeness), moral offences, religious taboos. The typology of shock tactics according to Dahl (2003) is described in Table 1.

**Table 1 The types of shock tactics in advertising according to Dahl**

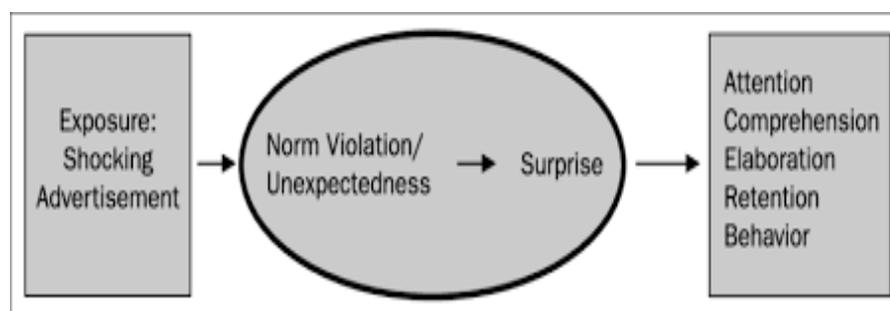
Offense Elicitor	Description
Disgusting images	References to blood, body parts or secretions, orifices, especially urinary/fecal, gases, odors, disease, parasites, bodily harm (e.g., dismemberment), death and decay
Sexual references	References to masturbation, implied sexual acts, sexually suggestive nudity or partial nudity
Profanity/obscenity	Swear words, obscene gestures, racial epithets
Vulgarity	References to crude or distasteful acts by humans or animals, such as nose picking, farting, licking, humping, or drinking from the toilet
Impropriety	Violations of social conventions for dress, manners, etc.
Moral offensiveness	Harming innocent people/animals, gratuitous violence or sex, alluding to people or objects that provoke violence (e.g., Hitler), violating standards for fair behavior (e.g., shooting a person in the back), putting children in provocative situations (e.g., sexual, violent), victim exploitation
Religious taboos	Inappropriate use of spiritual or religious symbols and/or rituals

**Source:** Tiwari Munich, Kaur Jaspreet, Manglik Ami, Goel Anshu, Impact of shock advertisement on consumer behavior, International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-8 Issue-4, November 2019, p.1840-1848

Breaking rules and taboos have caught the attention of many researchers in the field. Thus Pollay (2015) states that "Standards of public decency have changed greatly in the twentieth century, and advertising has been one of the elements that has contributed to the changing norms in society", it should be noted that reciprocally, changing social norms have affected the content and specifics of advertising. For example, the use of sexual references in advertising can be considered as a specific case of transgression, as the subject of sexuality is considered taboo - at different levels - all over the world. Current research on the use of sexual appeals in advertising tends to show that despite the controversy surrounding the tactics, sexual content increases the level of attention and interest, as well as the level of purchase intent. These effects, however, often seem mediated by other factors, such as the degree of congruence between product and sexual appeal, the context in which these ads are presented, and certain cultural and individual characteristics of the audience. In addition to sexual appeals, other social issues such as drugs, racial discrimination and violence may maintain a similar degree of shock value across cultural and national boundaries.

Some consumers perceive the whole message when they see an advertisement, others have emotions related to objective associations and memorize the emotional elements of the advertisement, and others focus their attention on the execution of the advertisement. Studies show that even twins interpret the same message of an advertisement differently due to their different interests and life

experiences (Mick and Buhl cited by Banyte 2014). Consumers' reaction to shock advertising can be explained based on Dahl, Frankenberger and Manchanda's (2003) model. Study results show that the use of provocative, controversial, and/or offensive advertisements captures consumers' attention (Phau and Prendergast, 2001), but not all of them are noticed by the target audience. Dahl (2003) argues that the violation of acceptable social norms is the stimulus that draws attention to a shocking advertisement and calls for its elaboration. If an advertisement unexpectedly "violates" established norms in an appropriate, tasteful, and ethical way, it evokes consumer surprise. For the public to understand the message communicated by an advertisement, they are forced to elaborate on it. Consequently, according to Dahl, the surprise caused by the violation of socially acceptable norms attracts attention and stimulates elaboration, retention, and therefore influence certain behavior.



Source: Darren Dahl, Ranjesh Machanda, Does it pay to shock? Reactions to Shocking and Nonshocking Advertising Content among University Students, *Journal of Advertising Research*, September 2003

It is the aspect of violation of social norms and values that supposedly underlies the ability of advertising to break patterns and capture the attention of the target audience. The initial processing of advertising information involves a cognitive evaluation that determines whether the advertisement has violated a social and/or personal norm. Any object or event (such as an advertisement) that contradicts an established expectation or pattern takes the target audience by surprise. Surprise is a significant part of the process because it causes the initiation of processing of advertising information and draws attention to the innovative stimulus and event. By focusing attention on the stimulus that causes the shock, the element of surprise encourages further and more detailed processing of the advertising content, an idea that is also supported by studies in the field of expectancy disconfirmation theory. Empirical research shows that individuals engage in deeper thinking about unexpected events than the unexpected. Therefore surprise encourages further cognitive activity because individuals because they want to understand the source of their surprise. Further processing of advertising information takes the form of comprehension, literal understanding of the message and elaboration, production of thoughts related to the product/message.

3 Based on the relevant literature review and the aim of the study the author states the following research objectives:

1. To assess the impact of shock tactics in advertising on consumer behavior

2. To comparatively analyze various shock tactics to determine which are perceived to have a higher level of shock

3. To analyze how do socio-cultural factors influence consumers' perception of shock advertising? (Generation Y and Z, gender, education level, urban/rural environment)

The following research questions have been formulated in line with the advertising impact measures mentioned above:

*Cognitive variables:*

- How do consumers define shock advertising?
- Do shock ads succeed in getting consumers' attention? - Attempts to shock consumers can generate high levels of awareness but can also lead to low levels of acceptance or even high levels of disapproval.
- Do consumers remember the content of these provocative ads? (message recall)
- Do the shock tactics used in social and commercial advertising have a different impact?

*Affective variables:*

- To what extent do consumers like certain provocative advertising messages?
- What is the impact on company brand perception? (Is it possible for consumers to have a negative attitude towards an advertisement and still maintain a positive attitude towards the promoted brand?)
- What is the nature of the consumer's reaction when exposed to shocking advertisements? (adjective checklist) – shocking, scary, disgusting, educational, obscene, confusing, amazing, etc.

*Conative variables:*

- Do shocking ads influence consumer purchase intentions or change behavior, especially compared to more traditional appeals?
- Are there socio-demographic variables that explain differences in reactions to shocking ads?

All shock tactics will be analyzed in terms of 3 aspects:

- Level of shock
- Violation/violation of moral norms
- Message/brand recall

Two research methods were used in the study:

1. Qualitative method - Focus Group Discussions - with the aim of collecting information from specific target groups to formulate hypotheses to be used later in the qualitative research method, finding out the attitudes towards shocking advertising of certain target groups of consumers, obtaining

qualitative data, perceptions and opinions, quotes, that capture individuals' behaviors towards shocking advertising and testing examples of shocking advertisements and questionnaire questions before launching them in the quantitative part of the research.

#### **METHODOLOGY:**

From the qualitative methods Focus Group is one of the most popular research methods used to analyze the impact of advertising on buying behavior. To achieve the objective of the research, 2 online Focus Groups were organized on the Zoom platform. The first Focus Group included participants from generation Z (aged 15-26) and the second with representatives of generation Y (aged 27-42). Online focus groups are a growing trend in the market research industry because of their ability to provide cost-effective qualitative information in a shorter time. The main advantages of conducting focus groups remotely mostly revolve around cost savings,

time savings and wider geographical areas for recruitment.

2. Quantitative method - Online interviews - with the aim of measuring the hypotheses received from the qualitative method, proving through quantitative analysis, is it really the majority opinion or just someone's perception, quantitatively confirm or disprove information received from the qualitative method.

#### **METHODOLOGY:**

From quantitative methods was selected online survey conducted in May 2023, using specialized software: online panel for quantitative data collection - Evonix CATI / Web fieldwork system. The study was conducted on the basis of a probability, stratified and random sampling, with respect of region, gender and age quotas. Total 604 resulting interviews: Generation Z (15-26 years) - 302 interviews and Gen Y (27-42 years) - 302 interviews. Urban environment, including Chisinau - 456 resulting interviews and rural environment - 148 interviews. For a sample of 600 interviews with the population aged 15 - 42 years - maximum error +/- 2.83%, this would mean that for 50% of real answers, in the analytical report the deviations range from 47.17% to 52.

### **Research methodology and findings**

Results are presented according to the type of shock tactic in the ad compared on quantitative and qualitative methods.

#### **1. Disgusting images in advertising**

#### **QUANTITATIVE METHOD**

The majority of respondents (93%) have a negative impression. For the most part, the advertising given was rated from 1 to 6 by both Gen Z and Gen Y. 46% of all respondents rated the level of shock caused by this advertising with 9 and 10 (on a 10-point scale). 74% of all respondents mentioned that this image provoked negative feelings, 25% - neutral feelings, and only 3% - positive feelings. Gen Y has a more negative position than Gen X (80% compared to 68%). Positive emotions (4%) have respondents aged 15-26 years (especially - interest, hope, enthusiasm, respect, excitement, etc.). Sadness is a feeling most provoked by the given image. For others fear, disgust, dislike, dissatisfaction - are the TOP-5 provoked emotions. 85% of all respondents mentioned that this advertisement provoked no or partial interest. The share of those who are interested in this advertising is higher among Gen Z.

#### QUALITATIVE METHOD

This disgusting advertisement has a different impact on generations: generation Z has a neutral, confused attitude, whereas Generation Y has a negative attitude. It will not influence consumer behavior, so as conclusion that the advertising with disgusting images has more of a negative impact and can affect the image of the brand.

### **2. Religious taboos in advertising**

#### QUANTITATIVE METHOD

The majority of respondents (94%) have a negative impression. For the most part, the advertising given was rated from 1 to 6 by both Gen Z and Gen Y, 42% of all respondents rated the level of shock caused by this advertising with 9 and 10 (on a 10-point scale) and 74% of all respondents mentioned that this image provoked negative emotions, 27% - neutral emotions, and only 2% - positive emotions.

Gen Z has a more neutral position than Gen Y (34% vs. 20%). Positive emotions (3%) only respondents aged 15-26 have positive emotions (in particular - joy, hope, enthusiasm, respect, optimism, etc.). Disgust is a feeling most provoked by the given image, for others shame, dislike, irritation, dissatisfaction - represent TOP-5 provoked negative emotions. 92% of all respondents mentioned that this advertisement provoked no or partial interest. The share of those who are interested in this advertising is higher among Gen Z.

#### QUALITATIVE METHOD

Advertising with religious taboos is more likely to have a negative impact on both Generations. Such advertising will not influence consumer behavior, it will have a more negative impact and could affect the image of the brand.

### **3. Sexual references**

#### QUANTITATIVE METHOD

The majority of respondents (87%) have a negative impression. For the most part, the advertising given was rated from 1 to 6 by both Gen Z and Gen Y, 24% of all respondents rated the level of shock caused by this advertising with 9 and 10 (on a 10-point scale) and 52% of all respondents mentioned that this image provoked neutral feelings, 41% - negative feelings, and only 10% - positive feelings. Gen Y as well as Gen X rated this advertisement as neutral (Gen Z 51%, Gen Y 52%). Positive emotions (13% Gen Z and 7% Gen X) especially - Interest, joy, enthusiasm.

For others shame for others, dislike, displeasure, irritation are the top-5 negative emotions provoked, 79% of all respondents mentioned that this advertisement provoked no or partial interest. Interest provoked by this advertisement among Gen Z/Y are at the same level (21%)

#### QUALITATIVE METHOD

For both generations, advertising with sexual references of this kind provokes neutral emotions.

It will not influence consumer behavior. The message is clear and it will not influence the consumer to change their attitude towards the brand. As a conclusion sexual references in advertising have more of a neutral impact and will not affect the image of the brand.

#### **4. Moral offensiveness**

#### QUANTITATIVE METHOD

The majority of respondents (96%) have a negative impression. For the most part, the advertising given was rated from 1 to 6 by both Gen Z and Gen Y, 50% of all respondents rated the level of shock caused by this advertising with 9 and 10 (on a 10-point scale) and 83% of all respondents mentioned that this image provoked negative feelings, 17% - neutral feelings, and only 1% - positive feelings. Gen Y has a more negative position than Gen X (88% compared to 78%).

Disgust is a feeling most provoked by the given image, for others dislike, displeasure, irritation, fear - are the TOP-5 negative emotions provoked. The share of those who are interested in this advertising is higher among Gen Z, but 91% of all respondents mentioned that this advertisement provoked no or partial interest.

#### QUALITATIVE METHOD

Social advertising of this kind is visually ugly for both generations, but at the awareness level it will have an impact. It will influence them, it will make them think, maybe even act. The message will be retained, it will be memorized by gender Z. At the action level it will influence the Gen Y consumers, so it probably will have more of a negative impact.

## 5. Impropriety

### QUANTITATIVE METHOD

The majority of respondents (60%) have a negative impression. For the most part, the advertising given was rated from 1 to 6 by both Gen Z and Gen Y, 75% of all respondents rated the level of shock caused by this advertisement as 1 and 6 (on a 10-point scale) and 43% of all respondents mentioned that this image provoked negative feelings, 34% - positive feelings, and only 28% - positive feelings. Gen Y has a more negative position, than Gen Y (50% compared to 36%), positive emotions (31%) have respondents aged 15-26 (especially - hope, respect, trust, interest, optimism, etc.). Sadness is a feeling most provoked by the given image.

For others fear, shame for the laity, shame, dislike are the TOP-5 negative emotions provoked. 49% of all respondents mentioned that this advertisement provoked absolute or partial interest.

The share of those who are interested in this advertising is higher among Gen Y.

### QUALITATIVE METHOD

For both generations the message of this advertisement is clear, more neutral attitude for Gen Z negative attitude for Gen Y, will impact primarily for violent offenses.

As a conclusion moral offensiveness in advertising has more of a neutral impact and will not affect the image of the brand.

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## PROJECT RISK MANAGEMENT THROUGH PMBOK

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**Abstract:** The article highlights the importance of risk management for the success of projects and organizations, respectively.

Project complexity, technological uncertainty, product innovation, cadence, or progress monitoring are all ways that affect project risk. Therefore, project risk management is a crucial component of the contemporary project management approach and a critical instrument for efficient project planning and control.

Risk management is defined as a collection of procedures that guarantee the recognition, assessment, and response to risks that have materialized and, collectively, it assures the project will proceed as anticipated.

The contemporary evolution of the business environment increases the level of uncertainty of companies, but also of their internal processes, especially of the internal and external environment of projects. Amplifying business risks is determined by high levels of innovation, new technology, commercial arrangements, interfaces, or other external dependencies.

In this increasingly dynamic organizational context, there is an orientation of projects from predictable to incremental ones. In the same way, the reduction and share of risks take place through the increasingly intense involvement of stakeholders, including their participation in the project teams.

The analysis of the evolution of the content of the project risk management is presented by the comparative-evolutionary analysis of this topic in more advanced editions of Project Management Body of Knowledge and other methodologies, which are known and used internationally.

Project risk management process analysis has made it possible to generalize some ways to enhance this area.

**Keywords:** project management, PMBOK, project risk management, methodology

JEL Classification: B41, M10, O21, O22

### Considerations about the project environment

Projects exist and operate in organizational environments (internal and external) that have different levels of influence and effects on project management and its success. Internal and external characteristics of the project environment can influence its entire course. These influences can have a favorable, unfavorable, or neutral impact on the project deliverables, stakeholders, or project team.

**The internal factors** of the organization arise from the organization itself, and are also determined by the correlation of the project with other portfolios, programs, or organizational projects. These represent:

- ✓ *Organizational and project management (PM) assets* may include approaches, methodologies, tools, models or techniques applicable to the project.
- ✓ *Infrastructure* consists of existing facilities, equipment, and information system, including software, and support.
- ✓ *Resource availability* represents the human, financial, informational, but also material and technological potential, as well as their geographical distribution.
- ✓ *Organizational culture and governance* include vision, mission, values, organizational hierarchy and relationships, leadership style, and code of ethics.
- ✓ *Data assets* include the organization's databases and archives of previous projects.
- ✓ *Knowledge assets* include the general and specialized expertise, skills, competencies, techniques, and knowledge of the parties involved.

**The external factors** form the general context of the organization and can enhance or constrain project outcomes and represent:

- ✓ *Regulatory environment* includes national and international laws and regulations with influence on the legality of the activity, industry standards, data security and protection, business conduct, etc.
- ✓ *Marketplace conditions* represent the factors that determine the company's competitive position: competition, market share, brand recognition, technological development, etc.
- ✓ *Social and cultural influences* include the political climate, national customs and traditions, patterns of conduct, ethics and perceptions, which are reflected on/through the project team and other stakeholders.
  
- ✓ *Academic research* includes industry and market studies, publications and benchmarking results.
- ✓ *Financial influences* include offers from financial institutions, inflation, taxes and tariffs, etc.

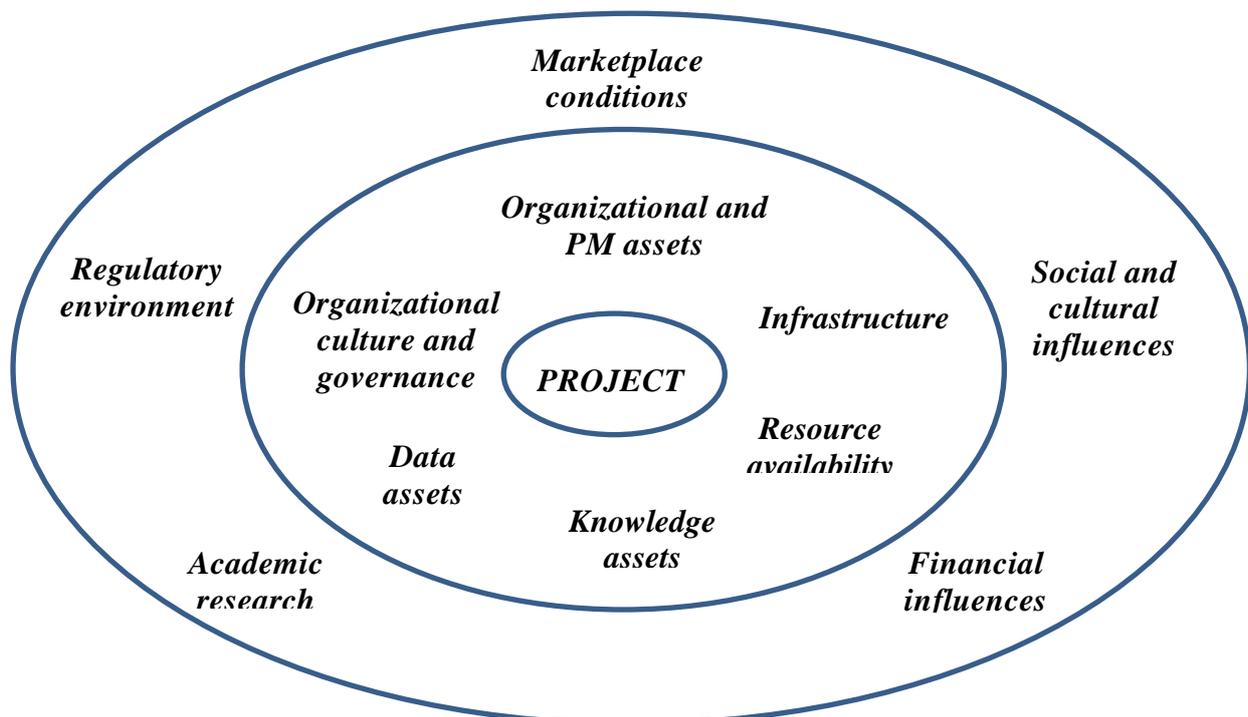
Generalized, the relationship of environmental factors is presented in figure 1.

The dynamic but predictable project environment generates opportunities, and the dynamic but uncertain environment generates major risks.

Apart from the mobility of the environment, the level of risk in projects is determined by the mix of the other 3 characteristics of the external environment:

- ✓ certainty – the quality and quantity of information available to the organization regarding environmental factors and also the certainty of its accuracy;
- ✓ the complexity of the environment – the number of factors to which the organization is obliged to react and also the level of a variety of each factor;
- ✓ interdependence of factors – the ratio in which the change of one factor acts on other factors.

In the same way, the high character of the internationalization of modern business that geographically disperses the resources also determines the risks in the projects and business processes, thus amplifying the importance of coordination activity in project management.



**Figure 1 Relation of environmental factors of the project**

Source: adapted on PMBOK®GUIDE 7th ed.

### The risk influence on the life cycle

According to PMBOK®GUIDE, a risk is “an uncertain event or condition that, if it occurs, can have a positive or negative effect on one or more objectives”.

Throughout the course of the project, stakeholders-related project teams must identify and assess known and emerging risks that are both internal and external to the project. The emergence of unidentified requirements from the parties concerned may potentially increase these risks.

Project risks can have a positive effect on it and then take the form of opportunities, but also have a negative effect - dangers. Project teams must capitalize opportunities and decrease threats.

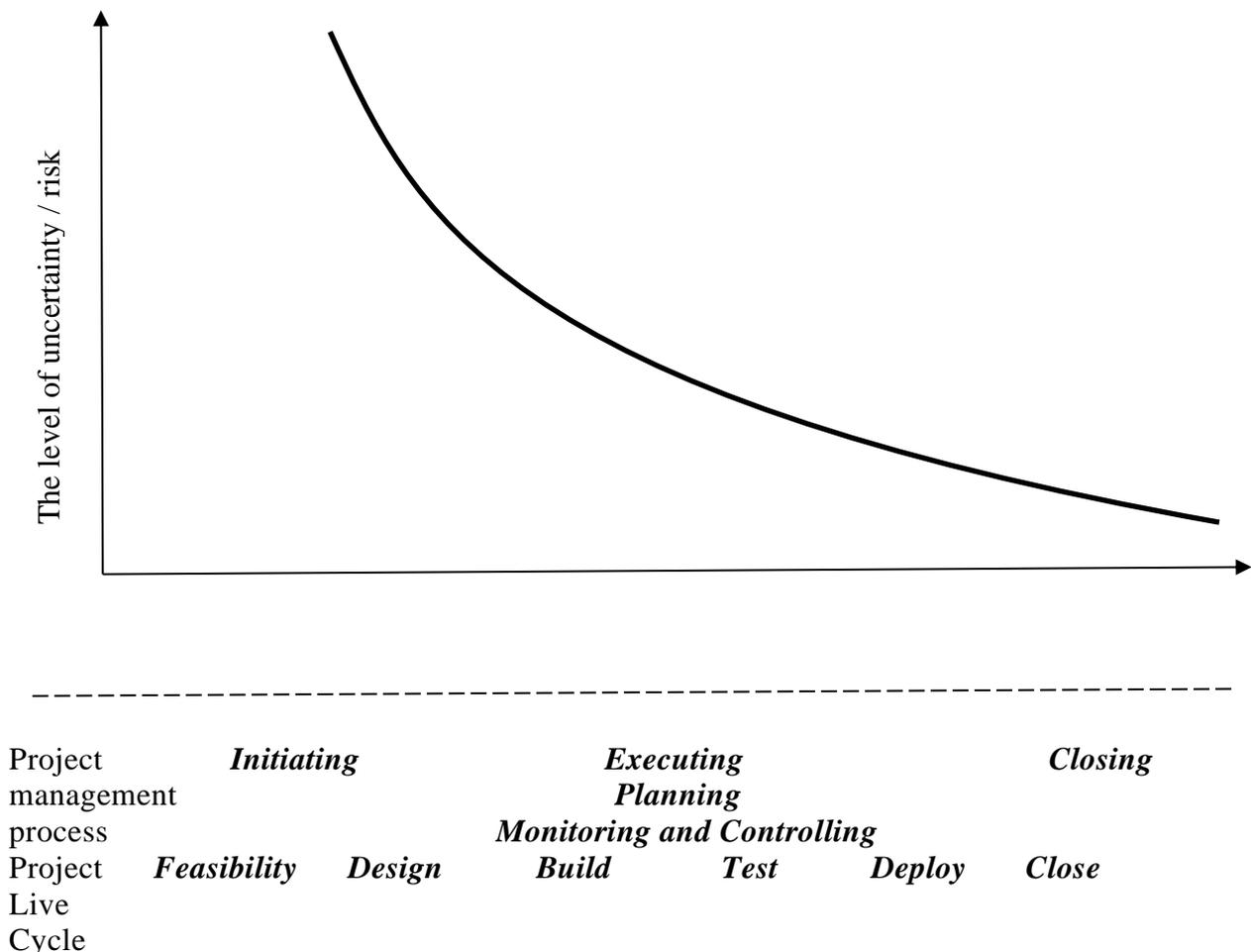
In general, risk responses from the project team should be:

- ✓ Corresponds to the risk event,

- ✓ Timely,
- ✓ Resource provision,
- ✓ Cost-effective,
- ✓ Agreed to by stakeholders, and
- ✓ Owned by a responsible person.

The level of risk is a variable value both during the life cycle of the project/project management cycle and during the life cycle of its product. In this context, the level of acceptable risk exposure by the main stakeholders such as the project manager, the organization in which it is carried out, and the project client must also be examined.

It is obvious that at the beginning of the project the increased level of uncertainty also generates increased risks, directly dependent on the novelty of the project idea. During the realization of the project, by updating the execution plan, the level of uncertainty/risk decreases, but does not disappear completely. Schematically this relationship is presented in figure 2.



**Figure 2 The relationship between the level of uncertainty/risk and project management/project life cycle**

Source: authors' own study

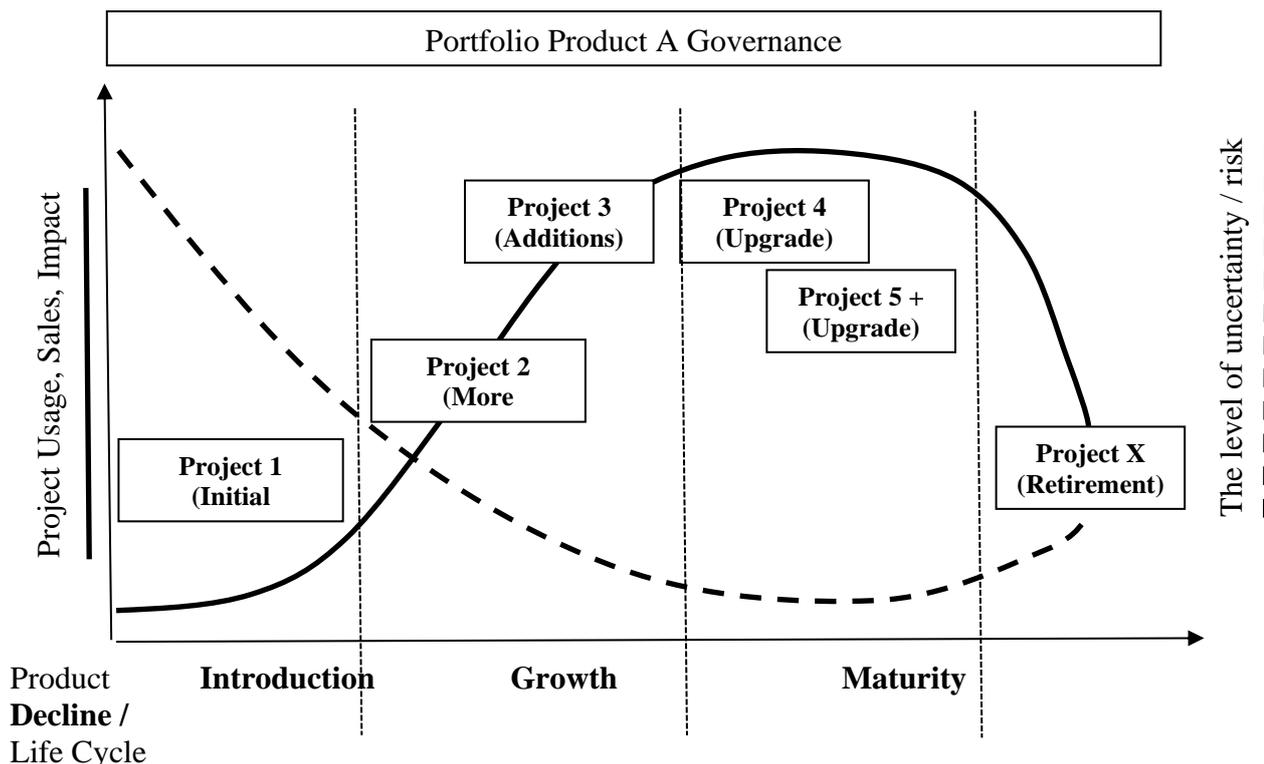
In the same way, the phenomenon of uncertainty/risk is also inherent in the life cycle of the product, developed through a program dedicated to a product of the organization/company.

PMBOK defines by product “an artifact that is produced, is quantifiable, and can be either an end item itself or a component item” (PMBOK®GUIDE 7th ed., page 19). Product management involves the integration of people, data, processes, and business systems to create, maintain, and develop a product or service throughout its life cycle.

As shown in Figure 3, the initial product may start as a project deliverable. Throughout its life cycle, the organization through projects can complement or improve certain components, functions or specific features of the product that create added value for customers. In project-oriented organizations, a program can include the full life cycle of a product or service to manage more synergistically benefits and to create own and consumer value.

The iterative, incremental and adaptive characteristics of modern projects also point us toward this approach.

Regarding the level of risk, we can conclude that it is the highest at the initiation phase, being the lowest at the maturity stage of the product and with an increase at the decline stage, determined by the economic effects (especially the recovery of investments) and the possible social ones following the removal of the respective product from the organization's offer.



**Figure 3 The relationship between the level of uncertainty/risk and Product Life Cycle Phase**

Source: adapted from PMBOK®GUIDE 7th ed., page 19

### **Development of project risk management through the lens of PMBOK evolution**

According to PMBOK, Project Risk Management includes "the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project". (PMBOK®GUIDE 6th ed., page 395). In order to maximize the odds of a project's success, project risk management aims to both raise the likelihood and/or impact of positive risks (opportunities) and lower the likelihood and/or impact of negative risks (threats).

Risk management is by importance, in our opinion, an area with major influences on the other PMBOK knowledge areas (in particular, content, time and cost) – determining the success of the project. Being present in all PMBOK editions, along the way, the content of the risk management area has been subject to revisions and additions. In Table 1 we outline the evolution of the content management summary in different editions of the PMBOK.

We can see that during its evolution, PMBOK deepened its risk management processes, developing the related tools. Thus, classic methods and techniques such as Checklists, Flowcharting, Interviewing (Risk Identification); Expected monetary value, Statistical sums, Simulation, Decision trees, Expert judgment (Risk Quantification); Procurement, Contingency planning, Alternative strategies, Insurance (Risk Response Development) and Workarounds, Additional risk response development (Risk Response Control) have been supplemented with new tools such as Data gathering, Data analysis, Interpersonal and team skills, Risk categorization, Strategies for threats and for Opportunities, Audits etc.

**Table 1 Evolution of content of the risk management processes in the framework of PMBOK**

PMBOK®GUIDE 1st edition (1996)	PMBOK®GUIDE 3rd edition (2004)	PMBOK®GUIDE 6th edition (2017)
<p><b>Risk Identification</b> – determining the risks that are most likely to have an impact on the project and documenting their characteristics.</p> <p><b>Risk Quantification</b> – assessing risks and their interconnections in order to gauge the range of potential project outcomes.</p> <p><b>Risk Response Development</b> – establishing</p>	<p><b>Plan Risk Management</b> – outlining how risk management tasks will be carried out for a project.</p> <p><b>Identify Risks</b> – determining and deciding whether risks could have an impact on the project and recording their characteristics.</p> <p><b>Perform Qualitative Risk Analysis</b> – prioritizing risks for further action by weighing their impact and likelihood of occurrence.</p> <p><b>Perform Quantitative Risk Analysis</b> – calculating the impact (probability and effect) of identified risks on the project's overall goals.</p>	<p><b>Plan Risk Management</b> – outlining how risk management tasks will be carried out for a project.</p> <p><b>Identify Risks</b> – locating the specific causes of each project's risk as well as its individual risks, and documenting their characteristics.</p> <p><b>Perform Qualitative Risk Analysis</b> – ranking each project risk according to its likelihood of occurring, its potential effects, and other factors.</p> <p><b>Perform Quantitative Risk Analysis</b> – quantifying the impact of all identified project risks as well as other sources of uncertainty on the overall project goals.</p> <p><b>Plan Risk Responses</b> – developing alternatives, choosing approaches, and deciding on courses of action to handle both the overall project risk exposure</p>

<p>improvement processes for opportunities and reactions to threats.</p> <p><b>Risk Response Control</b> – adapting to changes in risk as the project progresses.</p>	<p><b>Plan Risk Responses</b> – developing options and actions to improve opportunities and lessen threats to project goals.</p> <p><b>Monitor and Control Risks</b> – implementing risk-response plans, monitoring identified and residual risks, spotting new risks, and assessing the efficiency of risk management procedures.</p>	<p>and specific project risks.</p> <p><b>Implement Risk Responses</b> – implementing approved risk response plans into action.</p> <p><b>Monitor Risks</b> – monitoring identified risks, detecting and analyzing new risks, as well as assessing the efficiency of the risk management process throughout the project.</p>
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**Source:** PMBOK®GUIDE 1st ed., 3rd ed. and 6th ed.

Much more simplified content is provided by ISO 21502:2020 Project, program and portfolio management — Guidance on project management, which identifies the following risk management processes (ISO 21502:2020, page 34):

- ✓ **Identifying risks** - risks can be found at any time in the project's life cycle, and those that have already been found may change or recur.
- ✓ **Assessing risks** - risks should be prioritized for future action after being evaluated for probability, consequence, and proximity.
- ✓ **Treating risks** - involving the project team in the creation of alternatives and steps that will increase opportunities and lessen project threats.
- ✓ **Controlling risks** - making sure that responses to negative risks minimize interruption to the project and that responses to positive risks maximize the beneficial impact.

The methodology PRINCE2 recommends the following risk management procedure, which is based on Management of Risk: Guidance for Practitioners and contains the following processes (Managing Successful Projects with PRINCE2, page 126):

- ✓ **Identify** (Identify context and Identify the risks),
- ✓ **Assess**,
- ✓ **Estimate**,
- ✓ **Evaluate**.

By comparison, the PMBOK methodology presented a more systemic, situational, but also processual approach to project risk management. The development of this complex approach to risk management continues in the PMBOK®Guide 7th edition through the development of the project management principles "Navigate Complexity" and "Optimize Risk Responses", but, tangentially, in others as well. PMBOK®Guide 7th edition (2021) reflects a change in project management content from the 10 Knowledge Areas in previous editions to eight project performance domains - groups of related activities that are critical to the effective delivery of project results:

- ✓ Stakeholders,
- ✓ Team,
- ✓ Development Approach and Life Cycle,
- ✓ Planning,

- ✓ Project Work,
- ✓ Delivery,
- ✓ Measurement, and
- ✓ Uncertainty.

According to PMBOK®GUIDE, the Uncertainty Performance Domain interacts and determines the Planning, Project Work, Delivery, and Measurement Performance Domains from the deliverable perspective. We can see that the latest edition of PMBOK®GUIDE (2021) develops the general concept of uncertainty and risks in projects.

### **The evolution from predictive to agile in project risk management**

Project life cycles can range along a continuum from predictive approaches at one end to adaptive or agile approaches at the other. The project's deliverables and risks are outlined at the outset of a predictive life cycle, and any modifications to these areas are gradually controlled. Deliverables are generated across a number of iterations in an adaptive or agile lifecycle, and each iteration's precise content is established and agreed upon before it begins. In terms of risks, the subsequent iteration typically results in additional ones.

In order to respond to significant levels of change, projects with adaptive life cycles necessitate constant stakeholder interaction. High rates of risk are also produced by complex projects and high rates of change.

An adaptive project's overarching objective will be divided into a list of specifications and work that has to be done, often known as the product backlog. The team will strive to assess how many of the backlog items with the highest priority can be delivered in the following iteration at the beginning of each iteration. Each iteration involves a repetition of the three procedures (gathering requirements, defining the content and creating a WBS). A predictive project, on the other side, starts with these processes and updates them as needed based on an integrated change control process. In this way, the Agile methodology reduces risk in the project's development phase.

The sponsor and customer representatives should be actively involved in the project throughout an adaptive or agile lifecycle to provide input on the deliverables as they are developed and to make sure that the product backlog accurately reflects their current needs. This involvement reduces but also shares the risks between the parties involved in the project.

The project evolution is based on a better understanding of the present risk exposure since customer needs are preserved as a fundamental document that is updated frequently, with each iteration, and work can be rearranged.

The use of cross-functional project teams facilitates knowledge sharing and, as a result, guarantees better risk comprehension and management.

Each iteration's content is chosen with risk in mind, and risks will be found, examined, and dealt with when they arise.

Modern projects are characterized by changing requirements, high risk, or great ambiguity, so the specific content is frequently not known at the start, and significantly changes during

implementation. Early in the project, agile approaches purposefully spend less effort attempting to define and reach a consensus on the project's content and overall risks and spend more time creating the procedure for their continual discovery and evolution. Many project areas discover that there is frequently a discrepancy between the parties' declared requirements and their actual requirements. In order to clarify the requirements, agile techniques purposefully construct and review the evolution of the content and risks of the project stages. As a result, as the project is implemented, its content and risks are defined and revised.

## **Conclusion**

The effectiveness of a project's risk management directly influences its success rate.

The RISC element is related to the content, time, costs, quality and other elements of project management and is a defining one.

Project Risk Management, according to PMBOK, includes “the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project”.

For the successful implementation of projects, managers must know and apply situationally different project risk management methodologies and tools.

Risk management provides the foundation for project planning, cost estimation, scheduling and resource allocation, and other management activities that ensure project performance and success.

To align with modern trends and developments project managers must develop their systemic, process, and especially situational views of the project by moving from the predictive approach to the adaptive or agile approach to the project and its risks.

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- Agile Practice Guide, 2017
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## RECENT TRENDS AND DEVELOPMENTS IN OPERATIONS MANAGEMENT

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**Abstract:** Today operations management is used to characterize the management of the daily activities of all business units, which ultimately lead to the final product or service. The purpose of operations management is to streamline the production process and general operations within the business to maximize profit and ensure business growth. After going through three industrial revolutions, manufacturing technology and management are currently facing the fourth leap (and some researchers say we are in the fifth industrial revolution), industrial revolutions being driven by rapid change, achieved through innovation.

The purpose of this article is to highlight the trends in operations management based on the analysis of this concept evolution. In this sense, we mention the contribution of each revolution in the development of operations management. We note that today's main feature is the use of new technologies to provide prosperity beyond job creation while respecting the planet's production limits. Recent trends in production/operations management relate to global competition and its impact on companies, especially manufacturing companies. Following the research carried out, we highlight and characterize some trends in operations management. A special place belongs to the study of the influence of artificial intelligence on the development of operations management. We argue that artificial intelligence can significantly influence the management of production operations, but also in the service sector by providing significant advantages and improvements. The key question that appears in this order of ideas concerns finding the optimum between decisions made by humans and those determined by machines.

**Keywords:** production management, operations management, artificial intelligence, industrial revolution, digitization, agility.

JEL Classification: M10, M11

### Introduction

Operations management refers to the management of all business activities that facilitate the transformation of inputs into outputs. Initially, the term operations management applied only to production departments. Over the years the system has evolved and now the term is used to characterize the management of the daily business activities of all units that ultimately lead to the final product or service. Production management governs the value-added transformation process within a service delivery system. The task is to process information into decisions, so as to organize and guide the production process towards the achievement of established performance targets (Dyckhoff, 2006). Operations management can be considered a multidisciplinary field that focuses on the effective management of an organization's processes for the production and distribution of specific products and services. It applies both qualitative and quantitative concepts and techniques to increase process efficiency and effectiveness, reduce costs, ensure high-quality results, and improve organizational flexibility to ever-changing demands.

The purpose of operations management is to streamline the production process and general operations within the business. One of the main roles of operations management is to maximize profits and ensure business growth

The stated purpose of this research is to highlight recent trends in operations management based on the analysis of the evolution of this concept.

### **The impact of industrial revolutions on operations management.**

After going through three industrial revolutions (mechanization, electrification and automation) production technology and management are currently facing, as some say (Bauernhansl et al., 2014), the fourth leap, industrial revolutions being driven by rapid changes, achieved through innovation.

The first industrial revolution (Industry 1.0) began in the 18th century with the use of steam power and the mechanization of production. Even though the power of steam was already known, its use for industrial purposes was the greatest breakthrough for increasing labor productivity.

The second industrial revolution (Industry 2.0) began in the 19th century with the discovery of electricity, thus resulting in the first internal combustion engines. Then, towards the beginning of the 20th century, the first cars and the first airplanes appeared. The telephone and the telegraph appeared.

The third industrial revolution (Industry 3.0) began in the 70s of the 20th century. The culminating point is the appearance of a new energy source, the nuclear one. Electronic products appeared, the telecommunications industry and the computer industry experienced rapid development. A new era was born – that of the automation of production processes and the emergence of industrial robots.

The 4th industrial revolution (Industry 4.0) is characterized by the application of information and communication technologies in industry. It is based on the developments of the third industrial revolution. Production systems that already have computerized technologies are extended through a network connection. The networking of all systems leads to "cyber-physical manufacturing systems" and thus to smart factories, where manufacturing systems, components and people communicate over a network and production is almost autonomous ([https:// www.desouttertools.com/your-industry/news/503/industrial-revolution-from-industry-1-0-to-industry-4-0](https://www.desouttertools.com/your-industry/news/503/industrial-revolution-from-industry-1-0-to-industry-4-0)). The result is machines that can predict breakdowns and trigger maintenance processes autonomously or self-organized logistics that react to unexpected changes in production. The digitization of the production environment allows the use of more flexible methods to receive the right information by the right person at the right time. This changes the emphasis in the activity of the operations manager, who does not waste time in searching and collecting the necessary information, but solves the problems that arise. In Industry 4.0. technological innovations, including smart factories, the Internet of Things (IoT), artificial intelligence, 3D printing, bitcoin and gene editing, continue to spread across industries and economies (Marr, 2018; Cotelnic, Dorogaia, 2023).

If some authors talk about the fact that today's society has specific characteristics of the fourth industrial revolution, others consider that we have already entered the fifth (Industry 5.0), which includes the notion of harmonious human-machine collaborations, with an emphasis specifically on the well-being of several stakeholders (society, companies, employees, customers). Thus, it paves the way for a revolution in thinking and capitalizing on human-machine collaborations for the better welfare of society, through the effective use of technology (Noble et al., 2022). Also, the authors

note, it is not clear exactly where or when the term "fifth industrial revolution" originated, but articles and websites (e.g., Aryu Networks 2020; Gauri and Van Eerden, 2019) have noted its emergence. Manufacturing research also recognizes the term fifth industrial revolution (Xu et al. 2021), and the Journal of Manufacturing Systems, International Journal of Production Research, and IEEE Transactions on Industrial Informatics encourage research in this regard.

Noble S.M., Mende M., ș.a. (Noble și colab. 2022) realizând cercetări privind a cincea revoluție industrială evidențiază diferențele între a patra și a cincea revoluție industrială, astfel argumentând, într-un fel, intrarea omenirii în cea de a cincea revoluție. (Tabelul 1)

Noble S.M., Mende M., and others. (Noble et al. 2022) conducting research on the fifth industrial revolution highlights the differences between the fourth and fifth industrial revolutions, thus arguing, in a way, for humanity's entry into the fifth revolution. (Table 1)

**Table 1. Key differences between the fourth and fifth industrial revolutions**

		<b>The fourth industrial revolution</b>	<b>The fifth industrial revolution</b>
Human-technological focus	Maximization strategy	Maximizing the number and scope of technologies and their interconnection	Maximizing the strengths of both technology and people by understanding where each excels
	Competition vs Collaboration	Humans compete with machines for jobs	Humans and machines, metaphorically speaking, dance together; Humans collaborate with machines
Focus on well-being	Focus on the environment	No focus on the environment; Prioritizing technological progress (eg smart factories); Profit tracking	The well-being of all humanity and the planet; Focusing on sustainable and renewable resources; Tracking the profit with a specific purpose
	Pushing the limits of technology	Technology have to be trusted	Human usage of the technology

Source: Noble and colab., 2022, page 201

The Research and Innovation Community Platform (<https://research-and-innovation.ec.europa.eu/>) also tells us about Industry 5.0. It is mentioned that in order to remain the prosperity engine, the industry must lead the digital and ecological transition. Such an approach reinforces the role and contribution of industry within society and places the welfare of the employee at the heart of the production process and uses new technologies to deliver prosperity beyond job creation while respecting the planet's production limits. This platform also mentions that the current approach of "Industry 4.0" is completed, in such a way that research and innovation is put at the service of the transition to a sustainable European industry, centered on people and resistance.

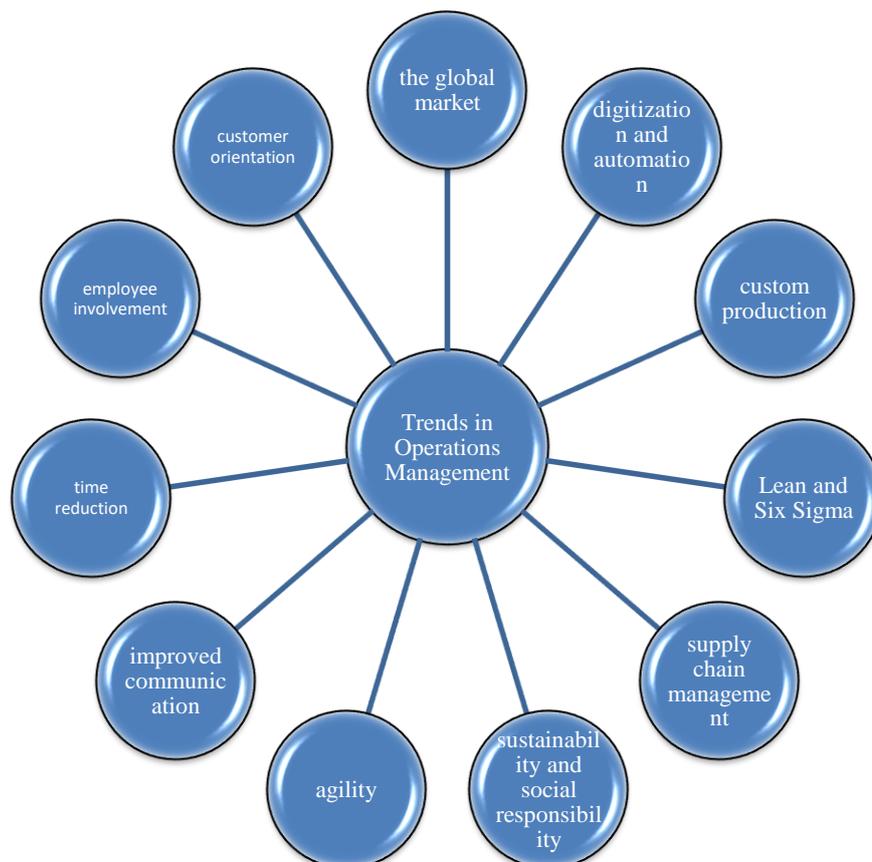
## Trends in Operations Management

How do these changes, industrial revolutions, influence operations management and what are the recent trends in the field? These are the questions that were put before this research. As Gunasekaran and Ngai (2012) mention, “operations management in both manufacturing and service organizations has evolved tremendously over the years”. The aforementioned authors further highlight four trends that have emerged and will continue to affect the field of operations management:

- The market has gone global, forcing business operations to keep up.
- Environmental awareness.
- The application of information technologies in operations management has changed the landscape of operations management.
- Manufacturing increasingly resembles the service industry, which indicates the significant level of services, including project management.

These trends are not mutually exclusive, but intertwine to varying degrees..

Synthesizing several bibliographic sources, we agree that recent trends in production/operations management refer to global competition and its impact on manufacturing firms. At the same time, we consider some of the recent trends much broader. We will stop at some of these to characterize them (Figure 1):



**Figure 1. Some trends in operations management**

Source: elaborated by the author

1. *Global market:* The globalization of business has forced many manufacturing firms to have operations in many countries where they have some economic advantage. This has led to a rapid increase in the competition level between manufacturing companies around the world.

2. *Digitization and automation.* It is an obvious trend, technology is advancing rapidly, and this makes digitalization to penetrate all fields. The automation of manual processes is also the order of the day, being more pronounced for industrial activities. The effect of these processes is visible: reducing unskilled labor, increasing the efficiency and competitiveness of enterprises, which, in turn, allow companies to reduce expenses and waste. The use of digital technologies and process automation have also become increasingly common in operations and production management. For example, industrial robots and computer-aided manufacturing systems can improve the efficiency and quality of the production process, and we are witnessing the gradual merging of the virtual world and the physical world. In this regard, the natural question arises: to what extent can and will operations management tasks be replaced by artificial intelligence (AI) technology? The key question that appears in this order of ideas concerns finding the optimum between decisions made by humans and those determined by machines. Who will set the performance targets? Who will be responsible for errors? And, most importantly, how much decision-making will actually remain a purely human task?

Artificial intelligence can significantly influence the operations management in both manufacturing and service sectors by providing significant advantages and improvements. We consider it necessary to mention the following positive implications of artificial intelligence:

1. *Process optimization:* Artificial intelligence can analyze and process large amounts of information to identify certain trends and more appropriate patterns. In this way, inefficient processes in the production process can be more easily identified and help to formulate suggestions for improvements.

2. *Predictability and planning:* In this direction AI would be of great use, by helping in production planning and inventory management, based on predictive analytics. Based on historical data analysis and factors influencing production processes, AI can plan demand and storage needs, ensuring efficient supply chain management.

3. *Quality improvement:* By monitoring sensors and analyzing data, AI can identify deviations and intervene before errors become major problems. This can lead to reduced defects and associated costs.

4. *Automation and robotics:* Integrating artificial intelligence with robots will help automate repetitive tasks and manual work, leading to both increased efficiency and reduced human error and work accidents.

5. *Autonomous manufacturing:* AI can be used to create and implement fully autonomous manufacturing systems without the need for human intervention in most operations. This can lead to increased efficiency and production speed.

6. *Equipment monitoring and diagnostics:* AI can be used for real-time monitoring of equipment operation within the manufacturing process. This can help quickly identify problems and diagnose breakdowns, allowing them to be rectified before they affect the entire production process.

3. Another recent trend in operations management refers to *Custom Manufacturing:* The growing demand for customized products requires companies to adapt their manufacturing operations to meet

individual customer needs. Techniques such as additive manufacturing (3D printing) enable the manufacture of customized products on a larger and more efficient scale.

4. Adoption of *Lean and Six Sigma* practices by business units. These are two management methodologies aimed at reducing waste and improving the quality of production processes. Many companies adopt these principles to increase efficiency and reduce costs. Instead of targeting mass sales of goods that generate economies of scale, the new trend focuses on manufacturing goods on order confirmation, which results in drastically reduced production costs and zero waste. It helps the organization to promote its operations to be faster, more reliable and of better quality.

5. *Supply chain management*: has become a critical component of operations and production. Companies focus on optimizing the flow of materials and information throughout the supply chain to reduce costs and improve delivery time (Galanton, 2021).

6. *Sustainability and social responsibility*: If in the past the basic purpose of business focused on making profit, today's business has started to focus on environmental sustainability. This new development in operations management discourages the acquisition and use of resources at the lowest possible cost, ignoring environmental damage. In the context of increasing environmental and social responsibility concerns, many companies are adapting their operations and production processes to be more sustainable and responsible. Today's operations managers are increasingly concerned with pollution control and waste disposal, have begun to initiate the design of products and processes that are sustainable, that consider minimal resource use, recycling possibility, provide biodegradable and environmentally friendly components, the use of less toxic chemicals. Thus, green production can be seen as a recent development in operations management

7. *Agility*. (<https://www.tutorialspoint.com/recent-trends-and-developments-in-operations-management>) Agile approach requires the enterprise to be able to adapt and drive change in a productive and cost-effective way without compromises quality. Agile manufacturing as a key component of operational flexibility (Taylor and colab., 2009) can include the use of reconfigurable manufacturing systems that are designed to rapidly change structure and components to respond to sudden market changes. Agility helps the organization to quickly adapt to internal and external market changes, and helps to respond in a quick and flexible way to customer demands. In a world of accelerated change agility is a vital characteristic of any organization and is an inevitable feature of operations management.

8. *Improving the communication system*. It may seem strange that we t improved communication have been highlighted as an operations management trend. But it is considered that proper and timely communication within the organization is crucial for the efficient functioning of each business unit. It is important to have a continuous flow of information, without any interruption or rupture, to withstand the smooth functioning of the whole system, and easy access and availability of enterprise data we can consider another area of development. Data availability is vital for an organization to make timely decisions, forecast and plan for the future. Unavailability of data leads to reduced efficiency.

9. *Time Reduction*: Reducing manufacturing cycle time and speed to market for a new product gives a company a competitive advantage over other company. When companies can provide products at the same price and quality, faster delivery (short lead time) provides a company competitive advantage over the other.

10. *Employee involvement.* Employees are the real resources that turn inputs into outputs in business. The recent trend is to assign responsibility for decision-making and problem-solving to lower levels in the organization. Namely, they face certain specific situations. They may be more aware of the advantages and disadvantages of the activities of the department or business unit concerned. Operations management began to focus on this area by involving employees and obtaining input for decision making. The right decisions are no longer the monopoly of top management. Examples of worker involvement are quality circles and the use of work teams or quality improvement teams.

11. *Customer orientation.* Any business cycle starts with the customer and ends with the customer. Being customer-oriented is the motto of every business, but focusing on trends and changing patterns of customer behaviors and preferences remains an ongoing trend in operations management. In addition to maintaining relationships with potential customers, it is equally important to find and anticipate customer preferences. Organizations that do not focus on this customer-oriented approach often risk losing market share. Continuous monitoring of customer preferences and changes through feedback can help the operations team come up with products and services that match customer expectations.

## Conclusions

Referring to the above, thus taking an overview of the expected evolutions of operations management presented in this paper, the conclusion is that they have an important impact on the various stakeholders of the business, which will further change the character the work done:

- *Machines and other equipment* have undergone and will undergo major changes: Highly automated computer numerical control (CNC) machines coupled with industrial robots, sometimes working together with workers on specific tasks. This is how their future is seen. (Birla et al., 2020)
- *Workers:* their number will be reduced, they will be deployed for work that requires more knowledge, short-term and unplanned tasks, monitoring automatic equipment, etc..
- *Manufacturing process:* additive manufacturing technologies / 3D printing is considered to be the main process of the future. Additive manufacturing allows the creation of objects with precise geometric shapes that are built layer by layer, unlike traditional manufacturing, which often requires processing or other techniques to remove excess materials.
- *Organization:* Decentralized decision-making based on local information by workers with the support of Artificial Intelligence.
- *Product:* mass production and custom batch production manufacturing.

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## ONLINE UNIVERSITY MARKETING: OPPORTUNITIES AND STRATEGIES

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**Abstract:** Under the conditions of intensifying competition, increasing costs and rapidly decreasing student numbers, universities are facing difficulties in promoting educational offers and attracting students, trying to find the best ways to interact with target audiences to improve and develop the institutional image and reputation, increasing notoriety, increase the attractiveness of study programs and stimulate enrollment. Therefore, the issue of marketing strategies, policies and tactics becomes increasingly current and of major interest to universities. At the same time, the studies conducted allow us to find that marketing remains one of the fields often ignored by universities. The use of digital channels becomes a necessity for any university marketing strategy.

**Keywords:** university, marketing, university marketing, online marketing, communication, marketing strategies.

JEL Classification: M30, M31.

### Introduction

The national development strategy "European Moldova 2030" represents the national long-term strategic vision document and indicates the country's development directions in the context of the Association Agreement and the status of a candidate country for EU accession [1], and the main policies in the field of education, the content and the mechanisms for achieving them are contained in the Development Strategy "Education 2030" [2]. Like other previous strategic documents, the "Education 2030" strategy recognizes education as a national priority and a basic factor in the promotion of democratic values, the assurance of human and citizen rights, in the development of human capital, in the formation of consciousness and in the valorization of aspirations of European integration, with a primary role in creating the premises for sustainable human development and building a knowledge-based society.

Speaking about some more important developments and activities with a positive impact on the higher education system in the Republic of Moldova, specific for the last periods of time, we can refer to the implementation of the stipulations of the Bologna Process and the implementation of the new Education Code, the start of the implementation of the Framework of Qualifications, the development of the Reference Framework of the University Curriculum, the initiation of the development of Qualification Standards for all levels of studies, the establishment of the National Agency for Quality Assurance in Higher Education and Research (ANACEC), the wider access of universities to national funds intended for research in conditions of competition, the launch of an extensive reform in higher education with promises to allocate large funds for the modernization and development of universities etc.

At the same time, the higher education system also faces a series of challenges and problems such as: the dramatic decrease in the number of students simultaneously with the increase in expenditure per student, the insufficient funding of universities, the lack of considerable public investment for research purposes, the level low presence of the research component in universities, the low status of scientific and didactic staff and researchers in higher education in society and the lack of motivation due to low salaries, the small number of academic mobility for students, teaching staff and researchers, weak interaction and unsatisfactory mechanisms of interaction of higher education institutions with the sphere of research and development and the business environment, the low participation of universities in European and international projects and programs, the passivity and weak motivation of students due to the lack of a real perspective in the development of a successful professional career in Republic of Moldova, respectively, their reduced responsibility towards learning results, the undervaluation of the individual work of students in the teaching-learning process and their weak involvement in research activities, the decrease in the prestige of higher education in general and its tarnished image etc.

In the context of the above, universities in the Republic of Moldova also face a series of difficulties, including in promoting educational offers and attracting students, given the dramatic decrease in their number in all programs, forms of education and study cycles.

Certainly, in the conditions of the establishment of the single European area of higher education and the appearance of new opportunities to study abroad for graduates of pre-university education, the universities of the Republic of Moldova are facing increasingly tough competition, and it is necessary to apply appropriate strategies of educational marketing to engage with target audiences, to increase awareness and drive study enrolment. And even if traditional marketing, including that based on the use of television, radio, print media, other forms of promotion continues to maintain its importance and can still be considered to be predominant in marketing activity, its effectiveness is continuously decreasing, and digital marketing, considered to be a new stage in the evolution of the modern marketing concept [3], comes with new solutions, which involve the active use of the Internet and electronic devices.

## **Results and discussion**

The purpose of educational marketing in general and digital marketing in particular is to implement various marketing strategies to promote valuable educational content to applicants, students, teachers and other interested parties. Universities can use online marketing primarily to help prospective students make the right choice when deciding where to study, to increase their brand awareness, to

showcase their strengths, what makes them different from competitors etc., and as a consequence – to stimulate enrollment in studies.

Universities can opt for different online marketing strategies, tactics, channels, techniques and tools, which offer various opportunities to achieve the proposed objectives. Among the most important are:

- *University's web page* can provide information about what the university stands for, the university's offer with reference to study programs, courses, additional services (canteen, sports club, extracurricular activities, frequently asked questions with answer contents), the values offered by the university, the practiced models of study organization (with physical presence, without frequency, online, distance, in mixed form), various educational materials, virtual tours, success stories of former students, etc. The presence of a chat-live, or chat bot gives the possibility to provide instant answers to visitors' questions. For many people the website creates the first impression of the university and its image. A website should represent a clear and memorable brand, fast, mobile-friendly, and easy to use and an important source of improvement is the users' opinions regarding their likes and dislikes, proposals, and improvement suggestions. [5, pp.139-140];

- *E-mail marketing* is considered to be a quick way to communicate with current and potential customers and cheaper compared to other online marketing tools. It enables the possibility of two-way communication both between institutions and between institutions and their current and potential customers. It refers to the process of sending messages for the purpose of information to a specific audience. E-mails may contain information about the educational offer, services provided by the university, newsletters, news about the university and current and future events organized within it, information about open days, personalized offers, successful experiences (stories) of former students, opinions, reviews, discount opportunities, new study programs, extracurricular activities within the university, other information. Among the most frequent questions of candidates who intend to enter the university are the provision of accommodation in student dormitories, living conditions, accommodation tax, accessible equipment, lecture halls and their facilities, learning opportunities, extracurricular activities, etc. Emails can influence study applicants to take the next step in deciding.

- *Online advertising* refers to the presentation of promotional messages and ideas to a specific audience on the Internet. The online environment offers advertising options placed on specialized portals through which it is possible to increase online traffic, the notoriety of the university, study programs, etc. The biggest advantage offered by digital advertising compared to traditional advertising is precise targeting based on demographics, geography, interests, behavioral patterns, etc., with positive effects on click-through rates. Online advertising messages can take different forms, such as [4, pp. 112-124]: *online advertising banners* static, in the form of images, animated, which give the impression of movement through rapid change; interactive, which allow the input of information by the user (for example, asking questions), the possibility of answering users' questions or even enrolling in studies; extensive, which offers an additional space to display the message at the time of display, by expanding the size, after the user has passed the mouse over it or clicked on it; video-banners, which have the shape of a regular banner and have a part intended for playing the video clip, etc.; *interstitials* ("inline", "pop-ups", "Pop-unders", superstitions, etc.) - are textual, graphic, video, etc. advertising messages that appear in the time interval between leaving a page web and loading another or when switching from one page to another of a site; *floating advertising* ("floating ads"); advertisements etc. To increase the effectiveness of online advertising, search engine marketing tools (Search Engine Marketing -SEM) are of particular importance, considered to be the most important means for attracting visitors, increasing search traffic and obtaining customers, to the

extent that most applicants turn to search engines to find information about universities, using keywords for this purpose. At the same time, only the registration on search engines is not enough, it is necessary to optimize the position on the search engine in order to improve the place of the university or its programs in the pages resulting from the search. For this, universities can pay search engines for placement on results pages, or they can focus on organic placement (without paying) on search results. Search engine optimization (SEO) is the process of optimizing a website so that it ranks in the search results, on the first pages of search engines, in the first positions or higher than others, and as a consequence – better traffic to the university website. Among the most commonly used advertising channels in online university marketing are considered to be search engine advertising, social media advertising, advertisements, banners and video ads.

- *Social networks* (Facebook, Twitter, Instagram, Reddit, LinkedIn, Tik Tok, Pinterest, YouTube, etc.) offer a large number of opportunities for interaction with the general public, but also with the target audience represented by young people and their parents, to gain attention of users and generating traffic to the university domain, an excellent way to reach a certain target audience, to exchange information with current and potential students, to build long-lasting relationships with them, to develop promotional campaigns, to obtain information about people who follow social media profiles, to increase awareness, to build the reputation of the university, to obtain feedback from the target audience regarding programs, services, image, to conduct marketing research and obtain information about the needs, wishes, opinions and interests of study applicants, to improve the interaction with them or even the number of enrolments.

- *The blog* (from the English expression web log, meaning diary on the Internet) represents an important communication tool and a component of the promotion strategies of universities. It is a website where texts, comments, reviews, impressions, video and audio materials, photographs, images, drawings, links to other blogs or sites to develop online traffic. As topics of discussion can be used the presentation of the university campus, the courses offered by the university and their importance for professional training, the scientific-didactic and didactic staff available at the university and the posting of captivating interviews, as the case may be, the favorable location of the university, as an important factor of motivation in choosing the university, and places nearby (cultural institutions, entertainment, green spaces, facilities offered to students, etc.). Depending on the audience and its purpose, the blog can be updated with a certain frequency (daily, weekly, etc.).

In order to achieve the proposed objectives, universities can also use other online marketing channels, tools and techniques, such as public relations (communication with the press in the online environment by transmitting information about the activities carried out, creating links on websites relevant, creating blogs, using the company website for information purposes, etc.), viral marketing, content marketing, inbound marketing, influencer marketing, video marketing, can create virtual communities, can use mobile marketing tools through the intelligent and rapid use of all available resources with the aim of gaining efficiency and quality in what the university's marketing team does (agile marketing).

Online marketing strategies can include the use of one or more online marketing channels, techniques and tools, these being developed and implemented with your own efforts, or by calling on the services of digital marketing agencies. Multi-channel marketing involves the use of multiple channels in online marketing strategies: social networks, e-mail, Internet, text messages, etc., in order to reach the target audience more effectively, taking into account the preferences, opinions and interests of actual customers and potential, using for this purpose relevant contents and appropriate channels [6,

7]. For this, it must be taken into account that customers can quickly switch from one digital channel to another, requiring a systemic approach regarding the style of messages and their content. In order to be understood correctly and maintain the attention of customers, regardless of the channel through which they are transmitted, the content of the message must be easy to read, easy to view, easy to understand and convey the same content on all communication channels.

It should be noted that the studies and analyzes carried out, with reference to the universities of the Republic of Moldova, have shown that none of them has a marketing strategy, in general, or an online marketing strategy, in particular. At the same time, the absolute majority of them have Strategic Plans (Strategies) for institutional development for a period from two to five years, in which special attention is paid to university marketing, predominantly with reference to traditional marketing actions, and in a lesser extent - online marketing tools and techniques [8 - 24]. At the same time, the universities of the Republic of Moldova recognize the importance of digital marketing strategies, in order to attract graduates from high school, colleges and centers of excellence, the need for their periodic updating [12], the improvement of the online presence through permanent updating with relevant information, the online promotion of the educational offer for bachelor's and master's studies in Romanian and English at the national and international level through the creation of appropriate advertising materials [22, 24 ], the development of promotional materials regarding the university and their placement in various electronic media and platforms [ 21], of capitalizing on communication opportunities through online tools (Facebook, Twitter, YouTube, etc.) [22], of online promotion of events of any nature, which take place at faculties and universities as a whole [18], of the online organization of the open day [10] etc.

Among the possible online marketing channels and tools, the greatest attention in the Strategic Development Plans of universities (Strategies) is given to the use of opportunities offered by university web pages, and among the most important directions of activity and actions are:

- considering the university information portal as the most important marketing communication channel [8];
- modernizing the structure and continuously updating the university's website, transforming it into an effective tool for information, communication with the beneficiaries (students, employers) and the university's partners (pre-university institutions, the business environment, authorities, organizations and other stakeholders), ensuring feedback regarding the institution's performance [14];
- strengthening and maintaining the university's website [11];
- development of web page content [9];
- improving the appearance and structure of the university web page [19];
- development and periodic updating of the university website [22];
- the development, modernization and management of the university's web portal in order to provide electronic services for beneficiaries (students, graduates, teaching, administrative staff, researchers, partners) in terms of an attractive and modern design, a well-structured, useful, informative and updated content [12];
- updating and developing the university website as a corporate communication tool [11];
- paying special attention to the didactic section of the site [22, 24];
- modernizing the structure and updating the content of the university's web page and transforming it into an effective tool for information and communication with the beneficiaries (students, employers) and with the university's partners (pre-university institutions, the business environment and other stakeholders) [21];

- the development of the university's website as a tool for promoting the institution's image at the national and international level [23];
- publication of information regarding the academic offer on the university's website [17];
- promoting the academic offer in the virtual environment [15];
- improving the web presence by developing the university's website (in Romanian, English and Russian languages), taking into account the evaluation criteria of the international web-rankings [18];
- the development of QUIZs about the university, with prizes, to be published on news portals for young people and on the official website of the university, the development and publication on the official website of the university of video material, the publication of success stories of university graduates on the official website [9,10];
- periodic updating of the web page [16];
- taking measures to increase the number of accesses to the university informational portal [8] etc.

Increasing attention in the university marketing activities stipulated in the strategic development documents is also given to the use of social networks for the purposes of informing the target audience and promoting the universities and the study programs offered by them.

Thus, the *The State University of Medicine and Pharmacy "Nicolae Testemițanu"* considers it necessary to implement an annual social media strategy, which involves the promotion of the university's image on social networks (Facebook, Instagram, Twitter, LinkedIn, YouTube, etc.), the promotion of the educational services provided and the activities carried out mainly through social media marketing, the diversification of channels and the increase in the number of followers on social media [8]. *The Moldova State University* aims to increase the institution's presence in the social media space and the permanent updating of the institution's Facebook and Instagram page [9]. The intensive promotion of the university on social networks to attract potential students from the country and abroad and to strengthen the institution's image among young people is provided for in the Strategic Development Plan of the *Academy of Music, Theater and Fine Arts* [13], and the capitalization of communication opportunities and online promotion on social networks - in that of the *State University "Bogdan Petricecu Hașdeu" from Cahul* [14]. The *Trade Co-operative University of Moldova*, as well as the *State University "Bogdan Petricecu Hașdeu" from Cahul*, want to expand the presence of universities on social networks and strengthen the virtual community of universities [14,21]. *Alecu Russo State University of Balti* and *"Ion Creangă" State Pedagogical University* in Chisinau propose to promote their academic offers on social networks [15,17], and the *Moldova State University* - distributing QUIZs, video materials on the university Facebook pages and the faculties, the periodic updating of the YouTube channel with the recorded video materials [9,10]. The *Technical University of Moldova* envisages in the Institutional Strategic Development Plan the support of the participation of teaching staff, departments, faculties in TV and radio shows and the dissemination of achievements and events through social networks, the presence on social networks of collaborators, departments, faculties, centers and the university as a whole [12].

Even e-mail marketing (electronic mail) is considered to be a fast way of communicating with current and potential customers and cheaper compared to other online marketing tools, only the *The State University of Medicine and Pharmacy "Nicolae Testemițanu"* recognize institutional e-mail addresses as an important communication channel in marketing [8], and the *Moldova State University* proposes the creation of an informative bulletin, to be distributed through the university's e-mail [9,10]. It should be noted that only the *Moldova State University* has a distinct strategy for promoting study

programs [10], and the Technical University of Moldova is the only university in the Republic of Moldova that has a blog on the university's website. In the same way, UTM proposes the continuous monitoring of the performance criteria and indicators, used in the development of international university rankings related to their presence in the virtual space (Webometrics) and undertakes actions in order to improve them and better position the university [12].

The strategic development documents of the universities of the Republic of Moldova do not refer to other online marketing tools and techniques, even if some of them are found in the practical activity of the universities.

Certainly, in order to have competitive advantages and be successful in the new conditions of the educational environment, universities need a strategic approach in organizing their activity and a marketing orientation, which seeks to build and consolidate the best possible image of the university as a whole and the degree programs it offers, including through the use of modern online university marketing tools.

Developing and implementing marketing strategies, running online university marketing campaigns can proceed in different ways. At the same time, the main activities of an online marketing campaign must include:

1. Carrying out market research, which involves collecting information about the educational environment, the competitors in the market, the prices of educational services, the existing opinions about universities, their endowments, the provision of qualified staff etc., in order to know the opportunities, but also the dangers generated by this environment;
2. Analysis of the activity of your own university in order to know the resources it has, its strengths and weaknesses in relation to the main competitors on the market;
3. Defining short, medium and long-term primary and secondary marketing objectives (e.g. increase enrollment, increase student numbers, increase university brand awareness, increase traffic, engage with a specific group of prospective students a specific region etc.). Objectives must be relevant, achievable, measurable and time-bound when they can be achieved;
4. Analysis of the behavior and desires of potential students, what they value, what criteria they take into account when making decisions (prestige, quality, educational model, proximity to home, testimonials of students and graduates, etc.);
5. Defining the target audience depending on interests, location, other possible market segmentation criteria;
6. Identifying the sources of information they consult and the specific channels for attracting applicants to studies;
7. The choice of marketing channels, depending on their advantages and disadvantages, but also the extent to which they allow reaching the target audience;
8. Development and optimization of contents and messages for each channel, according to the established objectives and preferences of the people who form the target audience;
9. Measuring the results of marketing campaigns in order to optimize ongoing campaigns or launch a new campaign, as well as to measure the effectiveness of the campaign.

One of the main advantages of online marketing is that it allows for the measurement of marketing values. For this purpose, key performance indicators (KPI - Key Performance Indicators) can be used, which can be different depending on the types of campaigns and marketing channels used, and among the most important are considered to be: [6,7]:

- Unique visitors – the number of people who access the page, each visitor being counted only once in the analyzed time period;
- How people find the site (sources of web traffic used to make the first visit to the site or landing page);
- Returning visitors to the university website – visitors return to the website or landing page when they want more content (more information) or intend to take a specific action;
- Total number of site visits – the number of unique browsing sessions by individual site visitors;
- Sessions - the set of interactions, such as page views and clicks, that the same user performs in a certain period;
- Total number of unique visits – the number of people who visited the website or landing page;
- Organic and paid traffic - represents the number of sessions that come from search engines and paid campaigns on the web;
- Click rate (CTR) – is the percentage of visitors who clicked on the call to action button or clicked on the link;
- Average time on page - the average length of time visitors spend on the page;
- Bounce rate - is the percentage of users who make a single visit, without performing other interactions, such as clicks and page views;
- Conversion rate - is the resulting percentage between the number of visits and the number of conversions made;
- External links - is the volume and quality of links from other domains that direct to the university website or blog;
- Return on investment (ROI) – shows how much a marketing campaign generates customers compared to the costs incurred;
- Customer acquisition cost (CAC) – is calculated by dividing customer acquisition costs by the number of new customers attracted during the reference period;
- Cost per acquisition (CPA) – is calculated by reporting the expenses to the contacts acquired in a given period of time;
- Cost per lead (CPL, cost per client) – represents the expenses necessary to generate a new potential client;
- Retention and abandonment rate – represents the total number of customers at the beginning and end of the reference period, together with the number of new customers, or how many customers leave, for example, each month, usually expressed as a percentage;
- Traffic per channel – the number of visits to each marketing channel, to understand how well each of them works;
- New sessions – are calculated according to the involvement of a user within 30 minutes (several visits for 30 minutes are considered a session);
- KPI related to results: coverage in digital media, engagement in social networks, transfer of social networks to the website;
- Reputational KPIs: position in national media surveys, position in national and international university rankings, etc.

KPIs can be tracked on Google Analytics (cooler - GA4), Google Tag Manager, Kissmetrics or other digital platforms.

At the same time, using modern online marketing strategies for now does not mean giving up traditional marketing strategies altogether, even if the return on investment in them is lower.

## Conclusions

In today's digital world, traditional university marketing strategies are no longer as effective as they used to be. Universities in the Republic of Moldova must become more market-oriented, use online marketing tools to address the target audience in a more efficient and effective way.

Even if the universities of the Republic of Moldova have a strategic vision in their development, embodied in strategic development plans (strategies) for a period from two to five years and annual action plans, in which special attention is paid to university marketing, universities do not have sectoral marketing strategies, and the use of online marketing channels, tools and techniques is mainly limited to the university website and social media marketing, to a lesser extent - email marketing.

In order to achieve marketing objectives, universities must develop and implement distinct marketing strategies, in which special attention is paid to online marketing tools.

Online university marketing strategies and marketing objectives must be based on the results of in-depth marketing research with reference to the activity of the own university and the behavior of potential students, and special attention must be paid to measuring the results of the implementation of marketing strategies in order to correcting and optimizing ongoing campaigns or launching new campaigns.

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## **STRATEGIC PRIORITIES FOR TRADE DEVELOPMENT IN THE MUNICIPALITY OF CHIȘINĂU**

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**Abstract:** In the current economic context, characterized by fierce competition between economic agents on the market, in the conditions of globalization and the expansion of large trade networks, the development of a modern trade, adapted to the demands of consumers, requires the knowing and using of the best performing trade methods and technologies. An important role in providing the population with commercial services in the Republic of Moldova belongs to trade of the municipality of Chisinau, which has a share of over 75.5% in the internal trade in the country in the last years. Respectively, its level of development has a strong impact on satisfying the consumption needs of the population and on strengthening the economic sector of the republic.

This article analyzes the current situation in the field of trade in Chisinau, identifies the priority strategic directions and the social orientation of the trade development in the municipality and imposes a systemic approach to the implementation process of public policies related to commercial activities until 2030. It offers the mechanisms and methods of implementing effective measures and procedures by using the tools of strategic and anti-crisis management for improvement the activities of this sector. The identification of strategic priorities and the substantiation of the Chisinau municipality's trade development strategy, aligned with European policies, has a major impact in the context of the European integration aspirations of the Republic of Moldova and the population's desire to increase the quality of life.

**Keywords:** trade, commercial services, strategy, development.

JEL Classification: N70, M48, M100, O18

### **Introduction**

Trade activity includes multiple sectors with important roles in the process of distribution of goods, supply, warehousing and wholesale and retailing, both in the domestic and foreign markets. In any

country and in any locality, trade is of strategic importance for the balanced and sustainable development of the economic and social system.

In a developed economy, trade contributes to the creation of a quality market in that it adapts easily to the requirements of the market and the economy in general, helps to satisfy consumer needs and people's preferences through the technological, technical and economic operations it carries out, its influence on the movement of goods and its impact on gross domestic product (GDP), which is on a stable growth trend. In 2014, trade accounted for 13.6% in the formation of Gross Domestic Product in the Republic of Moldova, and in the fourth quarter of 2021 its share increased to 15.3%, ranking among the areas with major contributions to the formation of Gross Value Added (GVA), with 5.9% (4).

Another important aspect of trade is its capacity to attract labour. Thus, in wholesale and retail trade; maintenance and repair of motor vehicles and motorcycles, 127.2 thousand people were employed in 2020, and in 2021 - 129.6 thousand people, which is respectively 17.2% and 17.5% in relation to the total number of employees in the economy (1).

Through the relationships it generates, trade influences all sectors of activity - financial, legal, social and contributes to the well-being of the population.

In this sense, sustainable economic development, the quality of life of the population depends to a large extent on trade development strategies and how they relate to other sectoral and national development strategies.

An important role in providing the population with commercial services in the Republic of Moldova is played by trade in the municipality of Chisinau, which accounts for more than 75.5% of the country's domestic trade according to 2020 statistics (2). Its level of development has a strong impact on meeting the population's consumption needs and strengthening the republic's economic sector. The identification of strategic priorities in this area and the establishment of a strategy for developing trade in the municipality of Chisinau in line with European policies are of major importance in the context of the Republic of Moldova's aspirations for European integration and the population's desire to improve their quality of life.

### **Analysis of trade activity in Chişinău municipality**

In the Republic of Moldova, the activity in the field of domestic trade is regulated by the Law no. 231/2010, *On Domestic Trade with subsequent amendments and additions*. Given the importance of trade policies for sustainable development, in 2013 the *Strategy for the Development of Domestic Trade in the Republic of Moldova for 2014-2020* was developed and approved by Government Decision No. 948/2013. This strategy established the directions for the development of trade and service provision in the country, set out the guidelines for improving the regulatory framework related to the marketing of products and services, implementing modern technologies for distribution, product processing, provision of commercial services and diversification of marketing channels. The implementation of the Strategy has dynamised and facilitated the development of the commercial sector in the country and in the municipality of Chisinau in particular. However, after the expiry of the action period, another similar policy document was not approved for the next period. In the absence of a distinct strategy in the field of internal trade development, tangible long-term results cannot be achieved.

In the municipality of Chisinau, trade plays a major role in creating jobs and ensuring the well-being of the population. It is well known that most consumer needs are met through the purchase of goods and services from the commercial network.

From Table 1 we attest that the turnover in retail trade in the Republic of Moldova in 2018-2020 is increasing. At the same time, there is also an increase in the share of Chisinau municipality in the turnover in the analyzed period from 73.3% to 75.5%, or by 2.1 percentage points, which confirms the increase in the role of trade in the mentioned municipality in domestic trade in the country.

**Table 1. Turnover in retail trade in the Republic of Moldova, million lei**

Indicators	2018	2019	2020
Total by country	41 061 792,9	55 238 136, 6	58 594 743, 4
Mun. Chişinău	30 082 463,5	41 222 632, 1	44 264 654,7

**Source:** Statistical Yearbook of the Republic of Moldova. NBS, 2022. Internal trade of goods and services (2)

The main strategic document that outlined the strategic visions for the development of metropolitan trade until a few years ago was the Strategy for the Development of Domestic Trade in the Municipality of Chisinau for 2015-2020, where the priority directions in the development and social orientation of domestic trade were outlined. With the expiry of the period of action of the Strategy, the elaboration of another policy document was initiated, but so far it has not been finalized.

In such a context, it has become urgent to develop a new strategy and an action plan highlighting the most relevant priorities, areas of trade development in the municipality of Chisinau, where most of the country's population and trade are concentrated.

According to the data of *the Report on the activity of the Directorate of trade, services and catering* for 2014-2021 (5), in the municipality of Chisinau, there is an impressive number and variety of commercial and service establishments. On 01.01.2022, according to the data of the *electronic register* of the Directorate, the network of commercial establishments of the mun. Chisinau constituted 31922 units, of which 22744 trade units (including 4187 street trade units, 38 markets), 2258 catering units, 6920 service units (Table 2).

**Table 2. Structure of commercial establishments in mun. Chisinau  
by field of activity (units)**

Commercial establishments	2014	2016	2018	2020	2021
<b>Totals, of witch:</b>	<b>24775</b>	<b>27080</b>	<b>30814</b>	<b>31935</b>	<b>31922</b>
<b>1. Commercial units, including:</b>	<b>19686</b>	<b>20450</b>	<b>22820</b>	<b>23213</b>	<b>22744</b>
- markets	42	40	38	37	38
- itinerant trade establishments	-	3472	4945	4815	4187
<b>2. Food establishments</b>	<b>1824</b>	<b>1867</b>	<b>1976</b>	<b>2006</b>	<b>2258</b>
<b>3. Service establishments</b>	<b>3265</b>	<b>4763</b>	<b>6018</b>	<b>6716</b>	<b>6920</b>
<b>Total commercial establishments located in suburbs</b>	-	-	785	1191	1321

**Source:** Report on the activity of the Directorate of trade, services and catering for 2014-2021 (5)

If we compare overall, we observe that during the period under review, the number of commercial units in the municipality of Chisinau increased by 7147 units, and in the structure there is a greater increase in the number of units providing services - with 3655 units, followed by trade units - with 3058 units and catering units with 424 units. There is also an increase in the number of commercial units located in suburbs.

Although, as we can see in recent years the total number of trade units in the municipality has not changed essentially, in the structure there is a reduction of 2.2% in the number of trade units in 2021 compared to 2020, and of street trade by 13.1%. At the same time, the number of catering and service establishments increased by 12.6% and 3.0% respectively. The number of commercial establishments located in suburbs also increased by 10.1%. These changes show that in the municipality of Chisinau there are qualitative changes in providing consumers, especially those in the suburbs, with commercial establishments, because street trading units are not able to provide quality services, even if they are located closer to the consumer. It is also welcome that the number of food and service establishments has increased.

Another indicator that characterizes the quality of trade in the municipality of Chisinau is the structure of the trade network according to types of commercial establishments. Thus, we observe an increase in the number of commercial units in 2021 compared to 2014, but a decrease compared to 2018-2020, overall. If we analyse by types of commercial units, then we observe that the number of all types of units is increasing, except for the kiosks, which decreased by 1482 units, or by 30.1%. Also in 2021 the number of street trading units decreased by 628 or by 13.1%, at the same time there is an increasing trend in the number of shops selling online - by 80 units or by 23.3% (Tab.3). If by 2020 the total number of business license holders was increasing, then in 2021 the number of business license holders decreased by 318 or 5.3% compared to 2020.

It should be noted that the activity in the field of trade in the municipality of Chisinau in recent years is characterized by the implementation of actions to improve services and modernize the infrastructure, but the quality of goods and the organization of the commercial and service process need to be improved. For these reasons, actions of managerial re-engineering, re-technologisation of commercial processes, digitalisation of commercial activities and services, improvement of the level and culture of consumer service, alignment with the European experience of commercial services are necessary.

**Table 3. Structure of the trade network in mun. Chisinau (units)**

<b>Types of commercial establishments</b>	<b>2014</b>	<b>2016</b>	<b>2018</b>	<b>2020</b>	<b>2021</b>
<b>Total, of which:</b>	<b>19686</b>	<b>20450</b>	<b>22890</b>	<b>23176</b>	<b>22744</b>
<b>1. Shopping centres, department stores, department stores</b>	<b>64</b>	<b>50</b>	<b>64</b>	<b>65</b>	<b>65</b>
<b>2. Super and hypermarkets</b>	<b>46</b>	<b>74</b>	<b>81</b>	<b>107</b>	<b>107</b>
<b>3. Shopping sections</b>	<b>4838</b>	<b>4452</b>	<b>4642</b>	<b>4519</b>	<b>4519</b>
<b>4. Grocery stores</b>	<b>864</b>	<b>869</b>	<b>1120</b>	<b>1277</b>	<b>1277</b>
<b>5. Non-food shops</b>	<b>3240</b>	<b>3184</b>	<b>3748</b>	<b>4130</b>	<b>4130</b>
<b>6. Warehouses</b>	<b>2325</b>	<b>2145</b>	<b>2403</b>	<b>2667</b>	<b>2667</b>
<b>7. Sheds, total</b>	<b>4928</b>	<b>4496</b>	<b>4109</b>	<b>3446</b>	<b>3446</b>
<b>Including:</b>					
<b>(a) for the sale of goods, located:</b>					

	-	<b>4145</b>	<b>3806</b>	<b>3207</b>	<b>3207</b>
- in streets	-	-	-	1158	1158
- in markets	-	-	-	1132	1132
- in the Central Market	-	<b>1071</b>	<b>909</b>	<b>917</b>	<b>917</b>
<b>(b) for the provision of services</b>	-	<b>351</b>	<b>303</b>	<b>239</b>	<b>239</b>
<b>8. Street trading units</b>	-	<b>3472</b>	<b>4945</b>	<b>4815</b>	<b>4187</b>
<b>9. Online shops and trade intermediaries</b>	-	<b>215</b>	<b>328/14</b>	<b>514/25</b>	<b>634/284</b>
			<b>3</b>	<b>6</b>	
<b>Of the total number of licence holders</b>	-	<b>1247</b>	<b>5651</b>	<b>6072</b>	<b>5754</b>

Sources: Report on the activity of the Directorate of trade, services and catering for 2014-2021 (5)

In view of the above, we can conclude that there is an urgent need for a comprehensive study of the trade situation in the municipality of Chisinau in order to identify strategic priorities for the development of the sector

### **Guidelines for trade development in the EU**

In the context of the Republic of Moldova's aspirations to join the European Union (EU) and to obtain the status of a candidate country for integration into the European family, the alignment of trade development priorities and objectives in the Republic of Moldova and in the municipality of Chisinau, in particular, for the time horizon up to 2030 with the EU trade development priorities has become an important desideratum.

In the wake of the post-COVID situation, but also of the phenomena witnessed worldwide, the Council of Europe has established that the EU needs a *new trade strategy* to meet the challenges it faces: economic recovery, climate change and environmental degradation, growing international tensions, more frequent recourse to unilateralism and its consequences on multilateral institutions (3).

This strategy aims to further integrate trade policy into the Union's economic priorities reflected in the Green Pact and the Digital Agenda for Europe, will specify the role of trade policy in the post-COVID economic recovery and will support the pursuit of the EU's geopolitical ambitions. It aims to build a *new consensus for a trade policy based on openness, sustainability and firmness*, which will contribute to *strengthening the EU's position as a global promoter of open, rules-based, fair and sustainable trade*.

It should be noted that one of the main objectives of EU trade policy in the medium term under the new Strategy is *to support the recovery and fundamental transformation of the EU economy in line with its green and digital objectives*, but also to adapt global rules for a more sustainable and fairer globalisation, in enhancing the EU's capacity to promote interests and rights where necessary (3).

To achieve the objectives set for EU trade development, the European Commission will focus on the following priorities: reforming the WTO; supporting the green transition and promoting responsible and sustainable value chains; promoting the digital transition and trade in services; strengthening the EU's regulatory impact; strengthening EU partnerships with neighbouring countries, accession countries and Africa; reinforcing the EU's focus on implementing and enforcing trade agreements; and ensuring a level playing field for European Community businesses.

Another priority objective of EU trade policy is to promote *'open strategic autonomy'*. For the EU, the concept of open strategic autonomy reflects a desire to chart its own course on the world stage, shaping the world around it through leadership and engagement, while protecting its interests and values. Thus, open strategic autonomy means making optimal use of the opportunities offered by openness and global engagement, while vigorously defending its interests both internally and externally. This means that the EU will continue to work with its partners to promote the positive agenda, but also act autonomously.

It is clear from the above that the EU has well-defined trade policy development priorities, which Moldova must also focus on in its efforts to integrate into the European Union.

### **Visions and strategic objectives for the development of trade in the municipality of Chisinau in the 2030 time horizon**

Based on the analysis of the situation in the field of trade in the municipality of Chisinau, the challenges facing the sector, the international experience, the objectives of European trade policy, **the vision** for the development of trade in the municipality of Chisinau in the time horizon up to 2030 was established, perceived by the authors *to become a municipal trade system capable of becoming the most efficient in the republic, to enjoy a high appreciation from consumers, partners, to be recognized as the most innovative, efficient and transparent.*

Based on this vision of the development of trade in the municipality, the **mission** of this field of activity was founded. In the authors' view, the mission of trade activity is *to create a favourable economic and social environment for all market players involved in trade activity (consumers, entrepreneurs, including producers, traders) in order to maximise the satisfaction of the population's consumption needs and the interests of entrepreneurs by promoting fair, competitive, modern, sustainable (sustainable) trade and stimulating all forms of entrepreneurship.*

To this end, a SWOT analysis of the internal trade system in Chisinau municipality was carried out (Fig.1). Thus, the strong points of the development of trade in the municipality were highlighted, including regulatory regulations, the continuous increase in the share of organized trade, but also in the number of consumers, the migration of purchasing demand from the regions to trade establishments in the capital.

Weaknesses include the imbalance in the location of the commercial infrastructure, activity on the basis of entrepreneurial licences, street trade, shortage of qualified staff in commerce, catering and services.

<b>Strong points</b>	<b>Weak points</b>
<ul style="list-style-type: none"> <li>• Existence of the legislative and regulatory basis governing the initiation and conduct of commercial activities</li> <li>• Existence of the Information System in the field of trade</li> <li>• Increasing the share of organised trade through modernisation and specialisation of the commercial network</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced competitiveness of domestic goods on the domestic consumer market</li> <li>• Imbalance in the location of trade infrastructure</li> <li>• Conducting trade activities on the basis of the entrepreneur's patent</li> </ul>

<ul style="list-style-type: none"> <li>• Increasing the volume of domestic products on the domestic consumer market</li> <li>• Decrease in street trade</li> <li>• Increase in the number of inhabitants and consumers</li> <li>• Migration of demand from nearby localities to the municipality</li> </ul>	<ul style="list-style-type: none"> <li>• Low level of cooperation between central specialised bodies, local government authorities and the private sector</li> <li>• Lack of a municipal trade supervision structure with control and advisory functions in the implementation of trade and consumer protection rules</li> <li>• Continuation of illicit street trading</li> <li>• Insufficient qualified staff trained in trade activities</li> </ul>
<b>Opportunities</b>	<b>Threats (risks)</b>
<ul style="list-style-type: none"> <li>• Interconnection of the Automated Information System for the Management and Issuance of Permit Documents (SIA GIAP) managed by AGE with other information systems and resources of public authorities with trade-related tasks (ASP, Tax Authorities, CSP, ANSA, etc.), increasing the quality of public service delivery</li> <li>• Application of modern technologies in trade by increasing/attracting domestic and foreign investment</li> <li>• Support domestic producers to promote domestic products on the domestic consumer market</li> <li>• Development of alternative forms of trade (electronic, online, door-to-door, etc.)</li> <li>• Increasing the income of the population</li> <li>• Integration of commerce in the municipality into circularity and adaptation of circular models by traders</li> </ul>	<ul style="list-style-type: none"> <li>• The shadow economy and illicit trade in goods</li> <li>• Unfair competition in some market segments</li> <li>• Prevalence of imported over domestic products on the internal market</li> <li>• The dubious quality of some products placed on the internal market with risk for consumers</li> <li>• Lack of personnel, especially skilled trade personnel</li> <li>• Decreased quality of trade services</li> <li>• Lack of effective mechanisms to protect consumer rights</li> <li>• Weaknesses in promoting fair trade</li> <li>• Weak producer-trader collaboration based on mutually beneficial relationships</li> </ul>

**Figure 1. SWOT analysis of the situation in the field of trade, food and services in the municipality of Bucharest. Chisinau**

Source: Authors' elaboration.

From the category of opportunities we can highlight: the initiation of commercial activity on the basis of notification and obtaining of permits through the SIA GEAP system and interconnection with the systems of ASP, Taxation, ANSA, CNAS, application of modern reporting technologies, attracting investment, but also promotion of local products, etc.

There is also a wide range of threats, including unfair competition, the prevalence of imported products on the internal market, and the dubious quality of some product categories.

In the context of the above, the strategic **priorities for the development of trade** in the municipality of Chisinau for the period up to 2030 have been determined. In order to increase the level of service and culture in trade, to increase the quality of the commercial process and the level of satisfaction of

consumer needs, we consider the following **priorities / strategic objectives** for the development of trade in the municipality in the current decade to be important:

1. Improve the regulatory framework for trade and services, including catering.
2. Modernisation of the commercial infrastructure, food services and commercial markets, optimising their location and improving the quality of services in these areas.
3. Digitisation of commercial and service activities, including catering.
4. Providing qualified, competitive staff for trade and service establishments and to strengthen the professional skills of traders-entrepreneurs.
5. Sustainable development (circular economy, green economy, prevention of food loss and waste).
6. Strengthening the institutional capacities of the Directorate of Trade, Food and Services (DCAP) of the municipality of Chisinau.

On the basis of these priorities, specific objectives and concrete actions to be implemented by 2030 have been identified in order to ensure the improvement of the level of trade organisation and consumer service (Table 4).

**Table 4. Specific objectives and actions regarding the strategy for the development of trade in the municipality of Chisinau until 2030**

<b>OG1. Improving the regulatory framework for commerce and the provision of services, including catering</b>		
<b>Nr.</b>	<b>Specific objectives</b>	<b>Actions</b>
1	Aligning trade and service provision <i>regulations</i> to the EU regulatory framework and best practices in other regions	1.1. Review the <i>typology of commercial establishments</i> and the classification criteria for food establishments and justify proposals to update/modernise/improve them 1.2 Development of the regulatory framework for the conduct of <i>specific trade</i> : in public areas/places in the municipality and during specialised activities (events) (festivals, fairs, fairs, etc.) and with certain products; updating of the rules for the conduct of trade, including in electronic and other forms 1.3 Updating <i>the regulation of catering establishments</i> in line with the current national regulatory framework and international best practice in the field 1.4. Optimise the regulation <i>of the way prices are set</i> in catering establishments 1.5. Developing <i>the regulatory framework for the provision of services</i> to the public 1.6. Development and implementation of the service <i>nomenclature</i> in the municipality 1.7. Review and update the <i>Regulation on the conduct of trade activities in the municipality</i> in accordance with current regulatory changes and modern trade practices 2.1 2.1 1.8. Regulating the <i>rules for providing</i> the population of the municipality with commercial space
2	Supporting the development of e-commerce	2.1. Implementation of a set of favourable <i>regulations, organisational and technical conditions</i> to stimulate the activity of <i>e-commerce</i> participants

		2.2. Supporting a competitive environment in commerce, creating comfortable conditions for consumption by the population
3	Supporting entrepreneurial activity in commerce and services	3.1. Simplification of the procedure for starting up a business in the field of commerce, catering and the provision of services 4.1 4.1 3.2. Updating the <i>Trader's Guide</i> in accordance with the regulations in force
<b>OG2. Modernisation of the commercial, food service and shopping market infrastructure, optimising its location and improving the quality of services in these areas</b>		
<b>Nr.</b>	<b>Specific objectives</b>	<b>Actions</b>
1	Optimisation of the typology and location of trade and service infrastructure, diversification of modern formats of establishments in the sector	1.1 Reviewing the location of commercial and catering establishments and services and drawing up proposals (plan) <i>to optimise the location of commercial infrastructure</i> (of all types) so that it meets the needs of consumers and fits in with the architectural plan of the municipality. 1.2 Supporting and developing modern shop formats, especially local ones, offering maximum choice of goods assortment, trade formats and traders for each consumer preference; efficient (rational) interaction between different shop formats and between them and producers/distributors of goods/services (trade networks, mobile units, markets, fairs, festivals, etc.); developing farmers', family business, ethnic and other non-specialised shops; eliminating imbalances in the development of infrastructure of different formats 1.3 Improving the appearance of commercial and <i>service establishments (aesthetic appearance)</i> , setting <i>standards (requirements) for their external appearance</i> and the design of adjacent areas 1.4 Optimisation of <i>street trade</i> , transition to the conditions set out in the Regulation on the conduct of trade in the municipality of Chisinau (2020)
2	Developing integrative processes	2.1 Active integration <i>of trade into the tourist circuit, including by promoting trade in products with cultural values in the municipality, especially in tourist areas/trails</i> , development of catering services in these locations 2.2 Promoting the concept of <i>integrating</i> trade with food and agreement services from the perspective of their integration
3	Improving the quality of consumer service in commerce and services	3.1 Ensuring a <i>comfortable environment for consumers</i> by providing an efficient commercial and service infrastructure in terms of availability of products and services (types of commercial units, forms of trade, territorial location of infrastructure); ensuring a harmonious combination of different types of commercial units (fixed, mobile) and territories (central areas, residential neighbourhoods, peripheral areas, etc.). 3.2. Ensuring <i>accessibility of commercial services</i> for people with special needs

		<p>3.3 Improve and implement effective mechanisms to <i>ensure consumer safety</i> and protect consumer rights</p> <p>3.4 Implementation of modern forms of <i>organising student meals</i> in educational institutions, monitoring the quality of menus and the safety of consumption</p> <p>3.5 Support the diversification of public food and catering services</p> <p>3.6 Supporting the expansion of catering for socially vulnerable people</p> <p>3.7 Facilitating <i>the development of the service sector</i>, particularly in densely populated areas, through infrastructural development, including in partnership with commercial establishments, housing blocks and separate social service units</p> <p>3.8 Elaboration and implementation of the <i>Concept for the optimization and development of commercial markets</i> in the municipality and their management, number and location, creation of appropriate conditions for activity</p>
<b>OG3. Digitisation of commercial and service activities, including catering</b>		
<b>Nr.</b>	<b>Specific objectives</b>	<b>Actions</b>
1	Development of e-commerce and e-business services; facilitating implementation and expansion of the application of various electronic business promotion tools (e-payments, e-marketing, e-procurement, etc.).	<p>1.1 <i>Digitalisation of services</i> for business representatives</p> <p>1.2 <i>Development of additional market mechanisms</i> to boost e-commerce, efficient use of resources</p>
2	Strengthening the municipal information system for managing trade activities and integrating it with other public systems	<p>2.1 Development of the Municipal Trade Information System (electronic register of traders/network of commercial units), which would allow operational monitoring of commercial activity, analysis of the current situation, forecasting the evolution of the commercial sector</p> <p>2.1 Promote the implementation of the "<i>one-stop shop</i>" concept in the field of trade, offer assistance to entrepreneurs in its use</p> <p>2.3 Taking steps to connect the City Hall's information system with the automated information system for managing and issuing permits.</p>
<b>OG4. Providing trade and service establishments with qualified, competitive staff, strengthening the professional skills of trader-entrepreneurs</b>		
<b>Nr.</b>	<b>Specific objectives</b>	<b>Actions</b>
1	Strengthening human potential and professional skills	<p>1.1 Supporting the training and professional development of traders</p> <p>1.2 Contribution to the certification of professional skills of traders</p>

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2	Ensuring the appropriate level of professional competence for promoting business activities and advising on entrepreneurial activity	2.1 Issuing of permits for the organisation of trade only to persons who possess professional qualifications in the commercial-economic field or who can prove that commercial staff have been trained in this field and monitoring compliance with this requirement during the course of their work 2.2 Facilitating support services for entrepreneurs in carrying out commercial-economic and service activities
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**OG5. Sustainable development (circular economy, green economy, prevention of food loss and waste)**

<b>Nr.</b>	<b>Specific objectives</b>	<b>Actions</b>
1	Accountability for preventing food loss and waste throughout the food chain, including the hospitality and food service sector	1.1. Supporting commercial operators to integrate into the circular economy, to implement circular business models 1.2. Designing and implementing mechanisms/schemes/models for the transfer of food by donation from food business operators (trade, catering) to beneficiary organisations or directly to consumers (based on a donation contract concluded between the food business operator and the beneficiary organisation or consumer, according to the provisions of the Civil Code No 1107/2002 applicable to donation) 1.3 Participation of food business operators and caterers, on a voluntary basis as partners, in the activities and campaigns proposed by the authorities responsible for preventing food loss and waste and/or initiating their own activities in this area. 1.4 Informing/educating consumers on the best conditions for the use/exploitation/consumption of products and the storage of food 1.5 Supporting the implementation in commercial establishments of services to extend the life of products (repair, reconditioning, maintenance, etc.) 1.6. Promote the reduction of surplus food. Develop a free food distribution app that links neighbours and local shops to stop any surplus food being thrown away (example is Olio used in over 30 countries worldwide) Promote education for sustainable development at all levels of education, including in non-formal and informal learning contexts
2	Development of the primary and secondary packaging collection and processing system	2.1 Implementation of separate collection of food waste by category for recycling/recovery/disposal according to the waste hierarchy and specific legislation in force 2.2 Support and promote the establishment of collection companies for glass packaging, plastics, paper and cardboard, cloth
3	Development of the collection and processing system	3.1 Supporting and promoting the establishment of firms specialising in the collection and processing of products and raw

		materials from trade and catering (specialised by product category)
<b>OG6. Strengthening the institutional capacities of DCAP Chisinau municipality</b>		
<b>Actions</b>		
<b>Nr.</b>	<b>Specific objectives</b>	<b>Actions</b>
1	Ensure transparency of public information and support entrepreneurs	1.1 <i>Transparency of activity</i> and access of citizens, entrepreneurs to public information; 1.2 <i>Development of the Directorate's information system</i> , facilitating its connection with other relevant information systems of public authorities 1.3 Strengthening the human potential of the DCAP 1.4 Establishment of a Call-Centre for continuous communication with beneficiaries 1.5 Development of the website, expansion of the presence on social networks; adaptation of the website to the mobile application
2	Strengthening market monitoring and cooperation capacities	2.1 <i>Monitoring</i> of trade, services and markets in order to ensure compliance with minimum quality standards for these services 2.2 <i>Strengthening cooperation</i> between central specialised bodies, local government authorities and the private sector 2.3 Supporting <i>employment in commerce</i> by stimulating the development of SMEs

## Conclusions

Trade is of strategic importance for the balanced and viable development of the state's economic and social system, contributing to the development of the internal market, to economic and social development, to meeting the consumption needs of the population, to increasing the contribution to GDP formation.

An important role in the internal trade area of the Republic of Moldova is played by the Chisinau municipality, which has accounted for about 75% of the country's retail trade turnover in recent years. In this sense, the development strategy of the municipality's trade can directly and significantly influence the evolution of trade in the republic in the medium and long term. In view of this, a study was conducted on the current situation in the field of trade in the municipality of Chisinau, the challenges it faces and the priorities for the development of this sector until 2030 were identified. At the same time, the most important objectives and actions were determined, the achievement of which will contribute to the implementation of the vision and strategic mission of trade development in Chisinau, and, as a result, to the consolidation of the potential of trade in the municipality and its increased impact on the socio-economic development of the country.

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## THE REFORM OF THE ENERGY SECTOR IN THE REPUBLIC OF MOLDOVA

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**Abstract:** In economies in transition, including the Republic of Moldova, the reform of the energy sector should be carried out as quickly as possible, since this is a prerequisite for enhancing the country's energy security, as well as for integrating the internal energy market with the European one.

It is obvious that one cannot imagine a modern, evolving economy without an efficient energy sector, that is capable of providing and sustaining with energy resources different sectors of the economy, alongside with areas related to social development.

The major current problems that the energy sector is facing today include: supply, network losses, inefficiencies of the energy market, environmental impact, poor sources of investments, thus, making the sector unsustainable; and this is largely due to absence of an adequate institutional framework. In addition, all mentioned above is aggravated by complexity and difficulty of the problem related to inclusion of our country into Energy Package IV, which envisions the reform of the sector applying standards of the European Union aimed at overcoming obstacles caused by the economic and financial crisis that we are going through.

Therefore, enhancement of the quality and security of the energy sector can only be achieved if restructured energy industries rest on a stable and sustainable financial foundation.

Through this research, the authors set the following objective: identification of problems and offering viable solutions regarding the reform of the energy sector of the country using best European practices.

**Key words:** reform, energy sector, energy resources, energy security, energy efficiency.

JEL Classification: M1, L9, O13.

### Relevance of the topic

In order to implement liberalization of the electricity and natural gas markets in the Republic of Moldova it is necessary to undertake in-depth restructuring of the energy sector. In this context, the reform of the energy sector of the Republic of Moldova as a candidate country for EU accession has to be linked to implementation of European directives and regulations, taking into consideration the

need to harmonize policies of our country in the respective field with relevant policies of the European Union.

Due to this process, we consider it necessary to analyze in this article the entire complexity of the problems in the field in order to summarize certain solutions that are needed in order to reform the energy sector of the country.

As a result of the set forth above, we can deduce that the subject of the respective research reflects the value of the energy sector as an area of strategic importance, and this requires an in-depth scientific study, a fact that demonstrates the relevance of the topic.

### **Research methods**

For the purpose of carrying out this study, the authors used different research methods. In order to provide for the theoretical support of the research, a number of scientific papers from the energy sector were reviewed, the study was made possible due to thorough examination of the specialized literature in the field of energy management. The research method was aimed at studying theoretical and applied materials related to methods of reforming the energy sector in the Republic of Moldova. It was possible to collect data due to utilization of a wide range of materials on the research topic, as well as professional literature.

The research methodology was mainly focused on approaches to documentation, comparative analysis, elaboration of solutions and on models for exploring the real situation and on forecasting events related to integrated planning of energy resources.

**Results of the research** will allow for making conclusions regarding strategic objectives that have to accompany energy sector reforms. The undertaken research is of applied nature, since it relates to an important strategic area, namely the energy sector of the Republic of Moldova.

### **Introduction**

In the vast majority of European countries, the energy sector is among the top three priorities in terms of national importance. This hierarchy is not the result of using subjective criteria, but is rather dictated by the real situation of dependence of the entire society on the energy sector.

It should also be emphasized that in all countries with developed or developing economies, for economic and social security consideration, there is a need to adapt and implement strategic national energy security programs.

In this context, a correct choice of strategic objectives is absolutely essential for the entire process of reforms. For this purpose, an attribute of possible objectives is the result of studying international, European best practices and own national experience.

### **Approach to the topic**

The energy sector includes a number of basic functional components, which are primary energy resources, transport infrastructure, as well as the infrastructure for distribution of energy resources.

An assessment, even a brief one, can demonstrate the extent and complexity of problems that the energy sector in the Republic of Moldova is facing today.

The current relatively modest performance of the energy sector as a whole is justified, on the one hand, by the quality of the infrastructure that largely inherited from the old political regime and, on the other hand, by the way this sector has been developing after the Republic of Moldova gained its independence, taking into consideration the following:

- political interference in organizational management through appointment of politically affiliated persons to decision-making positions;
- a vast chain of intermediaries that are included in the operational logistics;
- huge differences between the existing culture and that specific to market economies in terms of legal, financial, managerial and technological education;
- monopolization of the sector;
- government interventions, which as a rule affect the reliability of the sector.

At present, a lot of reforms in the energy sector cannot be implemented for two important reasons: imperfection of the legislation and lack of political will. Energy sector reforms could also fail to produce the expected results if supply and procurement activities encourage corruption, which in its turn will distort investment priorities of the sector.

A correct assessment of these factors and of the state of affairs resulting from the situation both domestically and in other countries, plus major economic and financial difficulties of the extensive crisis caused by the war in neighboring Ukraine, are essential for implementing extensive reforms in the energy sector of the country.

We believe, that *the main challenge of the reform* is to ensure affordability of prices for energy resources without compromising sustainability of supplier companies.

Legislative barriers and complex supplier switching procedures make it difficult and create uncertainty for end consumers in terms of exercising the right of eligibility with the purpose of identifying a more reasonable price for energy resources.

On the other hand, if prices are distorted, they can seriously affect competitiveness of energy companies, entailing dramatic effects for economic development, as well as for security of energy resources supply, given the fact of our country's dependence on their import.

*Another challenge to reform*, in our opinion, is related to the social impact of the restructuring, because of several shortcomings, namely:

- low efficiency of energy markets as a result of weak competition both horizontally between participants and vertically between resources;
- persistence of distorted prices influenced by social actions due to inadequate linkages of market mechanisms with social welfare systems;
- low efficiency of all social support schemes for energy resources, primarily in terms of focus and coverage, but also in terms of supporting final consumer energy efficiency programs.

Therefore, difficulties with affordability of prices for energy resources are not the result of competitive markets for energy resources, but rather represent results of poorly designed and implemented strategies.

Solutions for improving the situation with affordability of energy resources should be based on enhancing the level of market competitiveness, rather than on "energy poverty", which yet further aggravates access for low-income individuals and legal entities to energy resources according to their needs. [Leca A., Musatescu V. 2010].

Opening energy markets to competition imposes massive pressure on suppliers in terms of reducing prices for purchase, transportation, balancing and, respectively, sales costs, provided that market mechanisms do not allow for manipulations and abuse of a dominant position. Market monitoring and surveillance tools should therefore be essential.

The authors of the present study consider that due to the specificity and complexity of the energy market, new solutions that should be implemented are as following:

1. **Correction of market failures** by liberalizing and opening up the energy market, eliminating administrative errors and promoting transparency.
2. **Prevention of abuse of market dominance** by implementing clear rules in the wholesale energy market.
3. **More transparent pricing rules.** More efficient mechanisms are required for setting prices and tariffs in the regulated market, in order to make it possible to benefit from all advantages of openness and complementarity of the energy market.
4. **Fighting corruption.** It is important to avoid having "tick" (parasite) enterprises in the supply chain, the ones that can distort the entire mechanism of energy supply.

All the failures related to the energy market in the Republic of Moldova were reported by the press, the main problems being lack of transparency and manipulations in favor of certain groups.

Many specialists note that, although there are many discussions going on about adopting solutions regarding the reform of the energy sector, in general, this issue mostly includes collection of statements of intent, without any ongoing political will to achieve the proposed objectives and, most importantly, without providing necessary financial resources and continuity. [Leca A., Musatescu V., 2008, Voronca M., Constantinescu T., Cruceru M., Fodi A. Marin A., Voronca S., 2008]. There were many unrealized commitments, there were huge differences between what was envisioned and the actual achievements.

In order for the reform of the energy sector to be implemented with maximum efficiency, it is necessary that the decisions that have to be taken, be aimed both at the side of production, transportation and supply, and at the side of consumption of energy resources. In addition, the following is necessary:

- to implement European rules on integrity and transparency of the wholesale energy market;
- to establish an effective monitoring mechanism for wholesale energy markets;
- to intensify cooperation at both national and international levels through establishing mechanisms for monitoring and holding liable for manipulations in energy markets;
- to regulate financing of the sector;

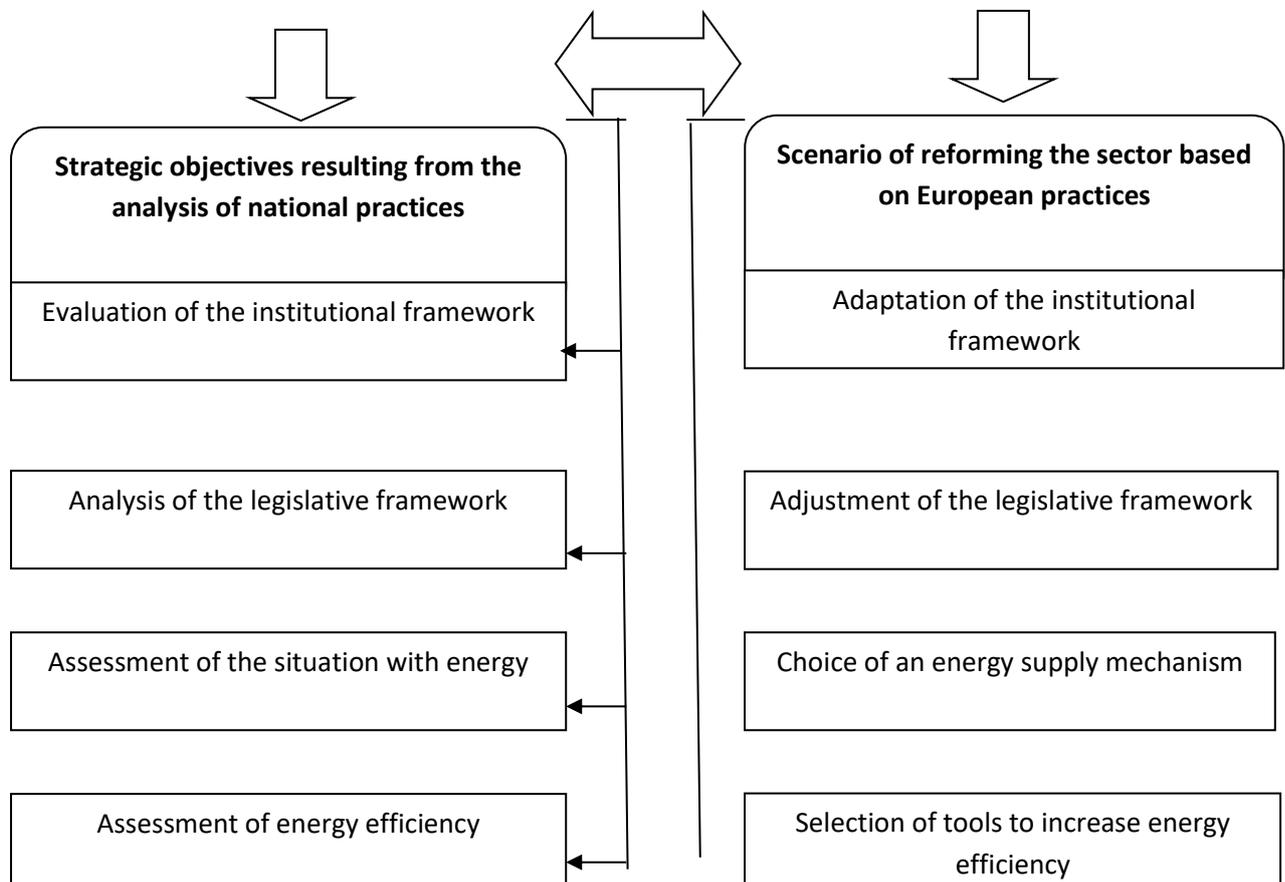
- to regulate utilization of renewable energy sources;
- to liberalize the situation with eligible final consumers;
- to open markets and minimize regulation of tariffs;
- to introduce modern advanced technologies;
- to enhance the level and quality of services;
- to reduce the environmental impact.

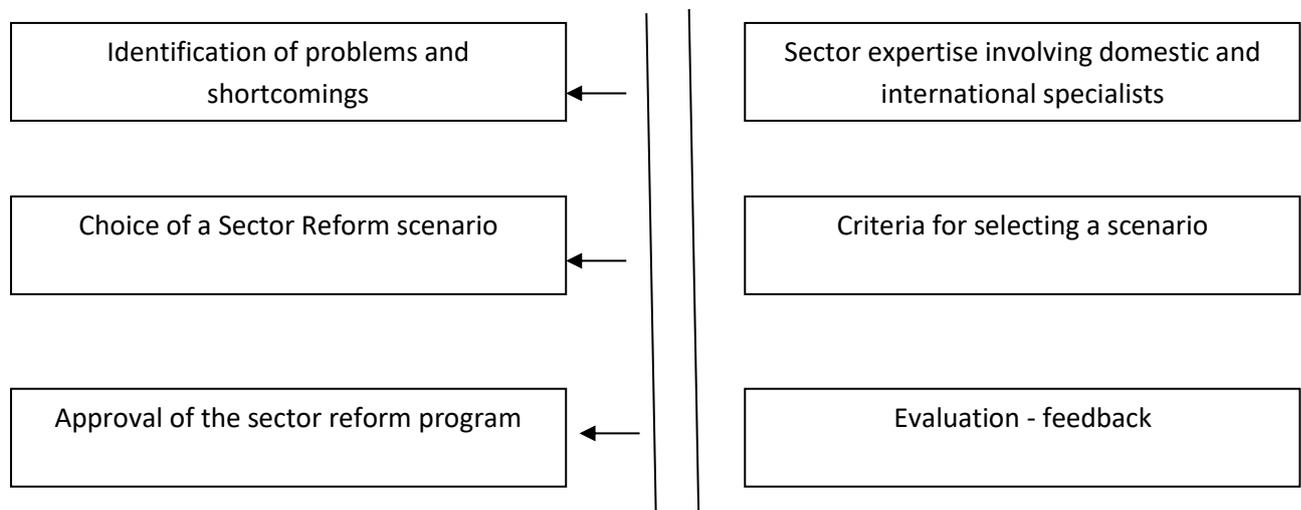
It is also important to analyze the concepts that guide the national strategy and determine the specificity of the long-term reform of the energy sector and its connection with the entire economic, social and cultural life of the country.

National practice for generating strategic objectives should be analyzed by means of the following:

- Evaluation of the institutional framework;
- Analysis of the legislative framework;
- Assessment of the situation with energy;
- Assessment of energy efficiency;
- Identification of problems and shortcomings;
- Choice of a Sector Reform scenario;
- Approval of the sector reform program.

Below, in *Figure 1* we will present the logical scheme for reforming the energy sector based on best European practices.





**Figure 1. Energy sector reform scheme**

Source: compiled by authors according to [Platon N., Vieru T. 2022, 2023].

Elaboration of a proprietary concept, as a common factor for the entire process of shaping a strategic energy sector reform becomes a compulsory action for ensuring appropriateness to the identified challenges and for justifying the submitted proposals.

## Conclusion

In order to set strategic objectives that have to accompany the energy sector reforms, it is necessary to take into consideration the following:

- ✓ studying global energy trends, in particular, European energy policies;
- ✓ forecasts of the evolution of the demand for energy resources, including renewables;
- ✓ transposition and implementation of Energy Package IV that limits environmental pollution;
- ✓ conditionalities related to European and regional models;
- ✓ commitments taken by the state through ratified international treaties and conventions;
- ✓ policies for getting access to energy resource, forecasts of science and technologies in the field of energy - environment.

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## GREEN MARKETING THROUGH THE LENS OF WASTE COLLECTION AND TREATMENT

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**Abstract:** With global challenges in production and consumption, sustainable development is the perfect solution. The environmental crisis generated by the overuse of natural resources, which has led to environmental degradation, encourages economic progress and improved quality of life by protecting the environment.

Waste collection and treatment is a crucial aspect of sustainable development and has a significant impact on the environment, human health and the economy. The objective of sustainable development in this context is to reduce the negative impact of waste on the environment and to promote the use of resources in an efficient but responsible way.

By implementing strategies and targets in waste collection and treatment, it can help promote sustainable development, reduce environmental impacts and create a more sustainable future for generations to come. Taking into account that green marketing also includes waste marketing, also known as waste management marketing, we have set as the aim of the research to highlight some aspects of green marketing through the lens of waste collection and treatment. It is an important and increasingly relevant area in the context of concerns about the global environmental crisis and sustainable development and focuses on promoting responsible waste management practices, educating and raising public awareness about the importance of recycling, waste reduction and resource efficiency.

**Keywords:** sustainable development, environmental crisis, protecting the environment, waste collection, waste treatment, green marketing.

**JEL Classification:** F01, M31, M38

### Introduction

With global challenges in production and consumption, sustainable development is the perfect solution. The environmental crisis generated by the overuse of natural resources, which has led to environmental degradation, encourages economic progress and improved quality of life by protecting the environment.

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in this context is to reduce the negative impact of waste on the environment and to promote the use of resources in an efficient but responsible way.

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At the current stage, the issue of environmental protection has become a major one, unresolved since the previous century. There are many warning signs of excessive pollution and depletion of natural resources. Although concern for environmental protection and conservation of natural resources is present in most countries and at international level, it is widely recognized that efforts in this area are insufficient and unevenly distributed across the globe. Funding for environmental protection depends to a large extent on the economic situation of each country, which leads to significant disparities in the global approach to this issue.

Proper waste management is essential to protect the environment and public health, and involves collecting, transporting, treating and disposing of or recycling waste in a responsible manner and in accordance with applicable laws and regulations.

This is where we can apply marketing tools to successfully manage waste sustainably by meeting the needs of today's individual and organisational consumers without compromising the ability of future generations to meet their own needs.

By carrying out ongoing market research, some hidden desires of individual and organisational consumers are brought to light, such as cheaper self-service packaging. Any waste can be reused, recycled or turned into fertiliser - it's just a question of proper sorting and proper waste management. As an example, a company that dries fruit and makes jam from plums gets plum and cherry stones as waste. The average annual quantity of pits obtained is about 36 tones. Some of these pits were taken by the workers, and the other part had to be paid for by the company to be disposed of in landfill. But these pits contain a considerable amount of energy, so the company has decided to reuse them to produce the heat needed to dry the fruit. This saves the company half of the natural gas it uses, which is about 17 000 m<sup>3</sup>/year, and the financial savings are around 120 000 lei/year.

After analysing the data provided by economic operators for the year 2021, the Environment Agency gathered and presented statistical information on waste management. This reporting process included all stages of waste management, starting from the moment of generation of waste quantities, which were correctly specified by category and type according to the Waste List. The reports covered activities in the field of industrial production, agriculture, as well as reports from municipal enterprises or sanitation services in municipalities.

Regarding waste generation, data from the Environmental Information System (SIA MD) showed that in 2021, enterprises from various economic sectors generated a total of 415.8 thousand tons of waste.

Most of the waste came from the agriculture and food processing sectors, totalling 300.4 thousand tonnes. The Republic of Moldova is characterised by the fact that the agro-industrial sector has a significant share in the total number of enterprises, which explains the continuous increase in waste generation in this sector. Most of the waste in this sector comes from the production of alcoholic and non-alcoholic beverages, accounting for 41.1%, and from the sugar production industry, with a share of 37.1% in the total waste of the agro-industrial sector (5 accessed: 17.09.2023).

Municipal waste, which accounts for more than 16% of the total waste generated, consists mainly of household waste from the economic and commercial activities of businesses. This category does not include household waste from the population.

About 5% of the total waste generated comes from waste treatment plants and waste water treatment plants. This waste is usually not included in the category of recovered waste, but is landfilled by businesses looking for ways to dispose of it.

In order to meet the priorities set out in the Government's Programme of Activities "European Integration: Freedom, Democracy, Welfare" for the period 2011-2014 and to implement the Government's Action Plan for 2012-2015, as approved by Government Decision No 289 of 7 May 2012, it was necessary to develop the infrastructure and services required to protect the environment at global, national and local levels from the effects associated with the management of waste generated by citizens, businesses and institutions (3, accessed 07.09.2023).

It also implies the creation of an appropriate legal and institutional framework to support the gradual alignment of Moldova's waste management practices with those of the European Union. The ultimate aim is to protect the environment and ensure that waste management is efficient and sustainable, thus contributing to European integration efforts and improving the quality of life for citizens.

Waste is traditionally seen as a source of pollution. But well-managed waste can be a valuable source of materials, especially when raw materials start to run out. The best option is to stop waste production. And when this is not possible, reuse and recycling are other good options.

There are many researchers and experts in the field of waste management and the impact of waste on the environment. These researchers come from various fields such as environmental science, environmental engineering, resource economics, environmental sociology and many others. Over the years, these experts have written research papers, books, scientific articles and reports on various aspects of waste management and its impact on the environment, including some internationally recognised researchers and experts in the field of waste management and environmental protection, such as Paul Connett, an expert in hazardous waste management, who addresses one of the most important issues of today's world - waste management and zero waste solutions. He highlights the concept of zero waste and argues for more responsible waste management practices in communities and societies.

The researcher defines zero waste as a holistic approach to waste management, with the aim of minimizing the amount of waste sent to landfill and maximizing recycling, composting and reuse of materials (1).

Through concrete examples of communities and cities around the world that have successfully adopted zero waste principles, the author demonstrates that it is possible to significantly reduce waste

and create a cleaner, healthier environment. He stresses the importance of education and public awareness about waste management and its impact on the environment. It argues that real change can only be achieved when communities become more informed and involved.

The paper "The Zero Waste Solution: Untracking the Planet One Community at a Time." offers practical tips and strategies for reducing waste at personal, household and community levels. The author promotes methods of recycling, composting and reusing waste (1).

Also here, the author highlights the link between zero waste and the concept of a circular economy, where resources are continuously harnessed without generating waste, and encourages readers to take action at a personal and community level to help reduce the impact of waste on the planet.

Daniel Hoornweg, is another researcher and urban waste management expert who has contributed to the development of waste management strategies worldwide. He supports the concept of the circular economy, which promotes recycling and reuse of resources to minimise waste and reduce environmental impact, arguing that the circular economy is an alternative approach to the way we manage resources and waste, replacing the traditional "use and throw" model with one in which resources are conserved, reused, recycled and reused.

The researcher's interest is not accidental. Waste is a substance or material left over from a technological or domestic process that can no longer be used in the production or use of a product, but has a negative effect on people's health and well-being. Waste management, also known as waste management, focuses on the whole process that includes the collection, transport, treatment and proper disposal of these wastes.

Virtually every individual, household or institution produces waste. This can be extremely varied, including household and biodegradable waste, industrial and hazardous waste, marine waste, medical waste, rubble, building materials, and liquid waste. Among the most common types of waste are plastic, metal and paper, which are the most recycled materials in the world and in Moldova today.

The industry and manufacturing sector has been successful in implementing effective measures to reduce the amount of waste generated in their processes, which can include recycling strategies, reducing material consumption and adopting more sustainable practices.

At the same time, population and living standards growth may lead to an increase in waste generated by the population in households and in everyday activities. This puts pressure on waste management systems to cope with more household waste and to develop solutions for collecting, recycling and disposing of this waste in a sustainable and responsible way.

These two trends underline the importance of adopting effective and sustainable waste management policies and practices that address both the industrial and household sectors in order to minimise environmental impacts and ensure sustainable development in Moldova.

In the "National Programme for Waste Management for the years 2022-2027," information on the estimated recycling rate of some categories of municipal waste is presented. However, it should be noted that this information is not official data and is only an estimate. Thus, according to these estimates, in 2018, the recycling rate for plastic waste was estimated at 4.1%, while the recycling rate

for paper waste was 7.7%. There is also an increase in the recycling rate for glass waste, which rose from 35.1% in 2018 to 41.5% in 2019 (3).

These estimates indicate initial efforts to increase the waste recycling rate in the Republic of Moldova, but additional measures may be needed to further improve waste management performance and increase recycling rates. Regular monitoring and reporting of waste management data is essential for assessing progress and developing future sustainable waste management strategies in the country.

Green marketing is growing for several reasons, one of which is increasing awareness and concern for environmental issues among consumers. As a result, they are more likely to look for products and services that are environmentally friendly and sustainable. This trend has prompted companies to adopt more sustainable business practices and engage in green marketing to attract environmentally conscious consumers.

Another reason for the development of green marketing is that there is increasing pressure on companies to adopt sustainable practices and reduce their environmental impact. Governments, consumers and other stakeholders are increasingly demanding that companies be more responsible in their operations and supply chains. This has prompted companies to demonstrate their commitment to sustainability and differentiate themselves from their competitors.

Finally, the growth of green marketing can also be attributed to technological advances that have made it easier and more cost-effective for companies to adopt sustainable practices. As a result, it has become increasingly viable for companies to engage in green marketing and promote their environmental efforts to consumers.

It is worth noting that green marketing is a key strategy for promoting sustainable practices and products, and can bring multiple benefits to the environment, businesses and consumers alike. This activity contributes to raising public awareness of environmental issues. Marketing campaigns can provide information about the negative environmental impacts of certain practices or products and educate consumers about the more sustainable alternatives available.

Promoting green products and services can stimulate innovation and the development of more sustainable solutions. Promoting green products and services can create positive pressure on companies to develop more innovative and sustainable solutions. Awareness of the demand for such products can motivate research and development in this area. When consumers are informed and aware of the green options available, they are more likely to make responsible purchases and support companies that offer such products.

Companies that embrace green marketing and focus on social and environmental responsibility can reinforce their image as responsible entities. This can build consumer trust and strengthen consumer relationships.

Green marketing can influence consumers' purchasing decisions by encouraging them to choose products and services that are less harmful to the environment. This influence can have a positive impact on the environment through consumer preferences and choices.

Green marketing is therefore not only a promotional strategy, but also a powerful force for changing behaviour and attitudes towards the environment, while contributing to the development of innovative solutions and building a positive corporate reputation.

In conclusion, green marketing plays a crucial role in promoting more environmentally responsible behaviour among both consumers and companies. It can stimulate sustainable development and help protect the environment in an increasingly concerned world, and help companies reduce their environmental impact through products and practices with a lower carbon footprint or recycled materials.

Companies that are seen as environmentally responsible can benefit from increased customer loyalty and a positive brand reputation. By adopting sustainable practices and promoting them through marketing campaigns, companies can help create positive change and contribute to a more sustainable future.

From the above, we can deduce that waste marketing, which can also be called "waste management marketing" or "solid waste marketing", is a considerable part of green marketing and can be defined as "the application of marketing principles and techniques in the management and disposal of waste from all sources in order to support a sustainable society". The significance of this type of marketing lies in the promotion of responsible waste management practices and sustainable waste treatment and disposal solutions.

Waste marketing aims to raise public awareness of the importance of proper waste management. This includes informing about the negative impact of improper waste management on the environment and human health. Companies and local authorities can use marketing campaigns to encourage people to recycle and reduce consumption of products with

excessive packaging. With information about recyclable products and responsible packaging, consumers can make more conscious choices about their purchases. Companies can highlight their commitment to environmental protection and responsible waste management through marketing strategies and comply with waste management legislation. This can include educating customers or other stakeholders on legal requirements and how to comply.

## **Conclusion**

The application of green marketing is crucial in modern business management as it helps raise awareness of environmental issues and encourages consumers to make more sustainable choices. In other words, to successfully implement waste management measures, active collaboration with citizens is essential. This requires effective communication between the local public authority, the sanitation operator, the businesses that process recyclable materials and the local community. In order to support the implementation of the principles of an integrated waste management system, it is crucial to carry out communication and public involvement actions.

Awareness-raising and information campaigns for citizens on the impact of waste on the environment and quality of life, as well as on how to apply the principles of the circular economy in solving waste-related problems, are an important tool in the development of local communities. These campaigns are designed to build skills and awareness among citizens about the importance of protecting the environment and to encourage their active and responsible involvement for the benefit of the

community. By promoting environmentally friendly products and practices, companies can not only reduce their own environmental impact, but also contribute to a wider societal shift towards sustainability.

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## **METHODS OF ELICITING COMPANIES' DEMAND FOR INTELLECTUAL PRODUCTS**

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**Abstract:** To influence the level of preparation of both IT specialties and economic fields closely related to IT technologies in higher or secondary educational institutions in order to meet the needs or requirements of various companies. Collaborative efforts between businesses and education can address the issue of quality potential personnel and enhance students' preparedness through the establishment of a standardized set of business demands. When identifying the requirements for IT specialties, the key vectors include not only work experience and skills but also business qualities and the ability to work in a labor collective, aligning with company values. To better define the competencies of future employees, one of the best methods we believe is the Delphi method, which involves expert judgment. This method is a form of collective expert assessment that includes several rounds of anonymous surveys of the expert group to achieve consensus. By involving interactions between companies and educational institutions in the study, surveys can be conducted to gather statistics and utilize educational plans that interest organizations. The competencies proposed by experts may carry similar semantic meanings but be described with different words. Additionally, the merging of similar competencies into more comprehensive ones is possible. In the era of rapid IT development, this issue can be addressed through existing text analysis and comparison techniques in databases. Thus, unification of competencies can be established during the learning process.

**Keywords:** IT, expert, higher education institution (HEI), competencies, Delphi method

JEL Classification: C13, C60, J24, J44, L15 O15, R15

### **Introduction**

To influence the level of preparation of both IT specialties and economic fields closely related to IT technologies in higher or secondary educational institutions in order to meet the needs or requirements of various companies. Collaborative efforts between businesses and education can address the issue of quality potential personnel and enhance students' preparedness through the establishment of a standardized set of business demands. The indicators to consider include professional knowledge, practical skills, teamwork, business qualities, and alignment with corporate values.

The works of both domestic and foreign scholars are devoted to the issues of personnel management, including: Bertchel O. (Bertchel, 2003), Pryimak V.I. (Pryimak, 2003) and others. In contemporary scientific literature, the question of effective personnel selection is insufficiently explored.

Today, companies are willing to take on interns, provide training, and prepare the specialists they need for their operations. However, if employers start collaborating with educational institutions at the learning stage, it may be possible to address the significant challenge of ensuring that potential professionals have both the necessary theoretical knowledge and practical skills required by the company.

### **The main research findings.**

Modern employers' criteria and requirements should receive special attention when shaping the structure of higher education institutions' academic programs. To create a comprehensive model of this academic field, all its components must be considered. Emphasizing employers' demands is crucial, but equal importance must be placed on online education.

Enhancing the quality of intellectual output is a fundamental factor influencing the competitiveness of future professionals and the institutions that educate them. To improve the quality of intellectual output, it is imperative to support decision-making in educational management.

In other words, graduates of higher education institutions should possess criteria and skills that can meet the requirements of employers as depicted in Figure 1 (Filatova, 2019).

Therefore, it is essential to identify key issues and challenges associated with preparing professionals for the job market and enhancing intellectual output. Previous research (Filatova, 2021a) explored this issue and identified primary elements related to management challenges and achieving high-quality intellectual output. These elements encompass the criteria and skills that graduates of higher education institutions must possess, particularly those highly valued by employers.

This is especially relevant for professionals who need expertise not only in mathematics, economics, or other fields but, most critically, in information systems and technologies – essential components of modern professional roles.

These skills include both universal competencies and those tailored to meet the demands of contemporary employers. Moreover, it is crucial to recognize that the quality of IT education must remain high and keep pace with the rapid emergence of new technologies and systems (Figure 1).

### **Subject and Methods.**

In delineating the prerequisites for IT roles, essential dimensions encompass not just professional experience and technical proficiencies but also essential interpersonal attributes and a knack for harmonizing with organizational values within a team dynamic. In our view, one of the most

effective approaches for refining the skill set of prospective employees is the utilization of the Delphi method, which relies on expert evaluation.

This technique constitutes a collaborative form of expert appraisal, incorporating multiple rounds of anonymous surveys among the expert panel to establish a consensus. The foundation of this expert evaluation methodology is detailed in the materials outlined in (Filatova, 2019; Zhuran, 2019).

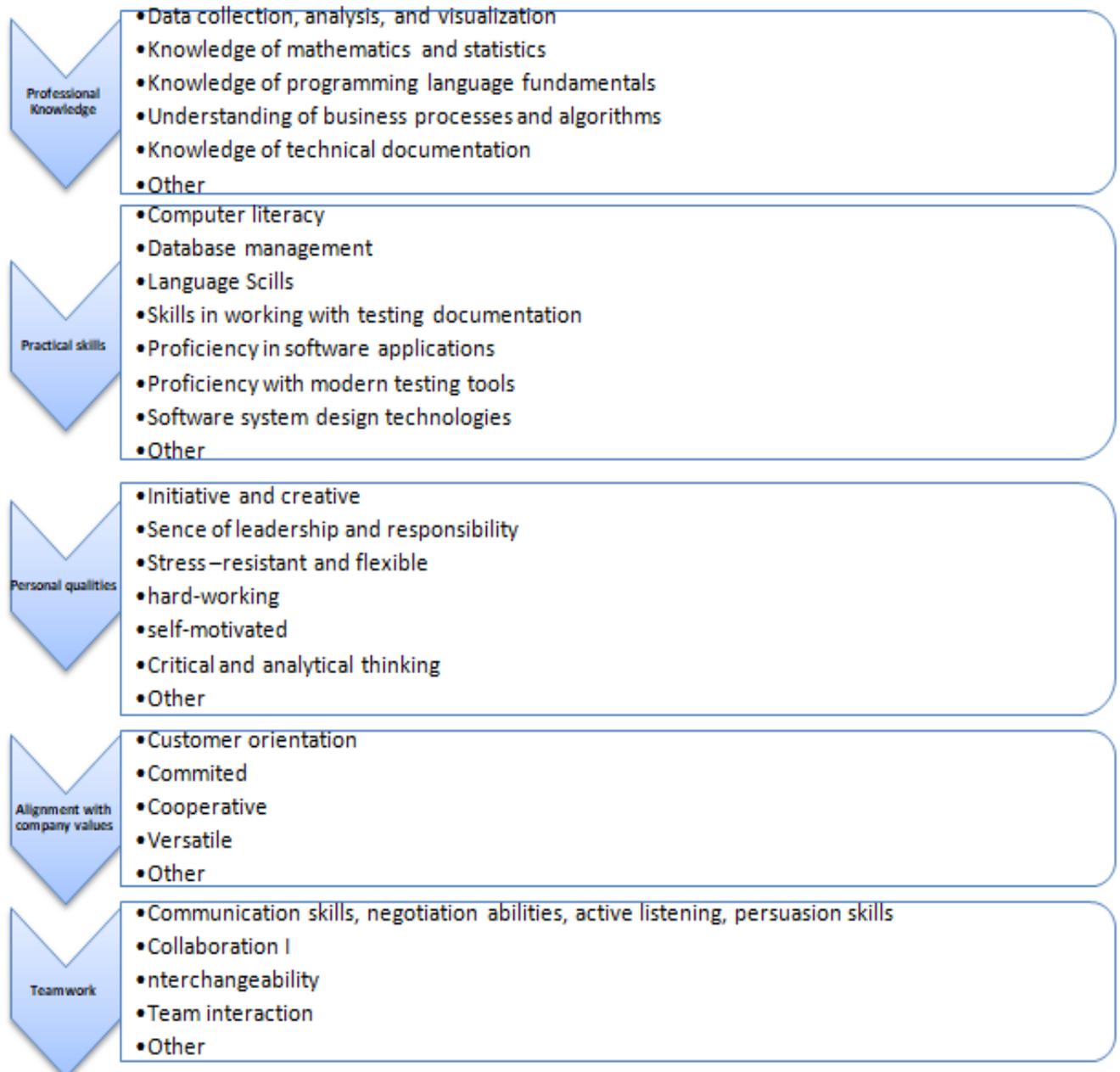


Figure 1. Requirements for graduates of IT specialties

Features of the expert assessment method as a scientific tool for solving complex non-formalized problems include, firstly, a scientifically substantiated organization of all stages of expertise, ensuring the highest efficiency of work at each of the stages, and secondly, the use of quantitative methods both in the selection of experts and in the evaluation of their judgments and the processing of obtained results.

The organization of interaction with experts depends on the chosen method of collecting expert information. Today, various types of expert assessment methods are used. They can be divided into two groups: individual and group (collective) expert surveys. Expert methods belonging to the first group involve individual work of researchers with each of the involved experts. In contrast, group methods involve collective work of experts (in-person or remotely), requiring the consensus of opinions of all experts and the development of a common expert conclusion based on consensus.

The comprehensive use of intuition, logical reasoning, and quantitative assessments with formal processing allows for an effective problem-solving approach.

The method entails remote and anonymous surveys of an expert group over multiple rounds to reach a consensus among experts. Experts are provided with survey sheets (questionnaires) related to the research problem. The questionnaire questions can take various forms, including closed-ended and open-ended questions, considering both quantitative and qualitative responses. Variations in argumentation and justification of expert assessments may also be allowed or optional.

The methodology for conducting expert assessments is based on the materials presented in (Filatova, 2019).

The Delphi Method involves conducting several rounds of surveys. In each round, experts express their opinions and provide assessments of studied phenomena. Additionally, quantitative ratings of the main advantages of each set type are determined through "weighting," assigning a specific numerical value to each of them in a scoring system in the following sequence:

The initial step in conducting the expertise involves forming an expert group. Common practice recommends forming a group of 10-15 experts in the respective field (not exceeding 20 individuals). The list of experts is compiled based on their professional status, years of experience in managerial positions, and education.

The first stage involves a quantitative assessment of the qualitative significance of each advantage. This assessment is conducted using a scoring system. After completing the first round of surveys, for each advantage, experts calculate the overall significance coefficient using the provided formula:

$$Q_j = \frac{\sum_{i=1}^N Q'_{ij}}{n}, \quad (1)$$

where  $Q'_{ij}$  - is the quantitative rating of the importance of the  $j$ -th indicator given by the  $i$ -th expert after the first round of surveys,

$n$  - is the number of experts.

b) When processing information obtained from experts, all ratings are arranged in descending order, and then the median ( $M$ ), quartiles ( $Q1$ ,  $Q2$ ) are determined, dividing the scale into 4 parts.

c) Each expert is informed about the values of  $Q'_{ij}$  and  $Q_j$  based on the results of the first round of surveys, providing necessary motivation. If the ratings of some experts fall into extreme intervals, they are anonymously asked to justify their opinion on providing such ratings. The justifications from these experts are considered by other participants. Experts can refine their ratings, and in the second round, they fill out a questionnaire with new assessments.

In the second round, experts determine the final coefficients of “weight” for any  $j$ -th indicator  $Q'_{ij}$  with corresponding justifications and clarifications. The final coefficients of “weight” for any  $j$ -th indicator  $Q''_j$  are established using a formula similar to the one used in the first round:

$$Q''_j = \frac{\sum_{i=1}^N Q'_{ij}}{n} \quad (2)$$

The possibility of conducting a third round of expert survey is enabled. Typically, with each new round, the convergence of expert opinions in rating assessments strengthens, leading to more consistent scores for each indicator. Thus, the "weights" of product advantages become more accurately defined.

After several rounds, the discrepancy in assessments becomes insignificant. Then, divergent viewpoints are documented, and a decision is made. This method is quite relevant for determining the probability of occurrence of risky events, assessing losses, and the probability of losses falling within a certain interval.

The iterative nature of multiple rounds allows for a refinement of opinions and a convergence toward a consensus, making the Delphi Method a valuable tool in situations where experts' judgments play a crucial role in decision-making.

By incorporating the interaction between IT companies and educational institutions into the research, it is possible to conduct surveys, gather statistics, and utilize educational plans that have been approved by organizations interested in this collaboration.

Experts are provided with a questionnaire containing a basic list of characteristics that influence a professional's competitiveness.

Based on the above, it can be concluded that to address issues in educational process management and enhance the quality of intellectual output of professionals, it is necessary not only to utilize existing methods, technologies, and opportunities but also to embrace new approaches, including various forms of online learning, such as distance learning platforms.

Currently, critical criteria and methodologies aimed at improving the skills of graduates and attracting employers' attention to students using modern approaches are essential. The global experience shows that a graduate's professionalism is paramount for employers. Therefore, we must make use of all the opportunities that already exist and those that are emerging to prepare professionals.

Even during their university education, students should acquire new knowledge and skills to become qualified professionals in high demand in the job market. All these efforts to enhance the level of students' education will help them become competitive in the future. However, this is only possible through continuous improvement of the educational process, the adoption of new technologies, and the professional development of instructors who implement these technologies.

When addressing complex non-formalized problems where statistical approaches are not applicable, experts play a significant role. Therefore, we believe that the Delphi method is relevant for solving these issues. The essence of the expert judgment method lies in experts conducting intuitive-logical analysis of the researched problem with a quantitative assessment of their judgments and formal processing of the results obtained. The synthesized opinion of experts resulting from this processing is accepted as the solution to the problem. The comprehensive use of intuition, logical thinking, and quantitative assessments with formal processing allows for an effective solution to the problem.

Building such a scheme is a highly responsible and complex task, so it should be carried out in collaboration with experts. The author should distribute the questionnaire they have developed to the experts. The questionnaire contains a basic list of characteristics that influence the competitiveness of IT professionals.

One of the shortcomings of expert methods often includes the labor-intensive processing of the obtained results, especially when it comes to textual information. The competencies proposed by experts may carry the same semantic load but be described using different words. Additionally, there is a possibility of consolidating similar competencies into a more complex one. In the era of rapid development of information technology, this problem can be addressed using existing developments in comparing and analyzing textual information in databases (Ivchenko, 2023).

Using a specific set of criteria (employer requirements and university competencies), it is possible to apply set intersection and union operations to the subject areas of Employers and Higher Education Institutions (HEIs) and construct a linear function. This can serve as an objective function for maximizing the attainment of performance quality and qualifications, encompassing factors influencing graduate performance and high qualifications. It also includes weight coefficients indicating the importance of each coefficient from an expert perspective. As a result, suitable parameters can be selected to enable the function to enhance knowledge attainment by adjusting model parameters. The factors within the objective function contribute to the acquisition of quality education, which subsequently shapes a competitive professional.

### **Solving a scientific problem**

In other words, by initially employing analysis, modeling, manipulation of the subject area, utilizing expert assessment, and then employing mathematical tools to solve the problem, it is possible to streamline and enhance the process of preparing professionals with contemporary knowledge and skills, which are rapidly evolving in our time. This can be achieved through the creation and analysis of a subject area model, information management within this domain, and the application of specific methods described in the article, not only improving educational services but also meeting the needs of stakeholders. This is particularly achieved by aligning with the modern employer's requirements.

Before delving into the development of any model or system, it is essential to first design and select a data model that allows for the definition of data, their relationships, and constraints imposed on the data within the research context. For this purpose, the following categories of data models can be used: object-oriented, record-based, and physical. The first two are used to describe data at the conceptual (subject area) and external (logical data representation) levels, while the last one is employed at the internal level.

At the conceptual level, an "Entity-Relationship" (ER) model should be utilized. It will help define all objects belonging to the research subject area and the relationships established among them, forming the basis for the research. This model will serve as a graphical representation of the metamodel.

Logical data representation should be organized using a relational data model, which is currently one of the most widespread approaches. It provides a convenient data structure and allows the use of relational algebra for analysis. All these qualities are necessary both for conducting research and for implementing software in line with the research findings.

Since the methods for building a system that will facilitate research have already been defined, it is necessary to explain how this system will be utilized during the research process. Additionally, it is important to specify the scope of application of the research results within this system.

The entire path from searching for methods to implementing the stated problem, as described above, will allow for improving the interaction system between educational institutions and companies.

### **Results and Conclusions**

The competencies proposed by experts may carry similar semantic meanings but be described with different words. Additionally, the merging of similar competencies into more comprehensive ones is possible. In the era of rapid IT development, this issue can be addressed through existing text analysis and comparison techniques in databases.

By applying expert assessment methods, it is also possible to determine the correspondence of educational qualification levels at different accreditation levels (Filatova, 2011). Thus, unification of competencies can be established during the learning process.

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**SESSION II: FUNDAMENTAL AND  
APPLIED ECONOMICS**

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## SOCIAL INFRASTRUCTURE - FACTOR OF SUSTAINABLE DEVELOPMENT AND INCLUSIVE GROWTH IN THE REPUBLIC OF MOLDOVA

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**Abstract:** Social infrastructure is the foundation of a sustainable and equitable society, providing the essential services needed to support the well-being and sustainable development of the population. From education and healthcare to transport and community spaces, a developed social infrastructure is essential to promoting wellbeing, inclusion and economic growth. However, as societies evolve and face new challenges, continuous improvement and increased investment in these critical systems becomes imperative. This article analyzes various measures that can be taken to improve the social infrastructure in the Republic of Moldova, ensuring a better quality of life for its citizens. In addition, the article emphasizes the need for collaborative efforts between governments, businesses, and civil society to design, finance, and maintain effective social infrastructure systems.

**Keywords:** social infrastructure, sustainable development, inclusive growth, Republic of Moldova

JEL Classification: O10, R10

### Introduction

In efforts to promote sustainable development and inclusive growth, we cannot underestimate the importance of social infrastructure. While physical infrastructure such as roads, bridges and power grids play a defining role, it is social infrastructure that forms the backbone of a harmonious and equitable society.

Social infrastructure comprises the institutions, facilities and services that support social welfare and facilitate societal progress. It includes educational systems, health facilities, community centers, parks, cultural institutions, social services and more. These components provide the foundation for social interaction, community development and access to essential services, thereby improving quality of life and promoting inclusive growth [1].

However, as societies evolve and face new challenges, continuous improvement and increased investment in these critical systems becomes imperative. Investment in social infrastructure is recognized as a key factor in achieving sustainable development, reducing poverty and inequality and improving the quality of life for all members of society.

### **Material and method**

In the framework of the research, general scientific methods of researching socio-economic processes and phenomena were used, in particular methods such as analysis, synthesis, deduction, induction, the method of scientific abstraction were used.

The information support of the research is represented by both national scientific publications and international studies, the annual reports presented by the Ministry of Finance of the Republic of Moldova, the National Bureau of Statistics (NBS), the data provided by the Ministry of Education and Research, the data published by Eurostat, the Organization for Economic Cooperation and Development (OECD), the World Bank and other informational resources.

### **Results and discussions**

Social infrastructure represents the set of services and resources that support the well-being and development of a society. Education is an essential element of human and social development, it plays a significant role in the social infrastructure.

A well-trained and educated workforce is absolutely necessary to promote innovation, stimulate economic growth and ensure the long-term development of a society. Education and training provide individuals with the skills and knowledge to contribute to the economy, innovate and solve problems, which in turn leads to national prosperity and economic advancement. It is a key element for a country's global competitiveness and improving the quality of life of its citizens.

According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), universal access to quality education is a central pillar of sustainable development. Countries that invest in education see significant increases in literacy rates. In most EU member states, the adult literacy rate is over 99% (2021) [10] with well-developed educational systems and access to quality education.

Among the countries with a high level of literacy is the Republic of Moldova, which has a literacy rate of over 99% (2022). It is also worth mentioning the constant evolution of the gross enrollment rate at all educational levels over the last decade. In 2022, the gross enrollment rates were as follows: for primary education - 107.1% (compared to 104.4% in 2015); for secondary education - 103.9% (compared to 106.4% in 2015); for second level secondary education - 83.0% (compared to 67.8% in 2015); and for tertiary education - 64.5% (up from 51% in 2015) [8].

However, there are educational gaps between urban and rural areas. In recent years, rural schools with a small number of students have been closed, a consequence of the demographic decline faced by the Republic of Moldova. Pupils in villages may have difficulty getting to school in other localities, particularly due to the lack of adequate transport infrastructure.

In addition, school infrastructure in schools in rural areas often lacks modern infrastructure and resources such as well-equipped laboratories, rich libraries, sports facilities and learning technology, which affects the quality of the educational process. At the same time, rural areas face a shortage of teachers (more than 2,000 teachers in 2022), as well as limited access to technology and the Internet, a fact that creates gaps between the quality of education offered and the school performance of students.

These educational gaps between urban and rural areas should be a concern for authorities and communities, as these inequalities influence the personal and professional development opportunities of students in rural areas. Under these conditions, efforts are needed to improve the educational infrastructure in the countryside, to increase access to education and to ensure a more uniform quality of education throughout the country.

The government is constantly directing resources towards improving the educational infrastructure. According to the data presented by the Ministry of Finance, in 2022, the Republic of Moldova allocated 16,1% of the total government expenditure for education [7]. In the same year, the Republic of Moldova allocated about 5.8% of the Gross Domestic Product (GDP) to the field of education. Although these percentages represent a significant weight within the GDP, in absolute terms, the amounts allocated are insufficient, amounting to 15.8 billion lei.

The percentage dedicated to education in GDP aligns with some European countries, but it remains insufficient to address all the challenges faced by the education sector in the Republic of Moldova.

Social health infrastructure has a direct impact on population health and economic productivity. Robust healthcare systems provide preventive care, treatment and disease management, improving the overall health of the population [3]. States that invest in quality and accessible medical services record a decrease in the infant mortality rate, an increase in life expectancy. According to Eurostat data, life expectancy at birth in the EU-27 reached an impressive 81.0 years in 2020, demonstrating substantial improvements in public health.

In the Republic of Moldova, life expectancy at birth has increased by about four years since 2000 (from 67.6 years to 71.4 years in 2022). However, there are major discrepancies in life expectancy by gender, 67.1 years for men and 75.7 years for women (2022) [6]. This reflects socio-economic inequalities, but also substantial deficiencies in the provision of health services. The social health insurance system offers a comprehensive package of services, however, approximately 16% of the population remains uninsured and is only entitled to a minimum package of services.

Another challenge for the country's health system is the growing shortage of health professionals. According to data from 2021, the number of doctors per capita in the Republic of Moldova was approximately 32.4 doctors per 10,000 inhabitants, and the number of medical assistants, approximately 66.3 medical assistants per 10,000 inhabitants [6]. These figures indicate a low density of medical staff compared to the EU average, where there are approximately 37.2 doctors per 10,000 inhabitants and approximately 87.8 nurses per 10,000 inhabitants (2021).

At the same time, hospitals in the Republic of Moldova face problems related to infrastructure and the provision of modern medical equipment. A large number of hospitals need modernization and investment to improve the quality of medical services offered, which highlights the need for modernization and investment in this area to ensure high standards of medical care.

In the Republic of Moldova, in the last decade, substantial investments were directed towards the modernization of medical units, expanding the coverage of medical assistance and improving the training of medical personnel. In 2022, public expenditure on health accounted for approximately 5.4% of GDP and 14.3% of National Public Budget (NPB) expenditure. However, these expenses are insufficient.

It is essential that the Republic of Moldova continues to invest in the health system, to ensure better access to medical services and to allocate a higher proportion of GDP to health (in the EU public spending on health is on average approximately 9.3 % of GDP, 2021). The government must focus on combating the shortage of health professionals, stimulating and maintaining medical personnel in rural regions through specific programs and support, modernizing hospital infrastructure.

Social infrastructure is not limited to health and education, but also extends to housing and social protection.

Access to adequate and affordable housing is essential for citizens' quality of life and social inclusion. The Government of the Republic of Moldova has undertaken several initiatives to address housing challenges, particularly for low-income individuals and vulnerable families.

Thus, in order to ensure access to housing, the government of the Republic of Moldova initiated the "Prima Casa" program in 2019, being extended until July 2023. This program offers financial assistance in the form of mortgage loans at low interest rates for citizens who wish to purchase their first House. The purpose of this program is to make housing affordable and support low-income families in purchasing a property. Despite some criticisms related to the eligibility criteria and the limited level of loans granted, the "Prima Casa" program facilitated the access of a large number of citizens to housing. Over 8,000 families and young people have purchased homes through the Prima Casa program, offering them housing options at affordable prices.

In the last decade, the internal labor migration of the population has intensified in the country, so that, during 2022, according to the NBS data, about 21.5 thousand people changed their residence inside the country, the number of the population in urban localities increased by 5.3 thousand people at the expense of rural areas. The largest number of migrants was oriented towards the big cities, 53.4% of the total arrivals returned to the municipality of Chisinau, followed by the municipality of Balti with 3.7% [3].

In these circumstances, the development of urban infrastructure is necessary, which includes the expansion of water and sewage networks, the modernization of transport infrastructure and the development of green areas and parks. These investments in urban infrastructure will not only improve the living conditions of residents, but will also help make cities more attractive to new investors and real estate developers.

Although some progress has been made, challenges remain, requiring continued efforts and investment in social infrastructure. Strengthening social safety nets and promoting sustainable housing solutions remain essential in ensuring the well-being and prosperity of all the country's citizens.

Social protection is an essential pillar of the social infrastructure, ensuring adequate support for the vulnerable population. Data from the International Labor Organization (ILO) demonstrate that

effective social protection programs significantly reduce poverty and inequality. This includes unemployment benefits, welfare and health care coverage, providing a safety net for individuals and families, enabling them to face economic challenges and maintain their dignity and well-being.

The social protection system in the Republic of Moldova is structured in two distinct components: state social insurance, which involves the granting of pensions, and social assistance, which is provided to people in situations of risk or vulnerability. The largest part of the financial resources is allocated to social insurance, representing approximately 65% of the total expenditures for social protection. In contrast, social assistance represents only 35% of the total of these expenses. This distribution indicates that the funds allocated to other types of covered risks, such as those related to maternity or temporary incapacity for work, are extremely limited.

In the Republic of Moldova, spending on social protection has grown steadily in recent decades, according to the data of the Ministry of Finance of the Republic of Moldova, spending on social protection in 2022 constituted about 14% of GDP. Social protection has the largest share in BPN expenses, approximately 36.9%.

Despite the increase in allowances in social assistance programs, the poverty rate in the country has increased. The NBS data indicates that between 2010 and 2022, the percentage of the country's population living below the poverty line decreased from 26.3% to 31.1% [4], with the Republic of Moldova being one of the countries with the lowest incomes in Europe, with a proportion significant population living below the poverty line, which highlights the importance of social protection programs.

In order to ensure effective and sustainable social protection, it is important to strengthen the social protection system, promote transparency and responsibility in the use of resources, and implement policies that address the social challenges facing the Republic of Moldova. The government must implement social assistance programs to support low-income families and individuals, programs that provide financial aid, food stamps, and other essential resources to those in need.

In the modern age, digital social infrastructure is essential for providing access to information, services and opportunities, this includes digital connectivity and access to information and communication technologies (ICTs). Bridging the digital divide is essential to ensure equal opportunities and inclusive growth. A study by the International Telecommunication Union (ITU) showed that a 10% increase in broadband penetration can lead to a 1.38% increase in GDP, demonstrating the significant economic impact of digital social infrastructure.

The Republic of Moldova has invested in the development of its digital infrastructure to reduce the digital divide and promote digital inclusion. The Global Innovation Index in the Republic of Moldova has registered an increase in recent years. In 2022, the Republic of Moldova placed 56th out of 132 countries and economies in the ranking of the Global Innovation Index, thus climbing 8 positions compared to 2021 [9].

One of the major objectives of sustainable development is to reduce social inequality. Social infrastructure plays a vital role in achieving this goal. Statistical data prove that a well-developed social infrastructure contributes to the reduction of discrepancies between social and economic groups.

In the Republic of Moldova, social inequality remains a pressing challenge, affecting citizens' well-being and opportunities. Despite progress in some areas, disparities persist in terms of access to education, healthcare, income and social support.

In the Republic of Moldova there is a high discrepancy between the incomes of those with high incomes and those with low incomes. According to the National Bureau of Statistics, in the period between 2018 and 2022, the Gini coefficient registered an increasing trend. In 2022, this coefficient was estimated at 0.3208, increasing from the value recorded in 2018, which was 0.2931. The increase in the Gini coefficient by 0.0277 or about 9.5% during this period indicates an intensification of income inequality during those years.

Rising income disparities have been associated with widening poverty, widening regional disparities, and four times more absolute poverty in rural areas than in urban areas. Higher poverty rates were also recorded in the south of the country compared to the national average. In 2022, the absolute poverty rate in the south of the country reached an alarming level of 49%, which is approximately five times more than the rate recorded in Chisinau (10%) [5]. The concentration of wealth in urban areas has exacerbated income inequalities, leaving rural communities more vulnerable to poverty and with limited access to opportunities.

To increase social support and reduce social inequality, measures such as improving the efficiency and targeting of social assistance programs are needed. In addition, promoting job training and creating economic opportunities can empower individuals and families to lift themselves out of poverty. By providing essential services to all, regardless of their socio-economic status, social infrastructure can support social inclusion and the creation of a fair and prosperous society.

Sustainable development is a key objective of the Republic of Moldova, and social infrastructure can play an important role in achieving this goal. Adequate social infrastructure contributes to the development of rural communities, reducing migration to urban areas and creating a balance between urban and rural development [2]. It promotes social inclusion and provides equal opportunities for all members of society to improve their quality of life.

Ensuring sustainable financing for the development and maintenance of social infrastructure is an essential necessity. Continued partnerships between the government, the private sector and international organizations can play a key role in supporting investments in social infrastructure, in realizing the Republic of Moldova's vision for a prosperous and inclusive society.

## **Conclusion**

Social infrastructure is a fundamental component of sustainable development and societal progress. It plays a key role in ensuring access to health and education services for all, providing adequate housing and promoting social inclusion.

Investments in social infrastructure are more than just expenditures, they are long-term strategies that generate substantial returns in terms of economic growth, poverty reduction and overall well-being. Investments in social infrastructure contribute not only to the improvement of the quality of life, but also to economic growth, to the achievement of sustainable development goals.

Governments, businesses and communities must work together to ensure sustained and strategic investment in social infrastructure. By prioritizing social infrastructure, the Republic of Moldova can create a stronger and fairer future for its citizens, unlocking the potential for economic growth, innovation and social well-being.

Improving social infrastructure is a collective responsibility that requires collaboration between governments, private organizations and citizens. By prioritizing education, healthcare, housing, transportation and community spaces, society can create an environment where everyone has a chance to thrive. These investments not only increase the general well-being of citizens, but also contribute to economic growth, social cohesion and a more prosperous future for generations to come.

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## **RESEARCH OF THE IMPACT OF THE QUALITY OF GOVERNANCE ON INNOVATION AND ECONOMIC GROWTH**

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**Abstract.** Modern growth theory believes that the most important determinants of the long-term sustainable economic growth are innovations and institutions that define total factor productivity. However, poor quality institutions, policy failures and ineffective governance can restrain innovation and slow economic growth. The purpose of this study is to use cross-country data for 2012 – 2021 to examine the impact of the quality of governance on innovation and economic growth. This study used methods of systemic and comparative analysis, synthesis and analogy, the method of structural analogy, the methods of regression and correlation analysis.

Among the main conclusion of this research, the following should be noted. The influence of institutions on economic growth is mediated, among other things, by the impact of government policies on innovation and technology, which determine the long-term possibilities of growth in the economy. A positive relationship has been established between the governance quality and the innovative development of the country: inefficient governments do not work well in conditions of uncertainty and often generate economic risks themselves disrupting economic stability; they cannot generate the financial resources and long-term incentives needed for the create of innovations. The state policy aimed at stimulating economic growth and increasing the innovativeness of the economy requires innovative approaches to management, modernizing the system of governance of the economic and improving the quality of government regulation.

**Keywords:** innovation, economic growth, institutions, quality of governance.

JEL classification: O31, O47.

### **Introduction**

Modern growth theory believes that the most important determinants of the long-term sustainable economic growth are innovations and technologies that define total factor productivity. The issues of effectively stimulating innovative and technological development are quite complex even for developed, mature economies due to the existence of the «free-rider problem», when economic agents do not have sufficient incentives and motives to finance research and development, as well as the introduction of innovations into production. This problem is even more acute in developing countries that lack innovation and demonstrate high dependence on foreign technologies due to limited financial resources of the state, poor quality of the institutional environment, failures of economic policy, and halting of market mechanisms.

Numerous theoretical and empirical studies, for example D. Acemoglu, J. Robinson, D. Rodrik, J. Fagerberg and other [1 – 3] consider the quality of institutions as the most important factor that promotes the development of innovation and explains differences in income levels in per capita between countries. In this context, the most significant is the influence of public administration institutions, which act as the main determinant of the growth of innovation, especially in countries with emerging markets, where market mechanisms for the development of innovation systems have not yet been fully created and used. The influence of institutions of governance on innovation is realized through the implementation of an effective innovation policy, reducing resistance to innovation, maintaining fair and transparent competition, creating equal conditions for public and private innovators, and laws on the protection of intellectual property rights.

It is likely that the low level of innovation in developing countries and transition economies is associated with the low quality of the institutional environment and the weakness of government institutions, which constrains productivity growth and contributes to the economy falling into the «low/middle income trap». Therefore, the main goal of this research is to study and quantify the impact of the quality of government on innovation and economic growth, which allows government to develop more prudent and cautious state economic policies.

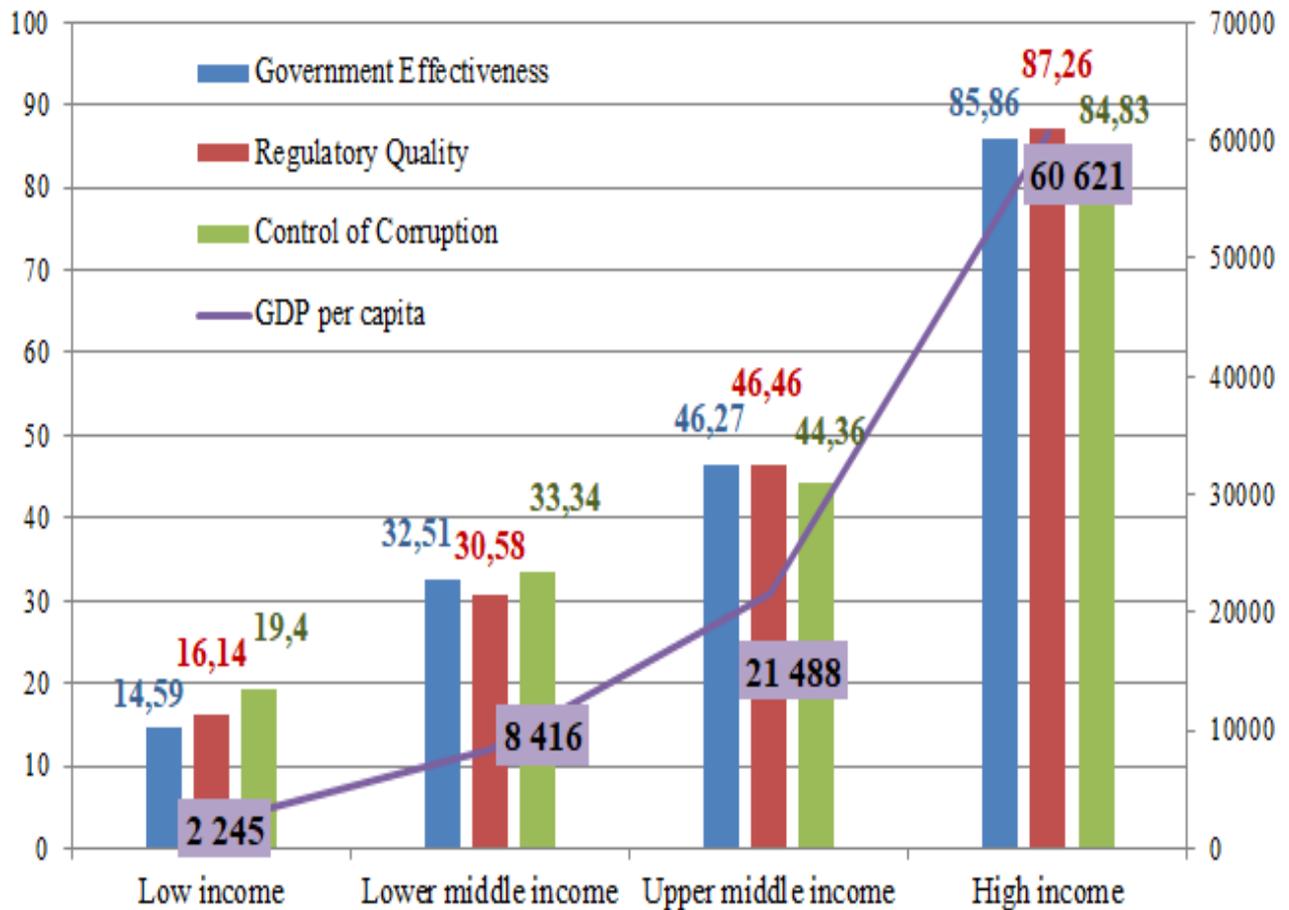
This study used methods of systemic and comparative analysis, synthesis and analogy, the method of structural analogy, the methods of regression and correlation analysis.

### **Main results**

In international practice, to assess the quality of governance institutions, an approach developed by the World Bank is used, based on the identification six aggregate governance indicators: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption.

In our opinion, the most significant variables that directly affect the quality of management decisions are the Government Effectiveness, Regulatory Quality and Control of Corruption indicators. These indicators reflect the ability to develop and implement a balanced economic policy, coordinate and interconnect policy instruments, coordinate its individual direction in various areas and for different perspectives (short- and long-term), balance the interests of economic agents, contributing to the effective implementation of strategic development goals.

Analysis of World Bank data shows a close connection between the quality of institutions and the level of per capita income, while the positive impact of government efficiency and the quality of regulation on the level of economic development of the state of clearly visible (Figure 1).

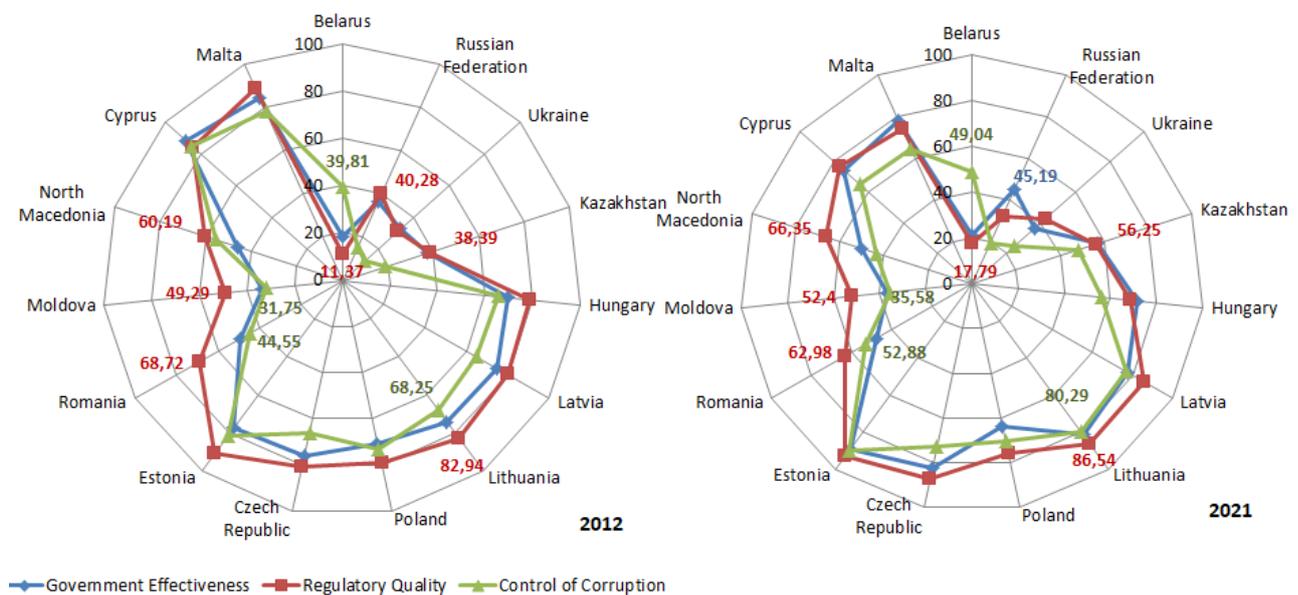


**Figure 1. Worldwide Governance Indicators and GDP per capita by groups of countries with different income levels in 2021**

Source: developed based on [4 – 5]

This interaction correspond to the main provisions of neo-institutional theory, according to which inclusive institutions ensure equal access of economic agents to resources, ensure free competition, protection of property rights, equality of citizens before the law, government accountability and have a positive impact on the economic development of the state, while extractive institutions keep economies on a low growth trajectory.

A comparison of governance indicators across countries indicates a low rate of transformation of their quality, which is a factor hindering the development of innovation and the economy as a whole. Thus, among the countries compared, significant progress in improving the quality of governance is demonstrated by Kazakhstan, Lithuania, the Czech Republic, and Estonia – for 2012 – 2021, the increase in the Government Effectiveness indicator was 19,8, 7,32, 5,91 и 12,2 percentage points, which allowed these countries to noticeably advance in the Global Innovation Index ranking (Figure 2).



**Figure 2. Quality of governance institutions in selected countries in 2021**

Source: developed based on [4]

Low quality of government regulatory institutions, policy failures and ineffective government can restrain innovation and slow economic growth [6]. The influence of the quality of governance on innovation is carried out directly, through the implementation of effective innovation policy, which requires careful coordination of economic policy measures in different areas; and also indirectly – through the implementation of a balanced macroeconomic policy, the formation of fiscal incentives for innovation and investment, and the creation of conditions for the development of the financial sector of the economy. In addition, the quality of regulation and governance influences innovation by supporting market mechanisms and public access institutions. Institution of general access ensure non-discriminatory, equal access of economic entities to resources, including financial resources, and reduce the risks of expropriation, which has a positive effect on incentives for investment and innovation. Market institutions ensure mobility and efficient reallocation of resources (information, technology, financial resources, etc.) to sectors with the highest productivity, which contributes not only to the development of innovation, but also to economic growth.

To empirically test the relationships describing the impact of the quality of governance on the development of innovation, regression dependencies were built based on the classical least squares method on international data for 127 countries in 2012 – 2021. The Global Innovation Index (rank values) was selected as a dependent variable reflecting the development of innovation.

The study shows that the quality of governance institutions has a significant positive impact on the development of innovation. According to calculations, a one percent increase in the index of governance efficiency and quality of regulation causes an increase in the Global Innovation Index by 0,593 and 0,549% respectively. At the same time, in outsider countries that occupy low position in the Global Innovation Index ranking, the importance of governance efficiency is higher: the elasticity coefficient is 1,37 versus 1,17 for leading countries, which confirms the high importance of the quality of public administration for countries with low susceptibility to innovation.

## Conclusions

Thus, the quality of institutions and in particular public administration institution has a significant positive impact on the dynamics of innovative and economic development. The influence of institution on economic growth is mediated primarily by their impact on the development of innovations and technologies, which ensure the growth of factor productivity in the economy and the possibilities of its long-term growth. Meanwhile, the quality of governance is an independent factor in the development of innovation and technology – effective government and high quality regulation in conditions of uncertainty make it possible to withstand shocks and mitigate their negative consequences for the economy, preventing volatility in financial costs for investment and innovation. High quality governance contributes to the development of the financial sector, the functioning of market mechanisms, contributes to the formation of an innovation friendly environment and the creation of long-term incentives and motives that ensure innovative development. The state policy aimed at stimulating economic growth and increasing the innovativeness of the economy requires innovative approaches to management, modernizing the system of governance of the economic and improving the quality of government regulation.

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## DIGITAL SKILLS DEVELOPMENT - A KEY OBJECTIVE OF THE EUROPEAN UNION MEMBER STATES

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**Abstract:** The digital skills nowadays are very important and necessary in many fields of the activity. The Digital skills required in the workplace is one of the method to drive innovation and stay competitive. Developing digital skills is an objective key of the members of EU countries. The Digital Skills Indicator is a tool that monitors Member States' performance in achieving competence targets. This paper analyzes the degree of attainment of basic digital skills in the EU Member States ("low", "narrow" and "limited" digital skills level). The influence of demographic factors on the levels of digital skills is analyzed and the gap between rural and urban areas regarding the population's digital skills is presented. The importance of digital skills is emphasized both for increasing competitiveness in the labor market and for adopting digital solutions in business.

**Keywords:** digital transformation, digital skills, online information and communication, content creation skills, digital education

JEL Classification: O15

In the modern world, the effective use of digital tools in business operations and digital transformation processes are impossible without improving the digital skills of employees.

The concept of digital skills includes competences that allow people to manage digital processes, to implement and confidently use digital tools and knowledge in their work.

The Digital skills currently in demand can be grouped as follows: skills that determine

- the fluent use of technology and digital devices, as well as confident work in various programs,
- analytical skills that determine the ability to obtain information, process it, to draw right conclusions and convey the results and decisions to the target audience;
- communication skills that allow you to communicate freely and organize the work using digital channels;

- skills aimed at identifying problems and finding ways to solve them personal characteristics that allow a person to easily adapt to a changing digital environment.

When the whole world was on lockdown, the companies had no other way out, except to transfer all processes online. Now, many of those who went to work in online mode a year ago, left teams to work outside the office or gave employees the right to choose - work in the office or from home.

According to one of the latest studies on the state of digital skills in Europe, conducted by the IDC company for Microsoft, companies that have successfully implemented innovative technologies face a shortage of qualified personnel. Only 3,5% of employees from European countries meet the ever-increasing needs of the market in digital literacy. In the countries of the European Union, there are thousands of vacancies that require potential candidates to have highly qualified skills. The question of the staff's possession of such skills takes on even greater significance.

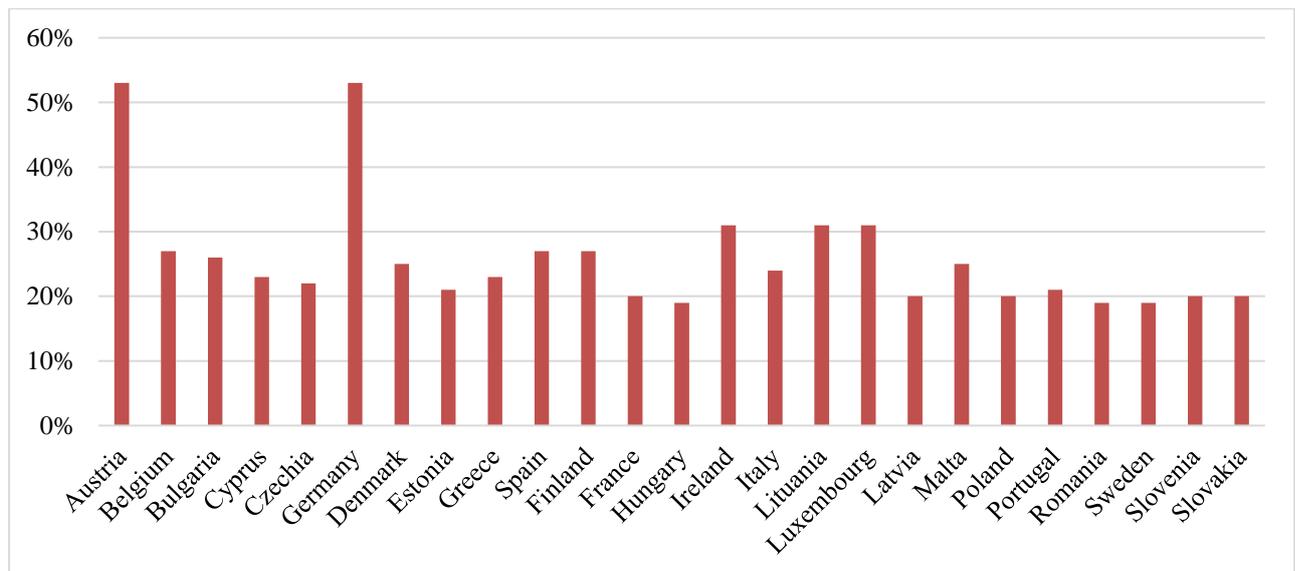
As noted in the Business Training Experts report on the return on investment in training, companies that have implemented a culture of professional development receive 24% more profit. The data from Global Knowledge show that 93% of employers are confident that certified employees increase overall productivity and commercial benefit. This means that companies investing in training today will be able to easily outrun competitors in the future.

The 2030 Policy Program: The Path to the Digital Decade approved by the European Parliament envisages that the European Union will achieve its objectives in the digital transformation of member states' economies by the end of the decade in line with EU values, promoting human-centered digital policies that give skills to citizens and businesses. EUR 127 billion is earmarked for digital reforms [2].

A cardinal direction established in the Path to the Digital Decade is: a digitally skilled population and highly skilled digital professionals. Achieving this objective will increase the competitiveness of the member states globally. Member States need to invest in their own digital transformation and help to increase innovative potential.

25 digital development plans were approved by the Council of the European Union. By 2022, the amount allocated in these plans was EUR 490 billion of which EUR 325 billion in grants and EUR 165 billion in loans [1].

Each Member State must allocate at least 20% of the total allocation of its Recovery Plan to measures contributing to the digital transition. Figure 1 shows the estimated expenses for digital transformation per member state.



**Figure 1 Contribution to the digital objectives**

Source: European Commission

From €127 billion earmarked for digital reforms, about 17% targets are aimed to the development of basic and advanced digital skills [1]. The Investments and the reforms will make an important contribution to the set goals of digital development.

Today, the advances in the artificial intelligence and workflow automation are progressing so quickly that certain outdated jobs or processes are disappearing completely. However, this does not mean that technology will displace people from the labor market. Technological advances can create millions of new jobs. And these places will require candidates to have the appropriate skills and competences. The most jobs in-demand require digital skills to a greater extent.

Since the process of digital transformation evenly affects all sectors of the market, it is difficult to name a list of those areas in which digital skills would be most in demand.

Most people today need new knowledge and skills: from schoolchildren and students to workers in all fields of the activity.

Member States' progress in digitization is reflected in the annual Digital Economy and Society Index (DESI) reports. The report reflects several indicators on digital skills.

Since 2015, the European Commission has measured citizens' digital skills through the Digital Skills Indicator (DSI), based on selected activities related to internet or software use, which are performed by individuals aged 16-74. In 2022 was introduced the new DSI 2.0, measures citizens' activities taking place on the internet in the last 3 months in five specific areas:

- Information and data literacy;
- Digital content creation;
- Safety;

- Communication and collaboration;
- Problem solving.

According to the DSI 2.0, it is assumed that individuals having performed certain activities over the internet have the corresponding skills.

According to the number of activities performed in each area, two levels of skills are calculated, i.e. 'basic' and 'above basic'. Based on the level of individual's skills in each area, an overall level is then calculated. If an individual has 'basic' in some areas and 'above basic' in others, then this individual is considered having overall 'basic digital skills'.

In addition to calculating 'basic' and 'above-basic' levels, DSI 2.0 also includes information on different levels of digital skills such as [1]:

- Individuals with low digital skills: who have either basic or above basic level in 4 out of the 5 areas;
- Individuals with narrow digital skills: who have either basic or above basic level in 3 out of 5 areas;
- Individuals with limited digital skills: who have either basic or above basic level in only 2 out of 5 areas;
- Individuals with no digital skills: who have no skills in 4 areas or in all 5 areas;
- Digital skills could not be assessed because the individual has not used the internet in the last 3 months.

The Human capital dimension assesses both internet user skills of citizens and advanced skills of specialists.

Internet user skills includes:

- at least basic digital skills;
- above basic digital skills;
- at least basic digital content creation skills.

The indicator at least basic digital skills assumes the percentage of individuals with “basic” or “above basic” digital skills in each of the following five dimensions: information, communication, problem solving and software for content creation and safety [1].

The indicator above basic digital skills assumes the percentage of individuals with “above basic” digital skills in each of the following five dimensions: information, communication, problem solving and software for content creation and safety [1].

The indicator at least basic digital content creation skills assume the percentage of individuals with at least a basic level in using software for digital content creation.

Advanced skills and development include:

- ICT specialists;

- Female ICT specialists;
- Enterprises providing ICT training;
- ICT graduates.

The indicator ICT specialists assumes the percentage of employed ICT specialists, aged 15-74. It includes jobs like ICT service managers, ICT professionals, ICT technicians, ICT installers and servicers.

In 2022 the leaders in employed ICT specialists (percentage of total employment) were Sweden (8%), Finland (7,4%), Luxembourg (6,7%), Netherlands (6,7%) and the lowest percentage are found in Bulgaria (3,5%), Poland (3,5%), Greece (2,8%) and Romania (2,6%) [3].

The indicator Female ICT specialists assumes the percentage of employed female ICT specialists. It includes jobs like ICT service managers, ICT professionals, ICT technicians, ICT installers and servicers.

In 2022, 1709 thousand of individuals constituted employed female ICT specialists in EU. The leaders of this indicator were Germany - 391 thousand of individuals, France -259 thousand, Spain 157 thousand, and the lowest indicator was in Luxembourg 4,0 thousand, Cyprus 3,2 thousand and Malta 2,9 thousand of individuals [3].

The indicator enterprises providing ICT training assumes the percentage of enterprises who provided training in ICT to their personnel. In 2022, the largest share of companies that organized trainings was in Finland (37, 67%), Belgium (32, 62%), Sweden (32,15%), Denmark (30,20%), and the most a small share was in Bulgaria (6,7%) and Romania (5,9%). On average in the EU, this indicator constituted 19.68% of all enterprises [3].

The indicator ICT graduates assumes the percentage of individuals with a degree in ICT.

In 2022 in the EU, the share of persons with a degree in ICT constituted 3,9% of graduates. The leaders in this indicator were Ireland 8,6%, Estonia (8,4%), Finland (7,5%), Romania 6,7% of graduates. A small share of graduates in the IT field was in Portugal 2.6%, Belgium 2,2, Italy 1,4% of graduates [3].

The Path to the Digital Decade program aims to increase the number of ICT professionals employed in the EU to at least 20 million by 2030, up from 8.9 million in 2021 (corresponding to 4.5% of the workforce). Although there has been steady growth since 2013, acceleration is needed to achieve the set targets.

In 2021 only 54% of individuals possessed at least basic digital skills, 26% possessed above basic digital skills and 66% possessed at least basic digital content creation skills.

Regarding the indicator of advanced skills and development in 2021, employed ICT specialists aged 15-74, constituted only 4,5%, only 19% were female ICT specialists. In 2020, 20% of businesses offered ICT training and 3.9% constituted ICT graduates. In 2013, the number of ICT specialists was 6 million and increased to 9 million in 2021.

Figure 2 shows the situation regarding the Human capital dimension in all member states.

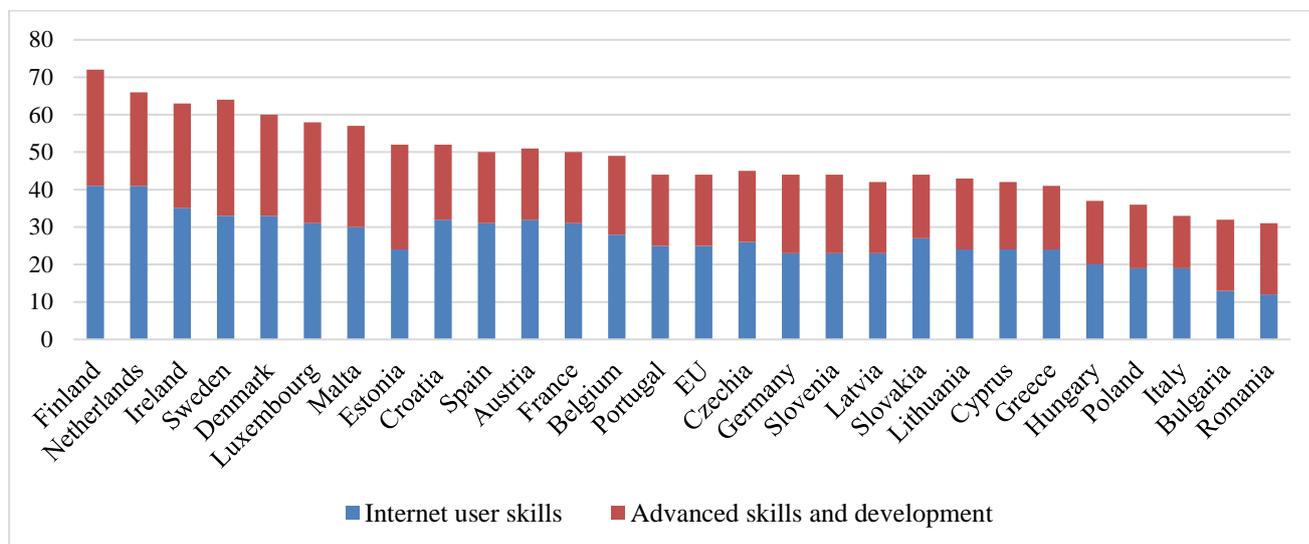


Figure 2 Human capital dimension (Score 0-100), 2022

Source: DESI 2021, European Commission

As we can see the leaders in internet user skills of citizens and advanced skills of specialists are Finland, Netherlands, Ireland, Sweden, and the lowest scores are found in Italy, Bulgaria, and Romania.

The situation in different member states regarding basic digital skills is presented in the figure 3.

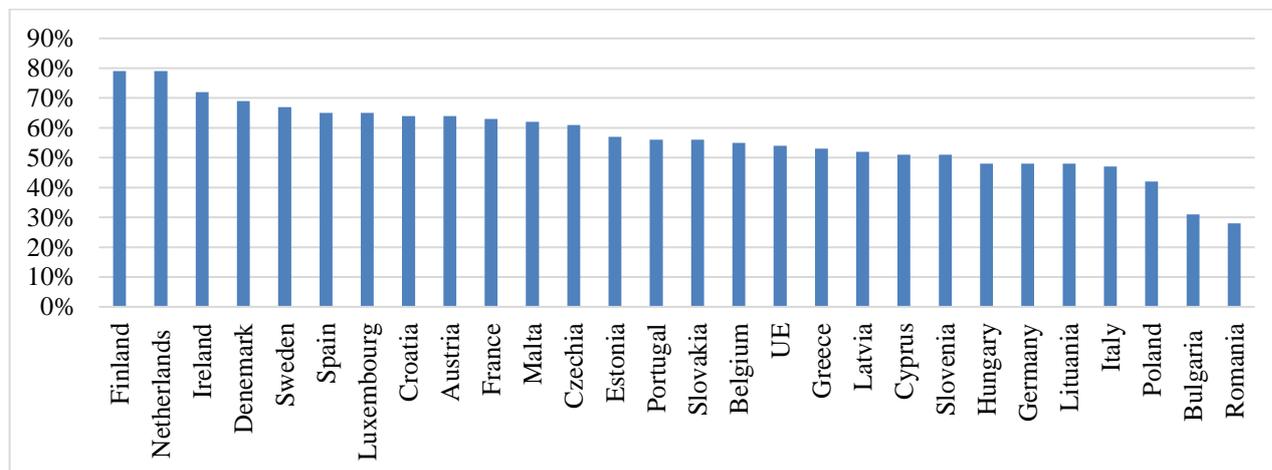


Figure 3 At least basic digital skills (% of individuals), 2022

Source: Eurostat, ICT usage in households and by individuals in Households and by Individuals

As we can see from figure 3 Finland and the Netherlands are leaders in the EU, where 79% of the population possesses basic digital skills. Romania and Bulgaria lag behind, this indicator constituting around 30% [1]. A large part of the EU population still lacks basic digital skills. The proposed objective for 2030 is for at least 80% of citizens to have basic digital skills [5].

The highest share of individuals (71%) who possess at least basic digital skills were in 2021 individuals from 16 to 24 years old, and the smallest share (25%) was the age group from 65 to 74. The analysis of this indicator depending on the living environment of the population showed that a greater share is represented by people who live in the urban environment (61%) and less is represented by the share of people from the rural environment (56%). In terms of studies, the largest share (79%) with at least basic digital skills is the group of individuals with high formal education. In terms of employment, the largest share with at least basic digital skills is the student group (77%), followed by the group of employees, self-employed, family workers (63%) and the lowest share is the group of retired persons and other inactive group (29%).

A recent Microsoft study on artificial intelligence and digital skills showed that 96% of employees in Europe say they are very interested in programs to improve digital literacy to remain successful in the age of advanced technologies.

Based on global data, the needs of the labor market were determined: in the most sought-after specialists and necessary skills. The list has been compiled of 10 professions, especially necessary in the modern economy - this is a software developer, a sales representative, a project manager, an IT administrator, a client manager, a digital marketer, an employee of support services, a data analyst, a financial analyst and a graphic designer.

To help people who lost their jobs due to the economic crisis, as well as specialists who want to obtain new knowledge for employment in the field of digital technologies, Microsoft launched a global initiative aimed at further training people in digital skills.

Initially, the company aimed to reach 25 million people around the world. Microsoft's certified training programs allow not only IT-specialists and developers to improve their skills, but also to increase the productivity of entire teams and workplaces by using the potential of cloud technologies and AI. In addition, training gives the opportunity to specialists from other industries to obtain new knowledge or requalify. This, of course, expands the specialist's horizons: he becomes more competitive on the market or can work in a completely new field for him.

In our opinion, business must always support, motivate and implement the training process of employees in the internal culture of companies. Especially considering the growing skills deficit, the heads of organizations should consider programs of professional development as priority tasks.

## **Conclusions**

The demand for skills and employees who own them is increasing as the digital economy continues to evolve, and in the future it will grow even more. It has already been noted more than once that today every company is digital, because business is transformed under the influence of technological innovations.

The introduction of advanced technologies will accelerate, and companies will most likely use a combined approach in business in the future. In addition to the implementation of innovative processes, the digital skills of employees will improve as part of training at enterprises, this will allow them to remain in demand on the market and perform their work no less effectively than a few years ago.

Therefore, increasing digital literacy is not a new-fangled trend at all, but a vitally necessary process for the economy, which will continue in the future.

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## **WEALTH AND POWER: HISTORICAL AND ECONOMIC SIGNIFICANCE OF DIAMONDS IN GLOBAL TRADE**

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**Abstract:** Diamonds are one of the most popular and extensively studied precious metals on a global scale. They find wide application in numerous sectors of production and trade. The subject of scientific investigation is diamonds, as one of the most ancient precious metals, a source of wealth and power. The focus of the research is the historical and economic significance of diamonds in global trade. The goal is to explore the place and role of diamonds in the global economy.

**Keywords:** diamonds, economic, global trade, investment

JEL Classification: G10, G15

### **Introduction**

Diamonds, as a form of noble metal, have been known to society since ancient times and have been symbols of wealth and power. At present, they continue to be the subject of heightened industrial and investment interest by economic agents. From a historical perspective, the trade in this noble metal demonstrates that its value is enduring. Scientific research aims to trace both the trade in diamonds from a historical perspective and to analyze the role and economic significance of diamonds as part of global trade.

### **The historical context of diamond trading**

Diamonds have a rich history intricately woven with human civilization. Their allure, rarity, and intrinsic value have made them sought-after commodities for centuries, from ancient times to the present day.

Even when we examine world history through the lens of human development, it is challenging to pinpoint when the interest in the noble natural element (mineral) diamond, known as “elmaz”, began and has persisted. It is difficult to specify who and where the first diamond was discovered in world history. There are numerous researchers who dedicate their professional careers to exploring the history of diamonds.

When examining ancient manuscripts that have reached us, it is revealed that information about diamonds existed over 3000 years ago. In fact, the first diamond deposits date back to India, where they were initially mined. Historical records indicate that around 1400 AD, trade routes were established to distribute diamonds from India to the bustling markets of the Old Continent. It should be noted that the ability of diamonds to reflect light in a special way intrigued the ancient Indians, who attributed supernatural and divine powers to these gems. As demand grew, these precious stones began to appear not only in India but also in Venice, and subsequently in the royal courts of Europe.

During the Middle Ages, new avenues for the use of diamonds emerged in their history. Undoubtedly, during the medieval period, diamonds were favored as decorative elements and valuable jewelry. Possessing them was a distinct symbol of the highest social status, but at the same time, ground diamonds were used as components in certain medicines. Certainly, the diamond possesses an energy field; it is a kind of powerful gemstone, which is why people in the past believed it could cure certain illnesses or aid in their recovery. At the same time, the peoples inhabiting South America regarded diamonds as a natural gift, a product to be used in construction, even embedding crystals in walls and roads, crafting game pieces for backgammon from them, and placing these precious elements in the statues of their deities.

The distribution, demand, and utilization of diamonds as minerals undoubtedly began during the Middle Ages, in the era of the Renaissance. From this period, the changing, transparent crystals became highly popular. A significant portion of the yield was obtained in the territory of the Indian subcontinent, with diamonds from this region being renowned for their uniqueness, exceptional quality, and high carat weight. It was during this period that the famous 'Hope Diamond' became known. In fact, some of the richest diamond deposits from this era are found in India, and Indian artisans had already mastered the art of transforming a rough and unattractive stone into a true gem, with a special allure for the eyes. Unfortunately, the precious stones from these well-known Indian deposits were quickly depleted, and the hunger for this precious mineral increased. Thus, the era of the Renaissance in the history of diamonds necessitated the search for new and lucrative deposits for diamond mining. Such new deposits were found in the territories of South Africa and Australia, and they were exceptionally rich.

Diamonds possess a unique and extraordinary mystique, an almost divine allure, which humanity places on a pedestal akin to the noble metal, gold. Swiftly, they transform into an unconditional value, a currency sought after and relevant in every corner of the world, both nationally and internationally. This is a sphere of immense interest and profitability for economic entities, for national governments, and for stock transactions, with diamond mines becoming coveted workplaces on the planet. It should be noted here that both mine owners, aiming to amass wealth and increase their prosperity, and mine workers, who labor under inhumane conditions to extract these crystals, desire improved living conditions for themselves and their families. To realize this aspiration, they discover that they can discreetly appropriate discovered diamonds, smuggling them out of the diamond mines without the owner or gemstone inspector detecting it, and

subsequently selling them at a substantial price. Naturally, the price they receive is much lower than what is obtained in the legitimate diamond market. Their actions do not go unnoticed, and mine owners openly propagate myths of mineral poisoning to mitigate the losses from diamond thefts. In addition should be pointed out that often, the mine workers pay for this act, this attempt to smuggle out one or several smaller stones, with the price of their human lives, as dangers lurk both during the act itself and in the process of selling the stolen diamonds.

Interesting events also occur in the contemporary history of diamonds, which are mined in the South African region. Historical data and market information reveal that at the beginning of the 20th century, market values and demand for these transparent crystals sharply declined. The reasons for this are linked to the historical and political context on a global scale. For the first time in the history of diamonds, it was noted that the volume of production of precious minerals significantly exceeded the demand for these gems. This is also associated with the period of the First World War and the aspiration for a new redistribution of territories already allocated between the Great Powers, both in the Old World and in relation to their colonial empires. This undoubtedly dealt a devastating blow to the global economy, as well as to the companies engaged in the mining and processing of these crystals.

The production of diamonds experienced a revival, thanks to a well-coordinated and deliberate internal and external policy of the diamond industry. From that moment to the present day, the diamond industry has never again fallen into collapse or political crisis. The leadership of the international corporation De Beers skillfully guides, controls, and regulates the diamond market, striving to prevent sharp declines in mineral prices. Even in the conditions of a global economic crisis, diamonds remain one of the most sought-after and viable investment niches.

At the end of the 19th century, significant changes were observed in the diamond industry with the discovery of diamonds in Kimberley, South Africa. This led to a frenzied rush that transformed South Africa into the epicenter of the world diamond trade. The De Beers Mining Company was founded by Cecil Rhodes in 1888 and quickly gained a dominant market share in diamonds. Statistical data indicates that Cecil Rhodes was born into a priestly family in England. Due to the damp climate and health reasons, he was sent to live with relatives in Africa, where the climate was more temperate, in hopes of improving his health. During this period, mining companies of various nationalities entered into agreements with local rulers for concessions to mine diamonds and precious stones in their lands. Interest in this direction greatly increased after the Great Depression. Cecil Rhodes passed away in 1902, but he left the De Beers company in control of 90% of the world's diamond production. In fact, after his demise, the company was led by Ernest Oppenheimer, who transformed it into a diamond empire. It played a key role in controlling diamond supplies and exerted significant influence over the global diamond trade.

Since the late 1920s, the International Diamond Mining Corporation De Beers has been skillfully led by South African billionaire businessman Ernest Oppenheimer. He undertook efforts to modernize production and incorporate innovations from scientific and technological progress into

the diamond mining process. Simultaneously, he extended an appeal and proposals to all interested companies to sell their diamonds through the so-called central organization. In fact, the distribution center is a subsidiary of De Beers, thereby establishing the De Beers company as an intermediary in large-scale diamond sales operations, derived from diamond mines. This also eliminated the possibility of bypassing De Beers in contracts for diamond trade or diamond mining development projects. The company is the one that determines the quantities of diamonds that can be sold on the stock markets and fixes the price value of diamonds. In both a national and global context, the development of the accounting policy of an enterprise can be regarded as a collection of elements and undoubtedly can be perceived as a complex task. (Николова, 2012)

Statistical data reveals that even to this day, the De Beers company, managed by the Oppenheimer dynasty, not only controls global production but also global diamond sales. In recent years, under pressure from European and American legislation, the international corporation, headquartered in South Africa, has relinquished actual control over the diamond market.

In the 20th century, significant changes were introduced in the diamond trade. De Beers, recognizing the potential of marketing, launched the iconic campaign 'A Diamond Is Forever' in 1947. This campaign further solidified the diamond's status as a symbol of eternal love and increased its demand in the jewelry market. (Sullivan, 2013)

Today, the diamond trade is a global enterprise with major trading centers in Antwerp, Mumbai, and Dubai. The industry also faces challenges, such as ethical concerns regarding „blood diamonds“, which have led to the implementation of the Kimberley Process to ensure conflict-free diamond trade (Process, 2023)

In fact, the history of diamond trading is a testament to the enduring value and allure of diamonds. From the ancient markets of India to the modern trading hubs of Antwerp and Dubai, diamonds remain a prominent symbol of wealth, power, and romance.

When examining the process of discovery, mining, production, and distribution of so-called 'diamonds' from the diamond industry, we can responsibly point out several interesting myths about diamonds.

Despite the claim that diamonds are extremely hard and stable, maintaining precision requires careful handling and avoiding aggressive testing of their hardness, as they can turn into diamond dust rather than remaining a beautiful precious crystal.

Another myth about diamonds is that if you put them in a glass of water, they become invisible. This statement is absolutely impossible. The truth lies in the refractive index of light and our perception, but diamonds never disappear from our field of vision.

When we consider the value of a diamond, we encounter the misconception that its price depends on the location where it is mined. In modern times, diamonds are mined in various parts of the world, which does not affect their ultimate value. The high price of diamonds is closely related to specific parameters – size, carat, color, and the country of origin indicated in its “passport”, where the diamond is sourced, is only information listed in the certificate.

Furthermore, an attempt at deception in the sale and pricing of a given diamond is that the price of the crystal is not dependent on fluorescence. In fact, fluorescence in the sale of a diamond can be a reason for a discount or refusal to purchase that diamond. Diamonds with strong or very strong fluorescence possess a distinct milky or grayish hue, which reduces their value.

In certain global contexts, there is an understanding that diamonds with a diameter of up to 2 mm are mere chips and have no value. Yes, in a certain sense, they represent diamond waste and are not used in the creation of jewelry. However, even a diamond with minimal weight is still a diamond, requiring special processing. In fact, if the crystal, in the process of its treatment, passes through this stage, it means that it is now a diamond, regardless of its weight, no matter how small it may be, it is treated as a full-fledged gemstone. Despite their size, even the tiniest diamonds have a certain number of facets, most often 57, due to the round shape, which is the most popular cutting method for diamonds.

Attempts to present diamonds as the brightest gemstone also do not correspond to the truth because when placed in sunlight, many other minerals sparkle more brightly than diamonds. Proof in this regard is the mineral moissanite, which shines much more actively and appears even richer than faceted diamonds.

It should also be noted that another myth about diamonds is that they do not burn. The burning temperature for diamonds is 900 degrees Celsius, an extremely high temperature at which you risk losing your diamond jewelry.

There is a belief that diamonds are the most expensive gemstones in the world. Indeed, they are extremely costly, and not everyone can afford diamonds, but there are many gemstones that cost more per carat than diamonds. In this regard, several examples can be presented; the ruby, known as the “Sunrise” with its origin in Burma, is sold at auction for a record sum, with a price of \$1 180 000 per carat. Likewise, a blue sapphire known as the “Blue Beauty of Asia”, sourced from Ceylon, is sold for a record \$17 300 000, which equates to \$44 000 per unit of weight. In fact, the most expensive among diamonds are the red ones, which are exceptionally rare and, therefore, highly sought after. Statistical data indicate that the most expensive among red diamonds is a crystal named “The Red Musaeu”, with its origin in Brazil in the late 20th century, and it is sold at auction for \$1 580 000 per carat. All these data necessitate the understanding that even the high price of faceted diamonds is relative.

A somewhat common myth is that the best diamonds come from globally recognized brands, and only the highest-quality diamonds can be purchased from them. Yes, but also no. Renowned brands can afford high-priced advertising campaigns and sometimes sell stones at prices much higher than the market value. Therefore, in cases like this, it is advisable for buyers to contact a trusted seller if they have doubts about the quality of a particular diamond and to seek information very seriously. In the world of business and stock trading, anything is possible.

In this regard, it should be noted that as of today, only 4% of the natural diamonds on the world market have questionable origins. In fact, the rest can be traced back to the name of the miner who extracted the crystal. Diamond producers clearly understand contemporary requirements and higher standards, claims, and warranties from economic entities, which is why they actively implement traceability for precious stones.

### **The significance of diamonds in global trade**

In addition to serving as symbols of luxury and romance, diamonds play a pivotal role in the ecosystem of global trade. Their significance on national and supranational trade levels is multifaceted and encompasses economic, geopolitical, and cultural dimensions. Exploring the current legislation within the territory of the Republic of Bulgaria, diamonds, from an accounting perspective, fall under group 51 and are classified as short-term financial assets (account 516 – Precious metals and precious stones)<sup>3</sup> when accounted for. (Янков, В., Николова, Г. , 2018)

Regarding the economic importance of diamonds, it should be noted that they are a primary export product for numerous countries, significantly contributing to their GDP. For countries such as Botswana, Russia, and Canada, diamond exports play a crucial role in their economic policies. The revenues generated from diamond trade are of paramount importance for infrastructure development, job creation, and other socio-economic benefits and strategies in these nations.

Regarding the geopolitical impact of diamond trade, it should be noted that in the past, it has been a stable source of power and influence. Control over diamond mines and trade routes confers exceptional strategic advantages upon states and companies operating in this sector. At one point, the De Beers Group controlled over 90% of the global distribution of rough diamonds, granting it significant influence over worldwide diamond prices and trade policies.

Regarding the cultural and symbolic value of diamonds, it should be emphasized that they are deeply rooted in various cultures as symbols of wealth, power, status, and commitment. The global diamond trade is influenced not only by their intrinsic value but also by the cultural significance attributed to them, particularly in the context of engagement and wedding ceremonies. This cultural value is the driving force behind a significant worldwide demand for diamonds. (Rowlatt, 2013)

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<sup>3</sup> See Янков, В. и Николова, Г. Счетоводство на предприятието. Габрово, 2018, p. 186

Regarding the introduction of innovations and technologies, it should be noted that the global diamond trade also drives advancements in gemology and technology. The global nature of the industry encourages scientific research and innovation, from innovative techniques for diamond classification to the development of synthetic diamonds. (GIA, 2023)

It can be stated with confidence that diamonds are not just brilliant gemstones but are key elements in the mechanism of the global diamond trade and industry. Their economic, geopolitical, and cultural significance shapes the trade policies of individual nations, and their influence on global markets transcends national borders.

The global diamond trade is centered in several well-known trading hubs, each with its unique history, influence, and contribution to the diamond industry. Major centers for diamond trade include Antwerp, Mumbai, Dubai, and others. These hubs facilitate interactions among economic agents and serve as primary venues for diamond trading, classification, and distribution.

The established center of Antwerp in Belgium is often referred to as the "diamond capital of the world." It boasts a rich history in diamond trading dating back to the 15th century. The city is home to over 1500 diamond traders, making it a significant player in the trade of rough and polished diamonds. The Antwerp World Diamond Center (AWDC) serves as the official representative of the diamond sector and plays a pivotal role in advocacy, research, and global representation. (Epstein, 2023)

In India, the established center of Mumbai is also recognized as a cornerstone in the global diamond industry, particularly in the domain of diamond cutting and polishing. The majority of the world's diamond cutting and polishing takes place in the city of Surat, near Mumbai, earning it the nickname "Diamond City". When we examine the geographical distribution of diamond markets, we cannot overlook the significance of the Bharat Diamond Bourse in Mumbai as a major and expansive center for diamond trading worldwide. More than 2 500 companies engaged in diamond trading and manufacturing are located here.”

In fact, Dubai in the United Arab Emirates has become a significant player in the diamond trade in recent decades. The Dubai Multi Commodities Centre (DMCC) has played a pivotal role in this rise, as it provides a stable infrastructure for diamond trading, storage, and certification. The city's strategic location serves as a bridge between diamond producers in Africa and consumers in the East, further solidifying its position in the global diamond trade.

New York in the USA is another notable center. The famous Diamond District in New York is a major hub for retail diamond sales. This district has a rich history in the diamond trade and jewelry production.

The Israel Diamond Exchange in Tel Aviv, Israel, is definitely one of the leading global centers for diamond trading, known for its advanced trading technologies and significant expertise in the field of high-quality diamonds.

Additionally, Hong Kong in China is emerging as an important diamond trading center, especially considering its proximity to major consumer markets in China and Southeast Asia. (see Israel Diamond Exchange, 2023)

In India, the established center of Mumbai is also recognized as a cornerstone in the global diamond industry, particularly in the field of diamond cutting and polishing. A significant portion of the world's diamond cutting and polishing takes place in the city of Surat, near Mumbai, which is known as the “Diamond City”. When considering the geographic distribution of diamond markets, one cannot overlook the significance of the Bharat Diamond Bourse in Mumbai as a major and large-scale center for diamond trade in the world. Here, over 2 500 companies engage in diamond trading and production.

In fact, Dubai in the United Arab Emirates has emerged as a significant player in the diamond trade over the past few decades. The Dubai Multi Commodities Centre (DMCC) plays a crucial role in this ascent, as it provides a stable infrastructure for diamond trade, storage, and certification. The city's strategic location serves as a bridge between diamond producers in Africa and consumers in the East, further solidifying its position in the global diamond trade.

Another notable center is New York City in the United States. The renowned Diamond District in New York City is a major hub for retail diamond sales. This area boasts a rich history in diamond trade and jewelry production.

The Israeli Diamond Exchange in Tel Aviv, Israel, is also among the world's leading centers for diamond trade. It is known for its advanced trading technologies and significant expertise in high-quality diamonds.

Additionally, Hong Kong in China is emerging as a significant diamond trading center, particularly given its proximity to key consumer markets in China and Southeast Asia. (Exchange, 2016)

It can be stated with confidence that the geographical distribution of diamond markets reflects the global nature of the diamond trade. These centers undoubtedly influence the global diamond industry dynamics with their unique advantages, perspectives, and specializations, significantly impacting prices, trends, and innovations.

While traditional diamond trading centers like Antwerp, Mumbai, and Dubai have long dominated the industry with colorless diamonds, several emerging markets have gained popularity due to various economic, political, and technological factors. These emerging markets are reshaping the

global diamond trade landscape by offering new opportunities and challenges at both the national and international levels.

With the increasing economic influence of China, its authority in the diamond industry is growing as well. Shanghai is rapidly becoming a significant partner in the diamond trade. The changes in economic status, increased prosperity, higher demands, and living standards are having a positive impact. In fact, the country's middle class is expanding, and its desire for luxury goods, including diamonds, is on the rise. The Shanghai Diamond Exchange facilitates the import and export of diamonds, providing a platform for international diamond enterprises.

Another participant in the diamond industry is Gaborone in Botswana. A country traditionally known as a diamond producer, it is now taking steps to become a trading center. With the relocation of De Beers diamond sorting and sales activities from London to Gaborone, the country positions itself as a significant player in the diamond value chain, beyond just diamond mining. (Njini, F., Denina, Cl., 2023)

Another African country rich in diamond deposits is Angola. The government is implementing a series of measures and making efforts to establish Luanda as a diamond trading center. On a national level, the Angolan Diamond Bourse (ADB) established in Luanda aims to transform the country into a competitive player in the global diamond market by increasing transparency in the trade sector and attracting international buyers. These activities are also supported and guaranteed by the country's significant natural resources. (Eisenhammer, 2018)

In Singapore, political circles are recognizing and acknowledging the potential for growth in the diamond industry. Therefore, there is a definite aspiration for Singapore to become a new center for diamond trade. Its strategic location, stable financial infrastructure, and favorable business environment make it an attractive destination for traders and investors in the diamond sector.

The challenges and opportunities presented by these emerging markets lie in offering new growth prospects, requiring economic changes that enhance prosperity and attract new economic agents and promising participation in global stock markets. To achieve sustainable growth, issues related to regulatory frameworks, transparency, and ethical trade practices need to be addressed. Diversifying trade centers can also lead to a more sustainable global diamond trading ecosystem by reducing dependencies on traditional markets.

Quite responsibly, it can be stated that the emergence of new diamond trading centers illustrates the unique and dynamic nature of the global diamond industry. With the development of diamond trade, these emerging markets undeniably play a crucial role in shaping the future of diamond trading by offering new perspectives and opportunities.

Trading in these brilliant crystals has a specific nature, associated with requirements for carat weight, cut, color, and clarity in diamond processing.

The diamond industry is fascinating yet exceptionally complex due to its nuances and specificities, relying heavily on standardized measures for diamond evaluation and trading. At the heart of this standardization is the universally recognized classification system known as the 4Cs: carat, cut, color, and clarity. Each of these criteria plays a key role in determining the value and desired qualities of the diamond, which in turn raises its value in diamond stock markets.

When considering the carat (weight) of a diamond, it refers to the unit of weight for diamonds. One carat is equal to 200 milligrams, and the carat weight of the diamond directly influences its price. According to statistical data, it can be noted that larger diamonds are less common and, therefore, more valuable. It should also be mentioned that there is a specific aspect with diamonds, where two diamonds with the same carat weight can have different prices based on the other 3Cs - cut, color, and clarity.

The cut is a critical process that requires specific skills, without which the diamond is unsuitable for the market and loses its qualities and value. The cut refers to how well the diamond is shaped and faceted. It includes factors like depth, table size, symmetry, and polish.

It can be stated with confidence that a well-cut diamond is brilliant and sparkling. The quality of the cut affects how light is refracted in the diamond, influencing its brightness. Diamonds that are cut too shallow or too deep may lose light, diminishing their sparkle and, consequently, their value.

The color of diamonds is another element of specificity in the diamond industry, where classification is based on the absence of color. The GIA color scale ranges from D (colorless) to Z (light yellow or brown). Truly colorless diamonds are rare, and their value is high. Even slight color variations can significantly impact a diamond's value. There are exceptions to this rule as well, as some diamonds, known as fancy-colored diamonds, exhibit strong colors like blue, green, or pink, and they are valued precisely for these unique hues.

The last specificity in diamonds is the element of clarity. Clarity in a given diamond assesses the internal and external imperfections of the diamond, known respectively as inclusions and defects. Diamonds with fewer imperfections are rarer and much more valuable. The GIA clarity scale includes ratings from Flawless (no inclusions or defects visible under 10x magnification) to Included (inclusions and/or defects visible to the naked eye). These requirements are of great importance in the diamond processing industry and influence the values in the diamond market transactions.

In the field of diamond trading, the requirements associated with the 4Cs serve as fundamental frameworks that ensure that traders, buyers, and sellers have a common language, understanding, and fairness. This standardization is of paramount importance in maintaining trust and transparency in the diamond trade, allowing for accurate assessment and comparison of diamonds from different sources.

The introduction of certification in the diamond trade is an extremely important detail that respects and definitively guarantees the authenticity, territory of origin, quality, and ethical sourcing of diamonds. The diamond certificate is often referred to as a diamond appraisal report because it provides a comprehensive analysis of the diamond's qualities and confirms its specifications. This is, in a way, the diamond's story. This certification process plays a key role in establishing trust, transparency, and standardization in the diamond trade. Authenticity is a special guarantee of quality, and possessing a certificate for a given diamond provides a detailed assessment of the 4Cs, i.e., the four characteristics of the diamond (carat, cut, color, and clarity), as well as other characteristics such as symmetry, polish, and fluorescence.

In our contemporary world, this is of tremendous importance because by verifying the qualities of the diamond, the certificate ensures that buyers receive what they pay for. It removes uncertainty regarding the quality of the diamond and provides an objective analysis of its characteristics. The certificate in the diamond industry is security at both the national and international levels for economic entities.

Certainly, everything mentioned above indicates that apart from the quality characteristics, certification can also verify the ethical supply of diamonds to economic agents, ensuring that there are no conflicts of interest.

In this regard, the Kimberley Process is of significant importance. This is an international initiative aimed at preventing the flow of conflict diamonds. Diamonds certified under this scheme guarantee that they are sourced from conflict-free zones, which promotes ethical trade practices and ensures transparency in transactions involving these exceptional minerals.

Simultaneously, consumer trust is increased. With a certified diamond, consumers have greater confidence in their purchase because it's a fact that the diamond's qualities have been verified by an authoritative institution. Certification strengthens the trust between buyers and sellers. This certainly assures consumers that they are making an informed decision and are not misled regarding the quality or origin of the diamond.

In parallel, consumer confidence is bolstered. With a certified diamond, consumers have greater assurance in their purchase because it's a fact that the diamond's qualities have been verified by an authoritative institution. Certification strengthens the trust between buyers and sellers. This unequivocally ensures consumers that they are making an informed decision and are not misled regarding the quality or origin of the diamond.

Statistical data indicates that standardization in the diamond trade sector is carried out by certification institutes such as GIA, AGS, and EGL, which provide standardized classification systems and are globally recognized. This global standardization ensures that a diamond evaluated in one part of the world possesses the same characteristics if assessed in another part

of the globe, thus facilitating international trade, economic agents, and maintaining consistency in diamond assessment.

In fact, certification in the diamond trade is not a mere formality but a cornerstone in the diamond industry. It upholds principles of transparency, trust, and ethical trade, ensuring that both traders and consumers are protected and have sufficient information regarding the subject of their purchase.

Looking at the historical past, it should be noted that diamond trade, no matter how brilliant and lucrative, also has its dark sides, especially when it comes to diamond mining. This has attracted the attention of the international community, raised concerns, and led to political decisions in this regard.

Ethical considerations, when not adhered to, as well as the lack of certificates for available diamonds, lead to conflicts of interest, the Kimberley Process, and the so-called “blood diamonds”. The Kimberley Process is definitely an international initiative established in 2003 with the sole aim of preventing the trade in blood diamonds. Indeed, the significance of the Kimberley Process is to require members, including states and organizations from the diamond industry, to verify that supplies of rough diamonds are not conflict-related. In reality, the process significantly reduces the flow of conflict diamonds, ensuring that over 99% of traded diamonds are not conflict-related.

The term “blood diamonds” or “conflict diamonds” refers to diamonds that are mined in war zones and sold to finance armed conflicts against certain governments and their policies. The ethical consequences of trading in such diamonds have led to global initiatives, especially the well-known Kimberley Process in this regard. Its cases are meant to help limit the flow of conflict diamonds and require assurances that diamonds are mined responsibly. In fact, “blood diamonds” are genuine diamonds mined in areas of armed conflict, primarily in Central and West Africa. They are primarily sold to finance military activities against governments, they are stolen diamonds during mining, they are often purchased relatively cheaply, and it even leads to loss of human life. At the same time, these diamond sales finance brutal conflicts that result in the loss and displacement of people, as well as the violation of human rights. Trading in them is illegal and undermines the legitimate diamond trade, posing ethical dilemmas for consumers and diamond traders.

Despite the significant progress achieved by the Kimberley Process, its provisions and clauses face multiple criticisms and challenges. According to the claims of those who criticize it, the definition given to conflict diamonds in the process is too narrow/ambiguous and needs supplementation because it focuses solely on diamonds that finance rebel movements against recognized governments, without taking into account other forms of violence and exploitation. Furthermore, ensuring compliance and monitoring in all member countries remains a particularly challenging task.

To prevent such incidents, consumer awareness and ethical sourcing in the offering and purchasing of diamonds are essential. As awareness of "blood diamonds" grows, consumers become more informed and concerned about ethically sourced diamonds. Facts of utmost importance for diamond trading.

In response to these challenges, many jewelers now provide certificates that verify the ethical origin of the diamonds they offer. Consumers are certainly contributing to limiting the trade in conflict diamonds by demanding clarity, transparency, and purchasing diamonds certified as conflict-free. All of this reveals that ethical considerations associated with the diamond trade are indeed profound. The industry's response, through initiatives such as the Kimberley Process, underscores the importance of responsible sourcing and the role of both traders and consumers in ensuring a guaranteed and transparent trade because the beauty of diamonds should not be overshadowed by conflicts, human exploitation, and death.

## **Conclusion**

From an economic perspective, diamonds have been objects of heightened societal, economic, and investment interest since ancient times. They signify wealth, power, and prestige for their possessors, and their value is enduring. On a global scale, they are part of international trade, with numerous individuals and entities engaged in this sector, both physically and legally. Evident from scientific research is the existence of companies with long-standing traditions in this sector, specializing in this activity and continuing to pursue it through the application of new and innovative technologies. Diamonds hold significant economic importance on a global scale.

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**SESSION III: EUROPEAN INTEGRATION,  
MULTICULTURALITY AND  
INTERNATIONAL ECONOMIC  
RELATIONS**

## **DEGLOBALIZATION AND THE TRANSITION TOWARDS A NEW GLOBAL ECONOMIC CYCLE**

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**Abstract:** The current stage of the world economic system, which has gone through four industrial revolutions, is in deep crisis. Deglobalization threatens to set back the process of economic development around the world by decades. The World Economic Order, established after the Second World War, is also jeopardised. What are the reasons, and what measures should be taken to avoid a collapse of the global economy? Questions that we try to answer in this article based on the fundamental laws of societal development. Firstly, we refer to the need for permanent re-alignment of the level of development of relations (interdependencies) between the subjects of the world economic system to the level of development of the forces of production at the basis of which technical and scientific progress lies. The imbalances and instability that have become so frequent in the world economic system are primarily due to man's inability to act in accordance with objective economic laws, man's inaction in the sense mentioned, and the necessity of which human society does not always consider.

**Keywords:** deglobalization, reshoring, economic cycle, slowbalization, autarchy, reglobalization

JEL Classification: F1, F4

### **INTRODUCTION**

Recently, the world economy has been going through a heterogeneous and complex period. It is only in recent years that the global economic environment has undergone extraordinary changes driven by health, humanitarian, and military crises. Namely, these changes highlight the deepening of the concept of deglobalization or globalization, notions that signify the slowdown of the globalization process. Thus, in this article, the authors aim to analyze the current global economic situation through the prism of several determining factors, analyze the evolution of the phenomenon of globalization through its metamorphosis into various concepts, and identify the advantages and challenges of globalization.

Several factors influence and characterize the course of global phenomena. The most significant are:

- The COVID-19 pandemic, in particular the new strains (Kraken, XBB 1.5, Erin) that are constantly emerging, directly influencing global supply chains and economic flows;
- Russian-Ukrainian military conflict with global impact, generating inflation, disruptions in regional trade flows, and overspending in the military industry;
- The World Bank's difficulties in achieving poverty reduction goals. Until 2030, there will still be 574 million people living below the threshold of \$2.15 a day, which is 7% of the world's population; (Friedman, 2022, p.7)
- The Biden-Putin-Zelensky era of adversarial;
- Terrorism, military conflicts - Israel, Syria, Afghanistan, Ukraine. For instance, because of these conflicts, there are disruptions in the supply process and access to raw materials or vital food products.;
- International migration and its impact on the labour market;
- Innovations, online activities, artificial intelligence and metaverse.

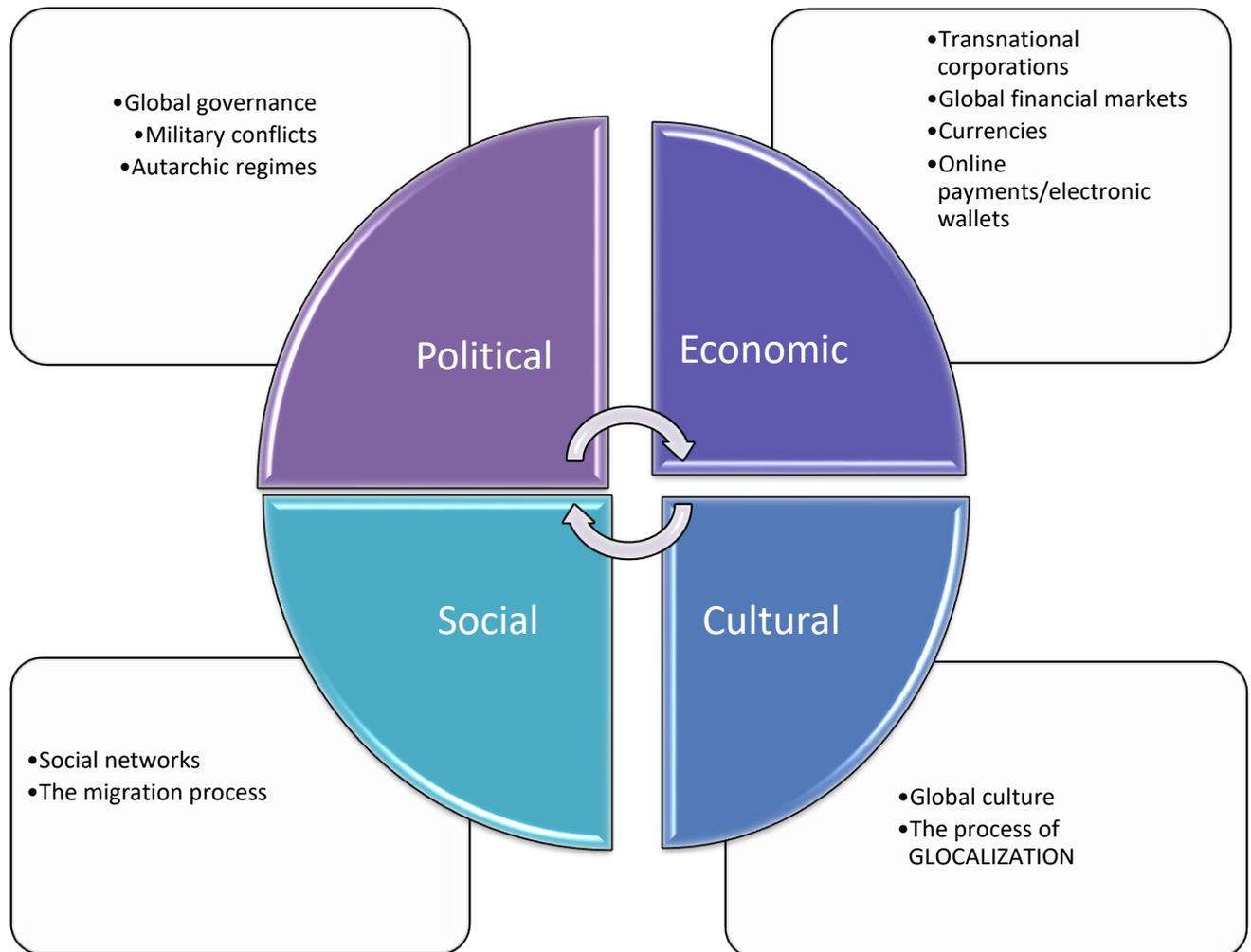
## **1. THE TRANSITION FROM GLOBALIZATION TO DEGLOBALIZATION**

Before talking about "deglobalization," we should define the concept of "globalization," which developed and became an influential global trend after the 1980s of the 20th century. It was the "century of extremes" in which humankind experienced the most spectacular developments, succeeding both in "compressing time" and "shortening distances" as well as experiencing the highest level of economic and cultural development, and therefore of civilizations. (Bari, 2004, p. 27-29). In general, globalization refers to the increasing interdependence of the world's economies, cultures, and populations, driven by international flows such as international trade in goods and services, technological, investment, and migration flows, and the free movement of people through the exclusion of various barriers.

Several authors have proposed a wide variety of definitions for the notion of globalization. For example, the director of the London School of Economics and Political Science, Anthony Giddens, has said that *globalization is a consequence of modernization*. (Kiogora, 1999). A more comprehensive definition of the phenomenon of globalization derives from the well-known phrase of the *planetary village*, proposed by Marshall McLuhan, a great Canadian professor and philosopher who surprised a few decades ago by moving from the concept of *Homo oeconomicus* to *Homo Globalus*, a person who knows no borders and local feelings. At the same time, he spoke about information technologies that connect us faster and more often, the compression of distances through new technologies, interconnection and increasing mutual dependencies, the integration of financial and capital markets, the growing internationalization of production through transnational companies, the emergence of planetary phenomena that require global approaches (environmental protection, global warming, massive illegal migration). (Bari, 2004, p. 29-30). British sociologist Martin Albrow, known for his studies on globalization, believes the concept refers to all those processes by which nations of the globe merge into a single world society, a global society. (Albrow, 1990).

Thus, summarising several definitions of the process of globalization, we can conclude that this phenomenon is highly complicated, heterogeneous, and encompasses all aspects of life. Therefore, globalization being a multidimensional and interrelated system determining the world economic order, impacts not only the social and economic aspect but also the political and cultural one.

In Figure 1, we can see the main determinants of the globalization process for each specific area.

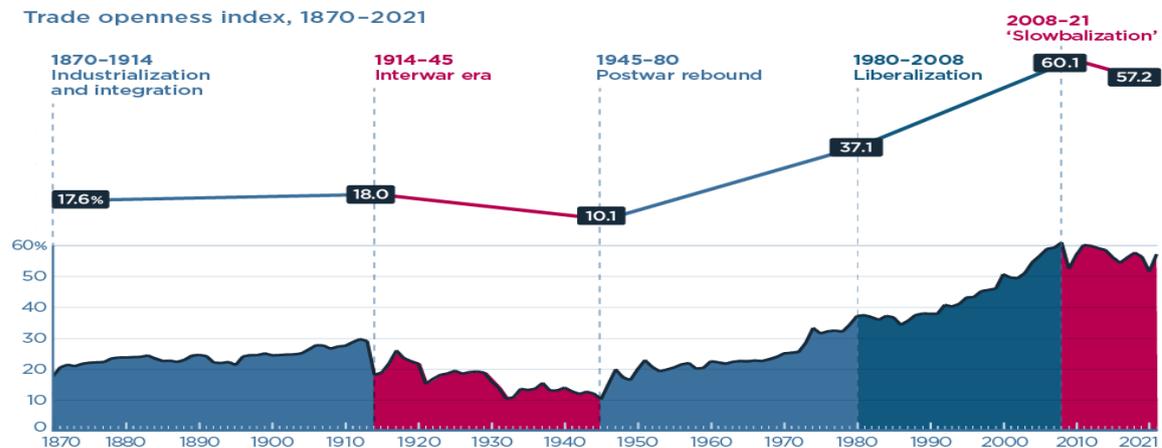


**Figure 1 Determinants of the globalization process for four specific areas**

Source: authors own study

Through these factors, globalization has evolved in different periods, metamorphosing into different concepts, from hyperglobalization to deglobalization. Christian Keller, Managing Director, Head of

Economics Research, Barclays, presents a diagram (Figure 2) demonstrating the evolutionary stages of the transformation of globalization to *deglobalization* or *slowbalization*.



**Figure 2 From Globalization to the slowbalization or deglobalization**  
Source: taken by the authors (Keller, 2023)

Looking at the evolutionary stages, particularly in recent years, the COVID-19 pandemic, active military conflicts, growing ideological contradictions, and massive disruptions in global supply chains are challenging globalization and shaping the path to deglobalization. At the same time, we can mention that the process of *deglobalization* refers to the reduction of interdependencies between states, the focus on national or regional characteristics, and, last but not least, it is a phenomenon that occurs when trade and investment flows are reduced. Figure 2 shows the process of deglobalization has intensified since the global financial crisis of 2008-2009, with the protectionist policies adopted in its wake by the United States and other countries. While the combined efforts of many countries, including the rising powers in the so-called BRICS grouping of five major emerging economies - Brazil, Russia, India, China, and South Africa - have helped to dissipate the financial crisis, but at the political level, tensions have been steadily rising between the developed countries and this group. The financial crisis was only the beginning of the crack in the globalization process, as the COVID-19 pandemic, which engulfed every corner of the world in 2020 and has continued ever since with the emergence of different strains of the virus, has further deepened the global economic difficulties. Global interconnectivity has been affected physically by imposing travel restrictions, and disruptions in supply chains have occurred, thus resulting in high levels of inflation, the cost of living has risen in all countries, especially in the West. In the global south, millions of people who had previously been raised out of poverty by the benefits of globalization have now returned to a lower standard of living. Furthermore, severe tensions arose between the global development centers, particularly China, the USA and Russia, manifested in trade and military wars. Hence, by choice or necessity, deglobalization has become a movement towards a less integrated world, characterized by local solutions, the emergence of concepts such as *onshoring* or *nearshoring*, the introduction of tariffs and border controls. For instance, buying "Made in America" goods and imposing tariffs on imported goods would be examples of deglobalization. Another example of deglobalization could be Brexit, where voters in the United Kingdom chose to leave the European Union. UK citizens opted for political autonomy over the free movement of goods, services, and people. (Weiss, 2023)

To explain the concept of *onshoring* more clearly, it is a term that defines the process of supplying or relocating a company's production operations within national borders. The term onshoring is often used with other prefixes, but the differences are insignificant:

- Reshoring – applies to companies that already have production operations abroad and are in the process of transferring the production back to their home country;
- Nearshoring – is the process of establishing production close to national borders, often in the same region or continent. E.g., a US-based company may have its production plant in Mexico or Canada; (Ross, 2020)

If the notions specified above occur in 2020, today, we have a new concept connected with the deglobalization process, namely *Friendshoring*. This concept is a consequence of recent economic crises and tensions in global supply chains caused by various shocks to the global economy. These include the COVID-19 pandemic and Russia's invasion of Ukraine. In essence, friendshoring is about redirecting supply chains to countries perceived as politically and economically safe or low risk to avoid disrupting business flows. These have raised concerns in the international community about the possibility of further geo-political fragmentation and deglobalization of the world economy, i.e., the decline of interdependence between nations, global institutions, and businesses. Just as we see allies in current military conflicts, such as countries friendly to Ukraine or enemies of Russia, or allies of Israel and supporters of Palestine, we see similar approaches in international trade. The US government, for example, has emphasized its intention to acquire components and raw materials from 'friendly' countries with shared values in order to increase the security of domestic production. (Ellerbeck, 2023)

## **ADVANTAGES AND DISADVANTAGES OF DEGLOBALIZATION**

The process of deglobalization comes with several advantages, albeit short-term. It protects domestic industries, creates local jobs, and thus makes it possible to reduce economic inequalities within a country. This is because deglobalization policies, such as protectionist trade policies and import restrictions, can limit the foreign competition faced by domestic businesses, allowing them to be competitive and protect jobs. In addition, these policies can encourage local production and consumption, contributing to the growth of a more resilient and sustainable local economy. It limits external dependence, educates a sense of patriotism, and encourages the consumption of national and local products. Developing local tourism likewise is a central benefit of the deglobalization process, as it would allow this industry to be fully exploited in all national economies.

On the other hand, deglobalization also comes with several drawbacks. Restricting the flow of goods, services, and people and limiting innovation threaten many forms of international cooperation and interaction, making countries more interdependent and less inclined to resort to armed conflict. There are great risks of the rise of autarchies, the outbreak of frozen military conflicts, the division of the world into spheres of influence, the risk of nuclear war, increased inflation, and other misunderstandings between states.

## **THE TRANSITION FROM DEGLOBALIZATION TO REGLOBALIZATION**

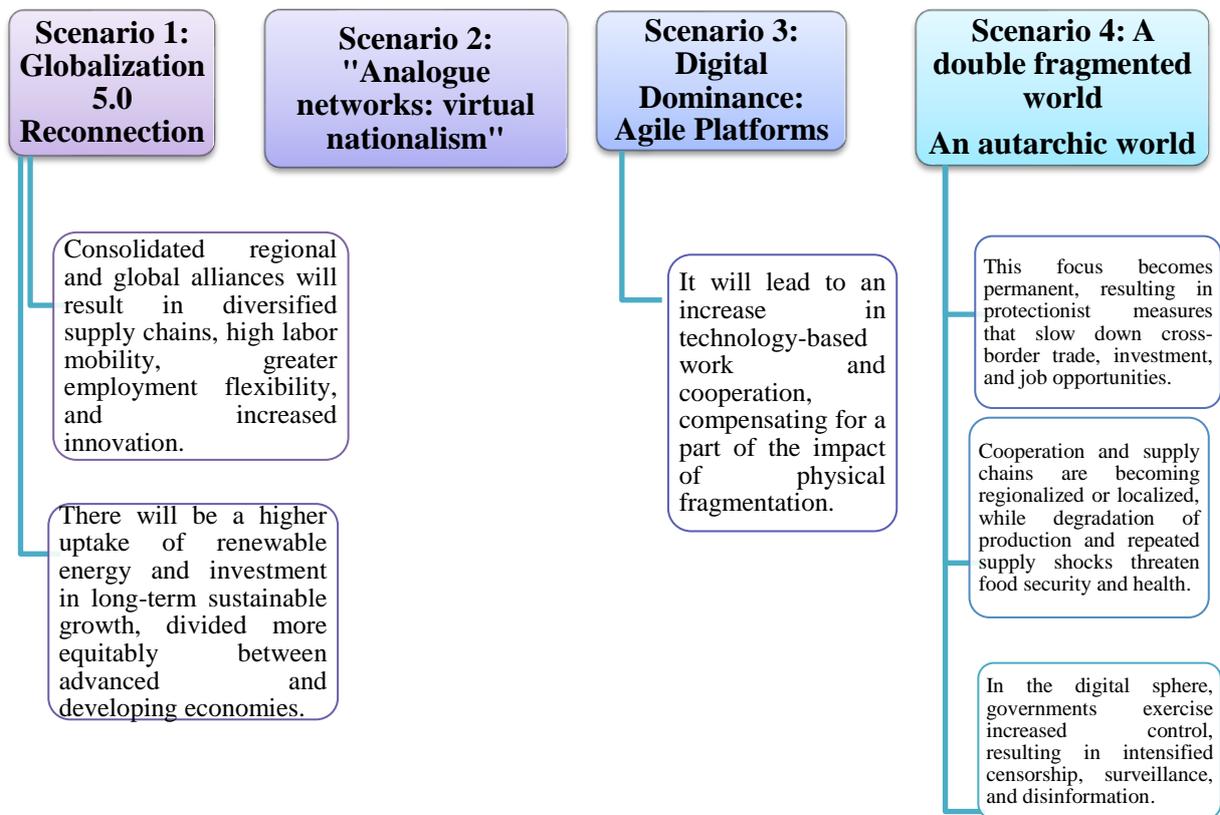
Given the current global environment, there are still no signs that the world will return to the way it was. Deglobalization is deepening, and a new model for reconfiguring the world economy needs to be identified to mitigate the negative effects of this process. It is imperative to consider how the entire

global economic system should be reorganized in line with the economic conjuncture without harming national economies while boosting the welfare of the world's population. *Reglobalization* would best describe the current pattern of economic integration and fracturing across different economies and sectors. Globalization is far from over, but will increasingly focus on greater regional connections and the formation of economic blocs for sensitive and strategically important sectors. At the moment, several changes should not be ignored but taken into account. For example, the trend towards total decoupling from China's economy by stopping the relocation of foreign assets is not easy to achieve, nor is it short-term. The disruptions in supply chains from 2020-2023 will slowly ease, even if some will disappear entirely. Another important issue affecting the global economy is climate change. With extreme weather events posing the greatest threat to global production networks, resilience and supply chain diversification efforts will persist, with an additional focus on developing trade in organic products.

Thus, in order to better understand how we can shape the globalization process through transformation and adaptation to current needs, the **5Rs** model of reglobalization is proposed, which means:

- **1R – Redefining** clearly the phasing of globalization, or in other words, clarifying how globalization should be phased;
- **2R – Reframing**, which refers to adapting to new global power centers but without excluding world economy players from the equation;
- **3R – Reform**, which means working towards substantial changes in the mechanisms of action of globalization, taking into account current requirements;
- **4R – Reconsideration** that implies giving globalization a broader spectrum of action in several fields, not only economic, social and political, but also technological, spiritual, demographic, etc.;
- **5R – Review**, meaning a thorough investigation of the globalization process through its advantages and disadvantages, as this could indicate the importance of the phenomenon for the world economy or, on the contrary, the damage and harm it brings. (Benedikter, 2019)

For the coming years, some scenarios for the transformation of deglobalization are proposed, either humanity will go towards a new form of globalization, such as Globalization 5.0, or the fragmentation of the world economy into autarchic systems will continue, which can become very dangerous for society. Four scenarios for the evolution of the global economic system are presented (Figure 3). The given scenarios are based on the physical and virtual integration and reconnection of systems or, on the contrary, their increasing fragmentation.



**Figure 3 Four scenarios for the future of economic globalization by 2027**

Source: adapted by the authors (Keller, 2023)

**Scenario 1 – Globalization 5.0** talks about the major role of innovations and adoption of new technologies such as blockchain, artificial intelligence, fintech, edtech, greentech, and healthtech, to the needs of national economies, as well as the interconnection of countries through this know-how. Virtual global connectivity will have tremendous effects on the world economy, especially as this could generate an increase in global GDP by another \$100 trillion.

**Scenario 2 – Analogue networks: virtual nationalism** refers to the fact that not all countries will be permanently connected to the network, leading to ruptures in economic cooperation. Virtual fragmentation can mean long-term stagnation in innovation, services, and production. A fracturing of digital financial services would sabotage the movement of international economic flows. Many developing economies without a strong digital infrastructure are disadvantaged from the outset by a lack of connectivity to global information and resources. Thus, in this model, the gap between developed and underdeveloped countries will widen further, the latter becoming even more isolated.

**Scenario 3 – Digital dominance: Agile platforms** refer only to a strictly virtual world based on advanced technologies.

**Scenario 4 – Autarchic world**, which is about the concentration of the global economy into isolated blocs, economic closure, and the abandonment of collaborative activities between states. (WEF, 2022)

Looking at all the potential scenarios, we can see that none of them is perfect or suitable for the global future as long as the world conjuncture is constantly changing. On the one hand, we can see that the traditional engines of globalization have reached a critical stage but, on the other hand, economic and social results will be achieved on condition that virtual and physical collaboration are effectively linked, with political leaders willing to maintain global peace and promote free and fair trade.

## **Conclusion**

1. After decades of increasing globalization in world trade, financial, and people flows, trends have reversed toward deglobalization caused by health, financial, and geopolitical crises in the world economy.
2. In this article, the authors analyze the globalization-deglobalization-re-globalization triangle, explaining the causes, effects, and future scenarios that would facilitate the transition to a more resilient, just, and sustainable world.

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## MODERN TRENDS IN THE HIGHER EDUCATION LANDSCAPE: WORTHWHILE AMERICAN PRACTICES

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**Abstract:** The higher education landscape is constantly evolving. Undeniably, different countries practice different approaches, methods and techniques. The USA has got a lot of useful lessons to share in this respect. Being the third biggest country in the world, which is welcoming professionals, researchers, students, immigrants from all over the world, it can show a good example as to how to prepare well-qualified specialists in various fields. American universities constitute the majority of the highest-ranking institutions in the worlds. That is why American higher-education practices and realities are worth considering and following through. It is no wonder the US remains the most popular destination by far for international students, who are drawn to this country because it is home to some of the best universities in the world, which offer great educational diversity for students. It is not possible to encompass the whole range of teaching/learning/researching aspects and experiences that are used in American universities in one article. For this reason, the present study focuses just on some of them, including syllabus development, problem-based learning (PBL), universal design for learning (UDL), cooperative learning, course delivery formats, flipped classroom, educational technology, and experiential learning. To a great extent, the presented issues are based on the authors' personal academic experience of both studying and working in the USA.

**Key words:** higher education, knowledge and skills, teaching, learning, methods, approaches

JEL Classification: A22, A23, I23

### Introduction

The higher education landscape is constantly evolving. Universities have to adapt to new approaches and tendencies that constantly appear in the world of modern education, which is always subject to a number of changes. Some of them happen as a result of society evolution, new teaching/learning methods and practices replace older ones step-by-step. Whereas others happen unexpectedly under the influence of certain circumstances which happen without our knowledge or consent, e.g., the necessity to go online because of the COVID 19 pandemic. Higher education in the 21<sup>st</sup> century is a multifaceted phenomenon, which incorporates a great variety of institutions and systems, an increasing diversity of students, and a range of purposes and functions.

Undeniably, different countries practice different approaches, methods and techniques to provide high-quality higher education. The USA has got a lot of useful lessons to share in this respect as American universities are internationally competitive. Being the third biggest country in the world, which is welcoming professionals, researchers, students, immigrants from all over the world, it can show a good example as to how to prepare well-qualified specialists in various fields. American universities constitute the majority of the highest-ranking institutions in the world. That is why American higher-education practices and realities are worth considering and following through. It is no wonder the US remains the most popular destination by far for international students, who are drawn to this country because it is home to some of the best universities in the world, which offer great educational diversity for students.

### **Global University Rankings**

Although rankings are often criticized in terms of the validity of the data offered by them, much attention is paid to global rankings. Some countries use university rankings as part of points-based immigration programs, while others automatically recognize degrees from higher-ranked universities. The three longest established and most influential global rankings related to higher education are those produced by Quacquarelli Symonds (QS), Times Higher Education (THE), and Shanghai Ranking Consultancy (the Academic Ranking of World Universities – ARWU). Quacquarelli Symonds (QS) is a British company specializing in the analysis of higher education institutions around the world. Times Higher Education (THE) is a British magazine reporting specifically on news and issues related to higher education. And the Academic Ranking of World Universities (ARWU), also known as the Shanghai Ranking, is one of the annual publications of world university rankings. Table 1 clearly demonstrates that American universities occupy leading positions and do constitute the majority of the highest-ranking institutions in the world. It means that their approaches, strategies, methods, techniques, etc. are worth following.

**Table 1 Global university rankings (2023)**

<b>Rank</b>	<b>Quacquarelli Symonds (QS)</b>	<b>Times Higher Education (THE)</b>	<b>Academic Ranking of World Universities (ARWU)</b>
1	Massachusetts Institute of Technology (USA)	University of Oxford (UK)	Harvard University (USA)
2	University of Cambridge (UK)	Harvard University (USA)	Stanford University (USA)
3	Stanford University (USA)	University of Cambridge (UK)	Massachusetts Institute of Technology (USA)
4	University of Oxford (UK)	Stanford University (USA)	University of Cambridge (UK)
5	Harvard University (USA)	Massachusetts Institute of Technology (USA)	University of California, Berkeley (USA)

**Source:** own work based on the data on the company websites.

### **Worthwhile American Practices**

It is not possible to encompass the whole range of teaching/learning/researching aspects and experiences that are used in American universities in one article. For this reason, the present study focuses just on some of them, including syllabus development, problem/project-based learning

(PBL), universal design for learning (UDL), cooperative learning, course delivery formats, flipped classroom, educational technology, and experiential learning. To a great extent, the presented issues are based on the authors’ personal academic experience of both studying and working in the USA. So, taking into account some of American aspects, approaches, experiences and practices related to preparing specialists at universities, faced and experienced by the authors personally, the following ones are worth mentioning:

### **Syllabus Development**

An American syllabus is not just a formality. It may be students’ first exposure to a course, and its contents may determine whether or not they take the course. A syllabus lets students know the content of the course, the reasons it is taught, and what will be required for them to be successful in it. It represents kind of a contract between the professor and students, as well as a learning tool, providing both parties with a common reference point that sets the stage for teaching/learning throughout the course. The form and content of a syllabus vary depending on the university, department, course and instructor. Universities have some institution-wide policies and guidelines which are taken into account by instructors as they build their syllabuses. As a rule, this information can be found on the university website.

Generally, there are common components that successful syllabuses contain. These components communicate to students the following:

- course description (the content, learning objectives, characteristics of class meetings, logistics),
- course topics and assignments (schedule of topics and readings, assignments, projects),
- assessments (grading policy, requirements, rubrics, information about tests, exams),
- course policies and values (inclusiveness, integrity, responsibility, expectations for success).

Students get acquainted with all the syllabuses for the coming term during the first academic week, so called ‘syllabus week’. It is a common practice to assign syllabus quizzes to students, to see how well they have understood what is expected from them during the term, to avoid future misunderstandings, and to collect and answer any questions later on.

### **Problem/Project-Based Learning (PBL)**

Problem/project-based learning is a widely used term in education in general, and in higher education in the USA (and not only) in particular. It involves students designing, developing, and constructing hands-on solutions to a problem. Its educational value is that it aims at developing students’ creativity and their ability to work through difficult or badly-structures problems, which is often done in teams, something which is likely to happen in a real-life work setting. As a rule, PBL includes the following steps or stages: defining the problem, generating ideas, prototyping solutions, testing. Students work extensively on projects in and out of the classroom, both on campus and in local communities. Along the way they build an understanding of other people and their own potential to impact the world for the better. In doing so, they develop key skills and abilities that will serve them in the future: collaboration, communication, socializing, problem-solving, delegating, critical thinking, etc. This type of learning results in greater student learning gains than traditional instruction, it challenges them to be adaptable, flexible thinkers.

A good example of PBL can be an integrated marketing plan for a real or imaginary company, which is created by students doing Marketing Communications course at Minnesota State University, Mankato. It includes the following steps: students choose a company, make its overview and define the purpose of their marketing plan, conduct a thorough analysis of the target audience, define the unique selling propositions, evaluate key competitors, establish clear, measurable marketing objectives, formulate marketing strategies, describe how they will be executed, explain the methodology for measuring the effectiveness of the marketing plan, create mock advertisements (for imaginary products), and, finally, present their plan. Presentations can take place in a purely academic setting, or, sometimes, specialists from the related companies/industries are invited to listen to them and share their expert opinion.

Thus, students are actively engaged in the process of experiential learning, i.e. learning by doing. These hands-on experience enables them to connect theories and knowledge learned in the classroom to real-world situations.

### **Universal Design for Learning (UDL)**

UDL is aimed at meeting the needs of diverse learners in a common setting. “It is designed to promote physical, social, and academic spaces that support meaningful access and function to a range of learners.” (Katz and Sokal, 2016). UDL allows students to access, process and represent their learning in multiple ways. Thus, while some students prefer to deal with the new content through a group discussion, others prefer teacher-led lessons, and another group of students are more likely to conduct research on their own using various media. In terms of presenting some information, some students prefer writing reports, others would better create a multimedia presentation. As a result, the learning endpoint goals are the same, but the ways students get there are different. UDL thus is an effective alternative for the “one-size-fits-all”. Its two important tenets are accessibility and engagement.

### **Course Delivery Formats and Modalities**

Besides traditional face-to-face instruction, when professors and students meet in person, there are other options, new educational solutions, which make learning more accessible and satisfy better clients’, i.e. students’, educational needs. These more modern options include the following:

- hybrid (class meets in person and has online asynchronous components as well);
- hybrid flexible or hyflex (class meets in person and virtual students can join via Zoom);
- online synchronous (class meets via Zoom at the same time every week with online asynchronous components);
- online asynchronous (class is fully online with weekly deadlines but does not have a required meeting time).

### **Educational technology**

Higher education has been profoundly impacted by the technological innovation over the past few decades, which has been considerably intensified since the COVID-19 pandemic started. Technology has evolved to include Internet delivered content, and much wider usage of laptops, iPads, tablets, smartphones both by students and instructors. As a rule, all students present at the lesson in a typical American classroom have got gadgets and actively use them during classes to participate in learning experiences in the most efficient way. Actually, there is nothing to do during classes without them. It goes without saying that the students who attend classes online have to use them too. If students cannot have/bring their own gadgets for some reasons, they can borrow them from the university library.

University courses employ technology in the classroom to enrich interactive face-to-face and online learning experiences in a number of ways:

- hyflex (hybrid flexible) course delivery format, when class meets in person and virtual students can join via Zoom (it should be noted here that there are plenty of suitable classrooms with all the necessary technology, including a computer for the instructor with the installed Zoom app, two screens – for the students present in the classroom and those online, microphones);
- incorporating all courses into the university learning management system (LMS), e.g. Canvas or D2L (Desire2Learn), where students can find all the necessary materials and download the majority of them, systematically submit homework assignments and get the professor’s feedback, see their grades and total progress;
- homework or projects where students use reading material, video, audio, pre-recorded mini-lectures, etc.;
- self-guided computer-assisted learning (on Canvas or D2L);
- video recordings of actual lessons.

### **Flipped Classroom**

Flipped learning innovators are Jonathan Bergmann and Aaron Sams, American science teachers. They consider that the flipped classroom can address the learning needs of students by allowing their teachers to personalize the students’ education. Basically, the concept of a flipped classroom is the following: “that which is traditionally done in class is now done at home, and that which is traditionally done as homework is now completed in class” (Bergman and Sams, 2012, p.13). The common stages are as follows:

- 1) Students deal with the content of the coming class individually.
- 2) They are encouraged to take notes, record any questions they have, and summarize their learning.
- 3) They have some assignments to do, theoretical or/and practical ones.
- 4) Students come to class with appropriate questions that help the instructors address their misconceptions.
- 5) After the initial questions have been answered (often in the form of micro-lectures), students are given some assignments; it might be an enquiry-based activity, a directed problem-solving activity, task-based learning, etc.
- 6) Finally, students get quite deep understanding of the topic both in theoretical and practical terms.

In a flipped classroom, the role of the teacher dramatically changes. They are no longer the presenters of information. Teachers spend their working time in the classroom interacting with and helping their students. They answer students' questions, organize and monitor their activity, they do lecture sometimes, but it does not last for a long time. The majority of class time is used for more extensive hands-on activities and problem-solving. The role of the teacher in the classroom is to help students deal with the information, but not to deliver it.

Typical homework assignments and activities, which students are involved in after having studied the content individually, might include the following:

- *The reading/audio/video presents many ideas related to ... . Create a 'top ten' list of ideas based on the content and ideas mentioned in the reading/audio/video.*
- *In the reading/audio/video, the author gives some recommendations. Which two of them do you like the best? Explain why for each one.*
- *The author presents at least 6 different ideas for ... . List the ideas below in the table and provide a description and/or example for each one (the first one has been done for you).*
- *Choose one passage from the reading that was particularly insightful and/or interesting to you. Write the passage below and then explain your choice.*
- *The authors provide several justifications for the importance of ... in this reading/video/lecture. List these justifications.*
- *Outline the most important features of ... .*

As we can see, such assignments contribute to the development of students' analytical and critical thinking skills. They do not just read/listen to the new material, they actively use it (make an analysis, compare, classify, make conclusions, justify their choices, etc.).

Typically, students submit their homework on the university LMS before the class. However, after having worked with the content at home, students continue working with their answers/notes when they come to the classroom. They usually work in groups/pairs, share ideas, compare and complete their answers, select the most important points. Besides, some classroom activities might be organized to work more with the content. As a result, students leave the classroom having acquired lots of useful knowledge and skills related to the topic.

To sum up, flipping the classroom establishes a framework that ensures students receive a personalized education tailored to their individual needs.

### **Cooperative learning**

As it has been mentioned above, it is a common thing to organize work in groups/pairs both during classes and beyond them, which has its roots in the necessity of developing students' collaborative and communication skills and ideas behind the cooperative learning approach. Students often have to discuss some ideas, approaches, activities, which were designed by them while doing their homework. It is not just discussing; they often have to choose the best one(s) and report to the class. Various roles might be assigned when students work in groups, such as the note-taker, presenter, time keeper, team leader. It must be noted that this work is skillfully organized by professors for both categories of students: physically present in the classroom and online. It hardly ever happens when students do not work in groups/pairs and Zoom break-out rooms are not used. Online students participate in

cooperative activities as efficiently as in-class students do. The distance is not a problem. Thus, all the four essential elements of cooperative learning are effectively implemented, both face-to-face and online: positive interdependence, individual accountability, equal participation and simultaneous interaction. This approach prepares students for working in real-life conditions, when they will have to cooperate with their colleagues, supervisors, administration, customers, etc.

### **Experiential learning**

Experiential learning is the process of learning by doing. Students master an educational program in order to develop their practical skills through the implementation of real practical tasks. The basis of this type of learning is the optimal combination of education with applied training. Thus, much emphasis is placed on practical tasks and assignments, without neglecting theory at the same time. When students do their homework, after having studied some theoretical basis, they, as a rule, are assigned to post their comments/ideas on the discussion board created by the teacher, elicit the most important issues they've read about, choose a number of those they like most of all, agree/disagree with and justify their choice, or they have to design a product, taking into account the theoretical content they have studied. It can be an action plan, a guide, a presentation, a project, etc., depending on the course. When working in the classroom, the professor usually organizes group or pair work, so that students discuss their lists, compare their choices, identify similarities and/or differences, and choose the best one(s) as a group. This kind of work promotes students' multilateral development, contributing to the improvement of their analytical, critical-thinking, communication and collaboration skills, thus preparing them for real-life work reality.

### **Conclusions**

In general lines, the approaches to preparing specialists in the USA can be characterized as inclusive, enthusiastic, dynamic and engaging. Students feel their importance in the classroom as the instruction is student-centered. Universities cater to student diversity, whose needs are carefully taken into account, both current learning needs and prospective professional ones. As a result, American universities attract significant numbers of international students. Definitely, they can show a good example as to how to prepare well-qualified specialists, they have got a lot of useful lessons to share and worthwhile practices and experiences to follow.

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## MEDICAL TOURISM AND HEALTH WORKER MIGRATION IN DEVELOPING COUNTRIES

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**Abstract:** Medical tourism is a growing economic sector with a \$272.70 billion market. In the last ten years, especially after the Pandemic, the health tourism market has increased for Estland with tourists from developed countries. Germans, French people, citizens from the US, and the UK are interested in medical services after the border with low-cost medical care, high technologies, and specialized health workers. This study analyzes factors pushing health migrants to travel abroad: working conditions, salary revenue, poor life conditions, lower education system, and desire to have opportunities to gain better experience, and specialization. This study shows the migration source countries, international agreements, and mutual arrangements that manage this phenomenon.

The research methodology is a literature review. The study's goal is to analyze the situation of migration health workers from Romania and the Republic of Moldova and to respond to questions: how this phenomenon affects the public healthcare sector, what is their desire, and is this a national or international problem? The globalization era is an opportunity for health workers to choose quickly actual job requirements, obtain a higher work position, and receive professional reviews and skills evaluation. Artificial intelligence, Virtual reality, and the Metaverse are the instruments proposed to resolve this phenomenon by the government. The migration of healthcare workers is not just an economic strategy for authorities. World Health Organization proposes a reform for Romania and the Republic of Moldova according to educational and social instruments. Today this phenomenon is influenced by refugees from Ukraine.

**Keywords:** medical tourism, migration healthcare, health worker migration

JEL Classification: JEL Codes I11, I12, I18, L83

### Introduction

The rise in medical tourism will likely stimulate the expansion and updating of healthcare facilities in developing countries. The market expansion in emerging countries is anticipated to be significantly fueled by the high healthcare costs in wealthy nations. Medical travelers can get specialized care, such as complex surgeries, special therapies for persistent illnesses, and other focused procedures. Increasing concerns regarding the cost of medical services, an aging population, a surge in diseases linked to a sedentary lifestyle, as well as elements like rising medical tourism and public education about health issues can significantly lessen illness loads.

People receive prompt and effective care. Cross-border medical tourism is being encouraged by more and more poor nations as a means of improving their economies. In Southeast and South Asia, countries such as India, Thailand, Malaysia, and luxurious Singapore are preferred for medical procedures and well-being treatments. Thailand is one of the preferred destinations for

medical examinations, cosmetic procedures, and dental treatments, with a growing emphasis on health and well-being due to the combination of high-quality care and cost-effective service costs. While other regional engines like Singapore and South Korea attract many of the same visitors with high-quality medical services, medical travelers also value Thailand's inexpensive hotels, culture, and shopping, and are dedicated to servicing the tourism industry for their particular attraction. As competition grows, it will be crucial to continue the Tourism Association of Thailand's campaigns and start visa extension programs to draw more tourists from worldwide.

For decades, there was a discussion over the migration of medical professionals from East Europe to Central or West Europe. Regardless of all of the competing considerations, the migration of health workers has a negative influence on the healthcare national system in the former, the phenomenon named "brain drain". The movement of health professionals "Brain Drain" describes the movement of doctors and other healthcare workers in search of better pay, a better standard of life, access to cutting-edge technology, and more comfortable governance structures in various parts of the world. Internal brain drain is one type of brain drain, but most typically, the term relates to abroad or global migration, frequently from insufficiently developed to high economic, social, and politically developed nations. Any country's strength largely depends on how much it produces, and this situation speaks about the well-being of the population. Healthcare workers are choosing developer countries for a new experience and to transfer their knowledge to a national country. departing their home nations has an impact on their home countries' short- and long-term viability.

The "Year of the Nurse and Midwife" has been proclaimed by the World Health Organization (WHO) for 2020 (Peters, A., Palomo, R., Pittet, D., 2020), for their implication during the COVID-19 period. The quality of relationships between health workers and patients, and patient care is strongly influenced by the travel of health workers (HCWs), which causes a deficit of workers between nurses, doctors, and midwives globally. Because it draws attention to a staffing crisis in the healthcare system, this phenomenon needs to be treated internationally.

The connection between the level of care provided and the number of individuals on a caregiver's caseload has been examined in numerous research. According to data from a study in the United States, a higher workload for nurses is related to lower patient satisfaction, worse outcomes, and a rise in nosocomial infections. A 2016 WHO research announced a global deficit of HCWs, it has outlined steps to support a rise in health professional training. If successfully implemented, this method should gradually reduce the total amount of missing midwives and nurses. Considering the WHO's projections for 2030, it, makes the issue much more fatal. The most wanted travel locations for doctors are the USA, Germany, and UK, France, Sweden, and Switzerland. (Adovor, E., Czaika, M., Docquier, F., Moullan, Y., n.d.)

Immigration laws designed to draw in highly qualified individuals affect the progress of the medical brain drain. In the long run, a destination country's collaborative stock of doctor migrants rises by 65%, 124%, or 132% when it offers immigrants a path to permanent residency, sets up a points-based system, or all three. The long-run stock is also increased by 54% and 28%, respectively, provided dyadic visa restrictions are lifted and foreign diplomas are accepted. The most effective approaches for luring doctors seem to be the introduction of a points-based system and the simplicity of gaining a permanent residence in the destination country. (Adovor, E., Czaika, M., Docquier, F., Moullan, Y., n.d.)

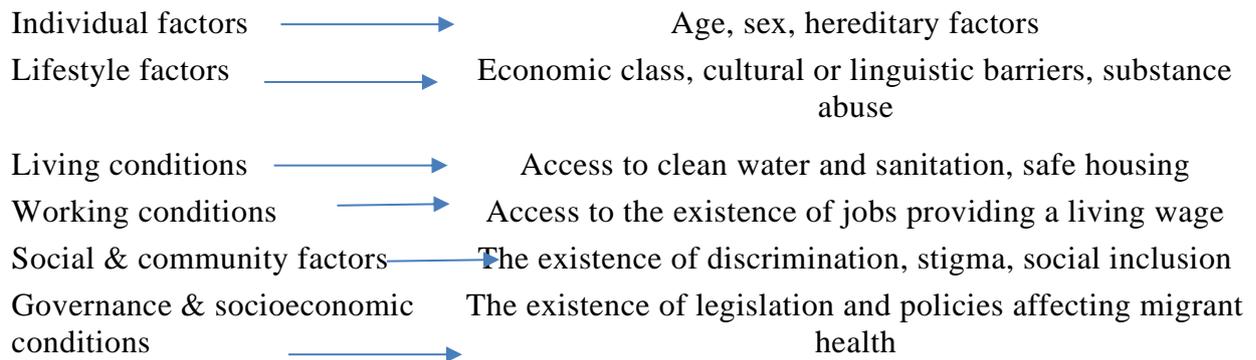
### **Determinants factors of health worker migration**

For better pay, secure employment, better living conditions, and a better life, healthcare professionals in poor nations must leave their home nations because of the low wages and intolerable living and working conditions there. Because of this, skilled workers have been departing the areas where they are most needed for numerous years, making already weak health systems even more susceptible. (Chimenia, A., Qi, B., 2015)

Many of those in the medical field who continue to work in the public health system are under more stress, have heavier workloads, and lack motivation due to their low pay, insufficient equipment and guidance, and the absence of many candidates for progress in their professional lives. A recent increase in the labor market is the globalization and migration of medical professionals, which is influenced by factors including education levels, working circumstances, and pay rates between nations. To control the health worker migration, in 2010, it was adopted the WHO Global Code of Practice on the International Recruitment of Health Personnel by the World Health Assembly. The Code shows the detrimental effects of health workers moving abroad and encourages workforce sustainability. The reporting on the application of the Code enables a better understanding of trends in the mobility of health workers and identifies serious issues that call for response. (WHO, 2023)

Conditions associated with the migration process could leave migrants more vulnerable to adverse health consequences. This is especially true for individuals who move in looking for low-skilled work or who are displaced due to emergencies or armed conflict. The impacts on migrants' health can be affected by a variety of factors and are subject to change always something to increase their life conditions. The health of migration is impacted by policies about the economy and society( Figure 1), fairness and human rights concerns, development ambitions, and societal norms.

Immigration of healthcare workers is an invariable effect of globalization. The database for international medical personnel is incomplete. Numerous variables affect migration, some of which may be regularly addressed, which could aid policymakers in developing strategies for attracting and maintaining medical personnel within the countries of their country of origin. The main driver determining the decision to migrate is financial motive. Competitive pay cannot be introduced. In addition to non-financial incentives, realistic prospects include more educational programs and support training, possibilities for schooling, etc. (Stilwell, B., Diallo, K., Vujicic, M., Adams, O., Dal, M., 2004)



**Figure 1. Migration and the social determinants of health.**

Source: CDSH Report 2008:43. Available at <https://www.migrationdataportal.org/zh-hans/themes/migration-und-gesundhei>

### Reglementation of health worker migration

A complicated and expanding topic is the international migration and mobility of health professionals. Fundamental labor market pressures linked to many factors, such as education, job conditions, and compensation between countries, are what are driving the movement. The COVID-19 epidemic has expedited the movement of healthcare professionals, WHO offers support for control and following the migration of international health workers in better conditions. The most important document in this context is the WHO Global Code of Practice on the Global Recruiting of Health Personnel. This Code determines those 64 nations to insert its applicability into their domestic legislation about foreign policy, or improve bilateral agreements within interested countries. At the 73rd World Health Assembly, a Member State-led assessment of the WHO Global Code's Relevance and Performance was discussed. (WHO, 2023)

The evaluation emphasizes the requirement for Code implementation through targeted support and safeguards to make sure that Member States' work on Universal Health Coverage and Health Emergencies serves to encourage rather than jeopardize similar achievements in other countries. WHO, ILO, and OECD have implemented the International Platform on Health Worker Mobility to improve discussion, understanding, and collaboration.

Several obstacles, such as trouble accessing healthcare services and maintaining continuity of care for significant medical disorders, are faced by migrant healthcare workers. Compared to their non-migrant colleagues, they are also more susceptible to workplace accidents, injuries, and health issues. One of the biggest issues facing migrant and refugee health workers is tuberculosis and mental health concerns. Poor access to treatment and necessary medications for migrants and refugees is caused by a lack of agreed priorities amongst partners and stakeholders. Public health has multiple unsolved problems as a result of a huge increase in both willing and forced migration. Therefore, addressing health issues impacting migrants and refugees requires an international activation of partners, trade unions, and stakeholders. The M8 Alliance members (this institution works on a wide range of problems, especially the health of migrants and refugees) established an annual International Event based on Migrants' and Refugees' Health, to address these problems for all implicated states, emigrations, and immigrations. (Bempong, .E., Stealth, D., Seybold, J., 2019)

IOM interacts with governmental, intergovernmental, and non-governmental partners to resolve migration problems and to create a better manner for this phenomenon and is the top intergovernmental institution in the field of migration. (IOM, 2023)

IOM thinks that properly managed health worker migration can be crucial for overall development and for enhancing health systems in both importing and exporting nations. This demands collaboration between numerous sectors, including the health, working programs, and working conditions, and economic-financial departments of national governments; stakeholders in international recruitment; health professional associations; and research professionals. (IOM, 2023)

### **Overview of destinations for immigration**

Many are leaving nations where their expertise is desperately required by the health systems due to large pay incentives and visa fast-tracks. Canada is one of many wealthy countries that have a growing interest in recruiting medical professionals from nations with limited resources to restore a healthcare workforce after a pandemic period. In a pandemic, hiring from underdeveloped countries with deficient health systems has raised new ethical considerations as a result of the necessity of high-income nations; countries as Germany and Finland, who had not earlier recruited medical workers from overseas. According to Sinead Carbery, head of the international recruiting business O'Grady Peyton International, some 1,000 health workers are coming to the United States from countries in Africa, the Philippines, and the Caribbean each month. Despite the United States typically importing nurses from abroad, based on the number of nurses, the demand from American hospitals is at the highest point in thirty years. An estimated 10,000 nurses from other countries with employment offers in the United States are on waiting lists for visa requirements at American authorities abroad. Patient care has suffered due to a higher need for a health workforce in both developed and developing nations. European countries and North America simplified procedures for accepting foreign credentials and developed dedicated immigration fast tracks for medical workers.

To fill staff gaps, in 2020, the UK created a "health and care visa" program, that promotes and targets foreign doctors and nurses. Benefits of the program include expedited processing and lower visa spending. The language standards for residency are being decreased in Canada, and the process of approving foreign-trained nurses' certifications has been sped up. Japan grants temporary aged-care employees a route to residency. Foreign-trained healthcare workers are now accepted for assistant physician roles in Germany. Each member of the World Health Organization, agreed to the Global Code of Practice on the International Recruitment of Health Personnel, in part in response to the migration of health workers from AIDS-stricken nations of sub-Saharan Africa. African universities and social authorities expressed their dissatisfaction with the doctors and nurses who graduated in this country, who were receiving government support for their higher learning but were being attracted away to the USA and Britain earlier than they had finished their revenue training that their homelands could never hope to equal. The code accepts that people have the right to leave their homes, but it encourages richer nations to fill vacancies accorded the existing agreements and helped by the Ministry of Health in the origin country. The major problem of health workers' migrations is the pressure placed on the public health care system in emigration countries. (Afzal, S., Masroor, I., Shafqat, G., 2012)

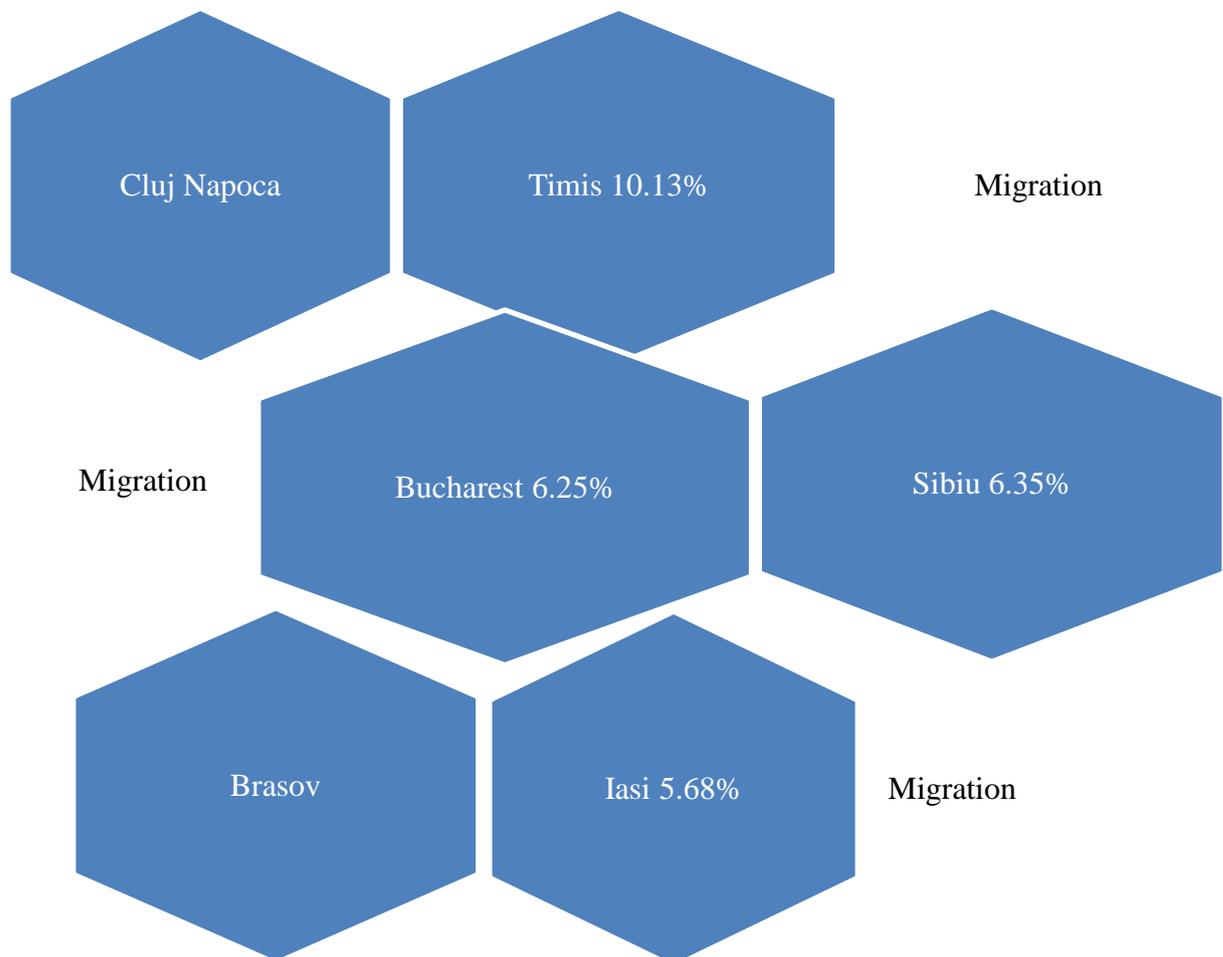
The "learn and return" program, in which healthcare workers come home after gaining new abilities, is also meant to be accessible to destination different countries. On paper, Zambia has more nurses than it needs. Before the pandemic, there was a growth in the migration of physicians, frequently from low-income to high-income states; according to Dr. Giorgio Cometto, a W.H.O. expert on health workforce issues, this movement had increased by 60% in the ten years before 2016. (Nolen, 2022)

The "red list" of nations on which the United Kingdom won't hire for its National Health Service includes those with shaky health systems. However, some healthcare professionals get past this by first entering Britain before being hired by, for instance, a company that places staff in private nursing homes. Upon arriving in Britain, they are choosing NHS jobs to be paid better.

### **Romania and Republic of Moldova: emigrants health worker countries**

The emigration of doctors and nurses from the Republic of Moldova is an increasing problem for authorities and WHO. Today this phenomenon is part of the Ministry of Health System Strategy, to ensure sustainability for national hospitals and to improve staff retention, especially in rural environments. (WHO, 2019) This strategy is monitored every year by the WHO and according to the Education Department of the Nicolae Testimiteanu State University for Medicine and Pharmacy, it is offering professional programs of education and specialization for doctors and pharmacists. They have implemented workshops with international partners' support to improve international technology and techniques in national medical system and educational programs. (WHO, 2019; WHO, 2014) A major strengthening of the state is a low budget accorded to staff migration. As a non-EU state, the Republic of Moldova is an emigrant country of health workers into Italy, Germany, and Spain as citizens of Romania, according to legal work forms in EU countries. The major determinant factor for migration is financial gains, a few of them consider that it is an opportunity to work with new technology and with specialized partners as an educational investment. (Europe, 2014) Younger migrants saw migration as an opportunity for a high rank of life conditions for themselves and their families, sometimes it meant unique revenue for their existence. Before migration, Moldovans were interested in learning a language, recognizing diplomas, and additional services accorded to migrant health workers as special courses for integration. Compared to other health professionals, doctors have more successful careers, but they also meet numerous obstacles to laborious, costly, and administrative diploma recognition procedures.

Physicians and nurses make up almost all of Romania's health professional deficit. (Rohova, 2011) The irregular geographic distribution of the medical staff in Romania is one of the major issues for human resources management. The territorial distribution of doctors is highly unequal. More health workers are interested in big cities such as Cluj Napoca, Bucharest, Iasi, and Brasov with many opportunities for a better life, continuous education, and a better specialization to obtain increased financial gains.

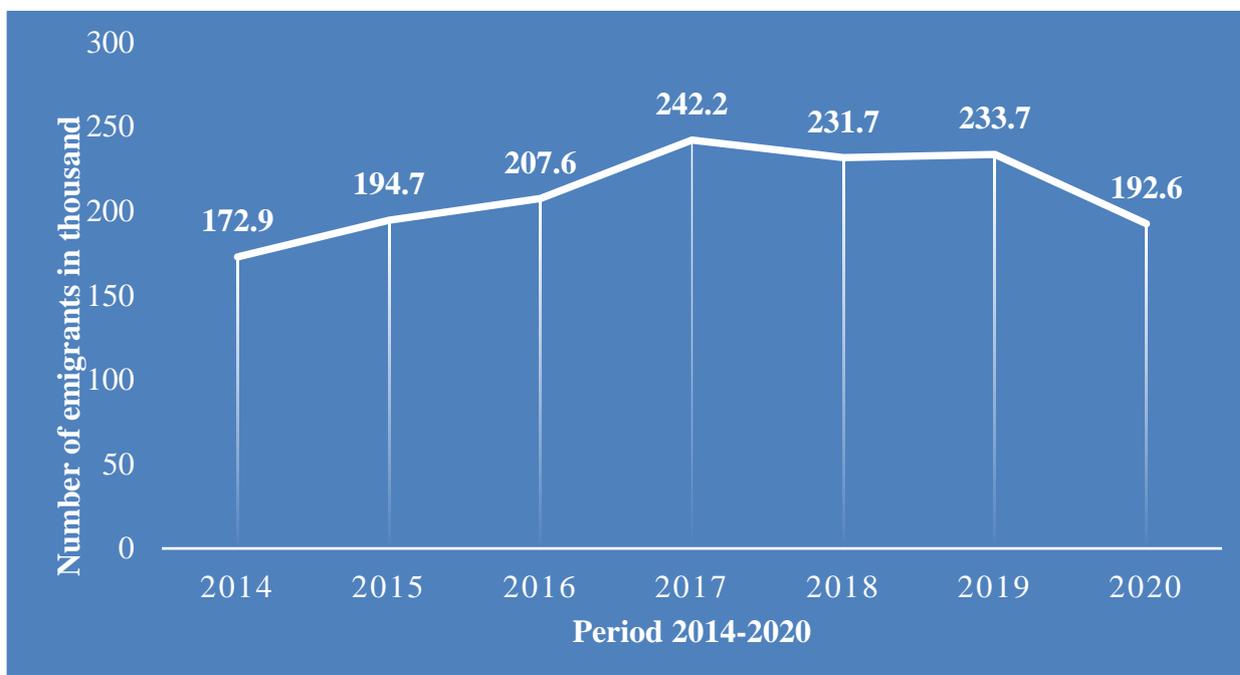


**Figure 2. Migration phenomenon of Physicians in 2018**

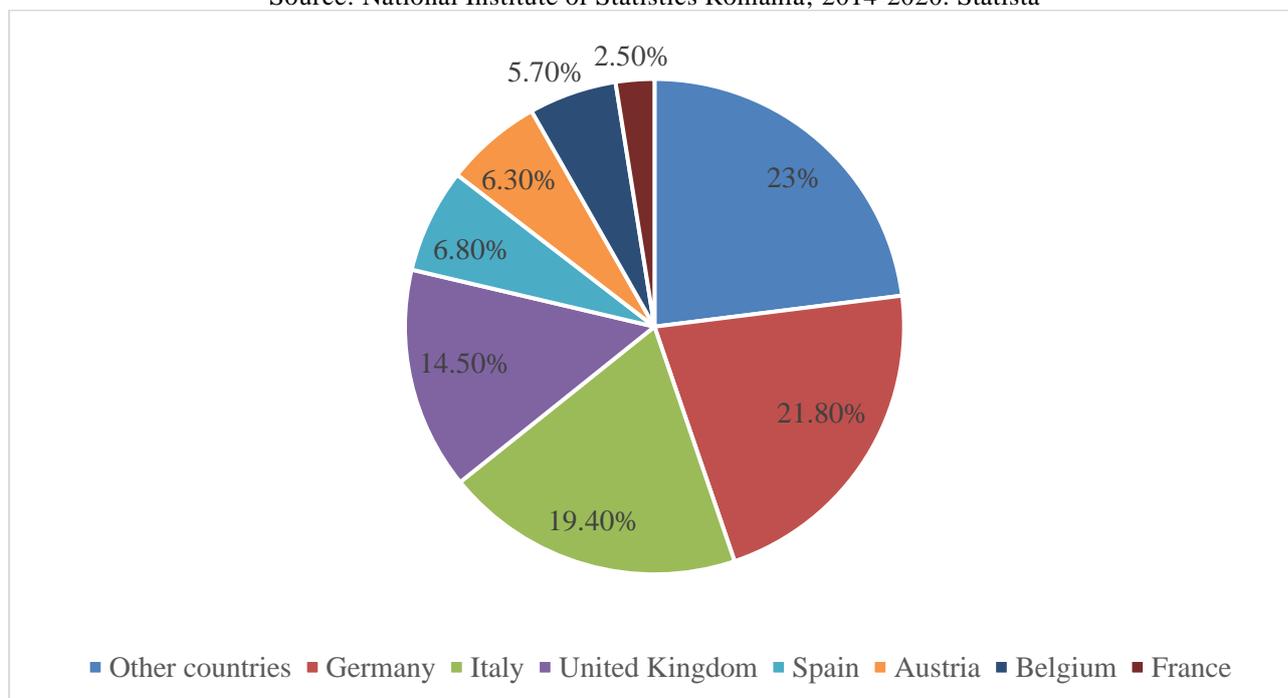
Source: Physicians' migration from Romania. Recent evidence from administrative data

Ordering Certificated Physicians, most of them are in Timis (10.13%), for the same score in cities such as Sibiu (6.35%) Bucharest (6.25%), and Iasi (5.68%) (Apostu, S.A., Roman, M., Vasile, V., 2020). According to a statistical database of NIS (2009), 404,396 people are estimated to have quit Romania between 1990 and 2008, reducing this movement by roughly 10,000 people annually. An estimated 104,835 people moved between 1991 and 2008. (Rohova, 2011) The preferred countries for Romanians are France, Germany, the United Kingdom, Belgium, Italy, and Switzerland (Figure 4). (Rohova, 2016) In terms of potential physician migration, health studies students in 2018 demonstrated a 40% overall inclination to move (Boncea & Voicu, 2019). Only 25% of the students considering migrating as a possibility had defined objectives, though. The survey also reveals that students who are in their later years of education have less of an intention to move. However, Saghin et al. (2017) present a contrasting finding, showing that 85% of undergraduate medical school students plan to emigrate. (Deliu, A., Farcasanu, D., Mihail, L., Mustata, M., Visinescu, I., Voicu, B., 2022)

According to Statista, 2017 year registrates the higher indicators of Romanian emigrants, 242.2 thousand people (Figure 3). During the last three years, this number has decreased, and one of the factors of decreasing is the increase in salary from 2016 to 2018, and after. (Apostu, S.A., Roman, M., Vasile, V., 2020)



**Figure 3. Romanian emigrants during 2014-2020**  
Source: National Institute of Statistics Romania; 2014-2020. Statista



**Figure 4. The preferred EU countries by Romanian emigrants**

Source: National Institute of Statistics Romania; 2014-2020. Statista

The most determined factors for health worker migration are living and working conditions. This phenomenon was changed after salary augmentation during 2016-2018, in the public health sector, an increase between 70%-172%, the principal beneficiaries were resident doctors. (Botezat, A., Moraru, A., 2020) Before Romania entered the EU in the year 2007, the United States and Canada were the destinations that Romanian doctors most often immigrated to. Unsurprisingly, since 2007, Romanian doctors have continued to transform countries such as France, Germany, the UK, and Belgium into travel destinations. Spain and Italy have also attracted Romanian physicians, albeit to a lesser extent than others, especially between 2006 and 2014, but developments in migration to these countries have fluctuated recently. Starting 2010, we are also seeing a consistent increase number of Romanian doctors migrating to Sweden. (Hervey, 2017)

### **Health worker's migration trends**

#### **Growing of doctoral and nurses offer**

While the number of nurses with foreign training reached 20% in the period 2011-2016, over 550 000 health workers, the number of doctors with foreign training grew by 50% between 2006 and 2016 (to reach nearly 500 000 in 2016). Some European nations, including Ireland, France, Switzerland, Norway, and Sweden, have increased the number of doctors with foreign training in the last ten years, in top preferred choices are the US, Germany, and the UK. It's necessary not to forget that some foreign-trained doctors, such as from Norway or Sweden, not less from the United States, are foreigners. This phenomenon is not a "brain drain" under such circumstances, notably given that those affected typically cover every aspect of their higher learning while studying overseas. The states with a rapidly increasing number of doctors and nurses are Mexico, Korea, Germany, Australia, Sweden. and the United Kingdom. For the opposite part some examples are Belgium, France, Poland, and the Slovak Republic, with a slow growth number of health workers, but the number the medical students in these countries is increasing. (OECD, 2019) In several OECD countries, the number of specialized doctors and the number of nurses was growing, in the last ten years, mainly caused by immigration. It is crucial to remember that a lot of these immigrant physicians and nurses could have completed their undergraduate or graduate degrees in their destination country rather than their origin country (because they chose to live belong their family and move when they were young or because they chose to do so). Less than 2% of doctors in the Slovak Republic are immigrants, but in Australia and Luxembourg, it is over 50%. In some countries, the proportion of migrant nurses is negligible such as the Czech Republic and Slovak Republic. In Switzerland, Australia, and Israel it is over 30%. With a few exceptions, more immigrants are doctors than nurses, especially in Luxembourg, Sweden, Switzerland, and Australia. Southern, Central, and Eastern Europe counted less number of health immigrant workers. (OECD, 2019) The OECD Conclusion Reports show that the most preferred destination for health worker immigrants is the USA, followed by the UK, and Germany.

#### **Internationalisation of medical education**

A new phenomenon mentioned in literature is the internationalization of health education, described by the migration of students for this type of education from developed countries to developing countries, pushed by financial factors: living cost, the educational cost for degrees, and the educational cost for specialization programs. Since 2007, Romanian medical schools have grown more alluring to overseas medical students since they supply degrees that are recognized

throughout the EU for comparatively affordable tuition and living expenses. Most medical educational institutions presently provide courses in either English or French, making up about 30% of their overall teaching capacity. In Romania, medical education has become more globalized with the lack of a specific national agenda. However, medical schools developed their methods for drawing in foreign students to grow revenue, keep highly qualified academic staff, and develop their infrastructure. (Ungureanu, M., Socha-Dietrich, K., 2019) Romanian students implement a six-year plan of study, with programs offered in Romanian, English, French, and Hungarian. (Muresan, S., Georgescu, A, Azamfirei, M, Marginean, C, David, CM Taylor, 2019) The first option for students is the Bucharest University of Medicine and Pharmacy with 300 programs in English and French in 2018, and the second and third options are Cluj-Napoca and Iasi. One of the options is the private medical university from Arad with half of the students international. In Targu Mures, 35% of educational programs are in English. Brasov, Sibiu, and Galati don't offer English programs for international medical students. The top five countries, in 2018-2019, those students chose Romania for a health degree, are the University of Medicine and Pharmacy in Targu Mures from Germany (202), Italy (75), Sweden (44), Finland (25), Israel (16), at the University of Medicine and Pharmacy Craiova from Israel (131), Greece (43), Italy (28), UK (20), Syrian Arab Republic (17). (Socha, K., Lafortune, G., 2019)

#### Burnout syndrome

Migration of health workers from Romania is an opportunity to reduce the new phenomenon of “burnout syndrome” (“occupational phenomenon”, WHO 11th revision of its International Classification of Diseases) (Jelinek, 2022). It is a physical symptom that causes a reaction to intense daily stress. In one recent national research (February 2023-March 2023, 8121 respondents/ doctors) made by the Romanian Doctoral College (CMR), more than 30% of respondents consider the migration phenomenon as an opportunity to reduce burnout syndrome and encourage physical and human condition, well-being opportunity to avoid a mal praxis situation about doctors and patients (70% of respondents consider that medical services are premise for malpraxis). (Romania, 2023)

#### Digital technologies versus migration phenomenon

For the greatest enjoyment of patients and physicians alike, virtual reality began its amazing takeover of the healthcare industry. Virtual reality in medicine offers some fascinating potential. It captured the imaginations of clinical researchers and actual doctors in addition to science fiction readers. Even though virtual reality is still in its infancy, there are more and more strong instances of how VR is improving both the lives of patients and the work of doctors. More than simply casually seeing a surgical procedure from the surgeon's viewpoint is now possible using VR. With the use of technology, doctors may now practice procedures and train future surgeons. Surgeons training workshop with the medical device vendor to receive training on a new device. Typically, there don't exist ways for doctors to continue improving their skills after this initial training. The gap between a surgeon's training and when they conduct a procedure on a patient may be a couple of months, forcing them to review their medical skills "on the fly" in an operating room. Comparing VR training on the Osso VR platform to conventional training methods, participants' total surgical performance increased by 230%. (Blumstein, 2019)

This type of technology can be included in the National Strategy Program to increase high-potential work conditions and work resources for doctors and avoid migration.

Metaverse - a digital environment that coexists with the real world. It is anticipated to be the next stage in internet development and offers a wide range of potential uses for both consumers and enterprises. For doctors and healthcare providers, the metaverse could offer new possibilities for patient involvement, care delivery, and research. On the other hand is an opportunity for potential immigrants to know their health conditions, to live in the digital world as in physical condition, and to expect the possibilities for a new future. Hospitals require assistance in standing out from one another. They have to first explain to patients why they should pick them over the numerous alternate options. Patients will have access to all the information they require before choosing a hospital in a world where information about medical care is stored in a blockchain system that is accessible to everyone with an internet connection. Additionally, it allows medical professionals like nurses to get knowledge from others around the nation. (Capati, 2022)

Digital platforms developed by Statistical Institutions and WHO create a beneficial environment for immigrants to know their possibilities, the rights, and to respect legal conditions in an emigration country. On the other hand, through migrant and diaspora people skills, and technologies are transferred from one to another country and it is crucial to transfer know-how in freeways and unlimited ways. This could be done by directly sharing skills, returning money home, generating investments in their home countries, and supporting institutions for industry research and development.

SDG 8 emphasizes the need for technical advancement for economic progress. The so-called "brain drain" of highly educated employees from low- and middle-income nations is the factor that contributes to the global concentration of R&D and technological skills in high-income countries, which is the subject of Goal 9. The unequal allocation of innovation between the global "North" and "South" is targeted by Goal 17, which focuses on global cooperation. (Gelb, S., Krishnan, A., 2018) It focuses on the necessity of counteracting the "brain drain" with "brain gain"—which means that returned emigrants are highly educated with professional skills—and "brain circulation"—the movement of knowledge, technologies, practices, and experiences to home governments by immigrants and diaspora people, in part through temporary returns. (Theoharides, C., Abarcar, P., 2021)

## **Conclusions**

The exodus of healthcare professionals from East European countries to developed countries is a global and significant problem. Romania lost more than 50% of health workers for EU countries who are interested in better working and living conditions for them as specialists and for their families as future education. Emigration is an opportunity for students from medical institutions, and the social programs proposed for them in immigrating countries, are the best choice for another life not just for Romanian students. National authorities are looking to increase this problem by applying regional and local reforms to retain health workers for the public health sector. Systematic efforts and national interest in the reform of the public health sector should activate a strong National Strategy for those countries where this problem affects the life of the nation and protect the patients who need to be served in their country. New investments in digital technologies can reduce the migration phenomenon according to the sustainable policy of WHO and increase the educational score of developed countries. The new globalization era can provide factors and opportunities to reduce stress conditions for health workers and increase the happiest relation between health workers and local or across patients.

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## THE REGIONALIZATION OF INTERDEPENDENCIES IN THE WORLD ECONOMY

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**Abstract:** The global economy operates within a intricate web of interconnectedness among its participants, necessitating continual adaptation—a crucial imperative in the modern era. Numerous factors contribute to or impede the harmonization of international economic relations, particularly concerning the development of production factors. Hyperglobalization stands out as a positive force, fostering unprecedented prosperity from 1990 to 2008. Conversely, global crises represent a starkly negative aspect, precipitating the economic downturn we currently face and stalling the expansion of global interdependencies in recent times. The dual challenges of the pandemic crisis and Russia's invasion of Ukraine loom large, threatening to setback global economic progress by several decades. Within this context, this article endeavors to identify strategies for addressing the complexities of interdependency within the global economic system, specifically by focusing on enhancing regional economic potential while still acknowledging the importance of the global dimension. This approach does not advocate for forsaking global interconnectedness; rather, it suggests fostering a more organized alignment of interdependencies and production forces at the regional level, promoting global values through integration and peaceful adaptation to change. Simultaneously, it advocates for the development of robust global systems, institutions, and norms. This paradigm shift would introduce a new regional dimension to economic development strategies worldwide. The article critically examines the transition from a global to a regional focus—a predominant trend in the current global economic landscape—and assesses its impact on aligning interdependencies and production forces. A pertinent question arises: Can the expansion of BRICS with six new members serve as an exemplar of this adjustment, or might it exacerbate global instability by heightening tensions between established entities like the OECD and the BRICS, or between the G7 and the E7?

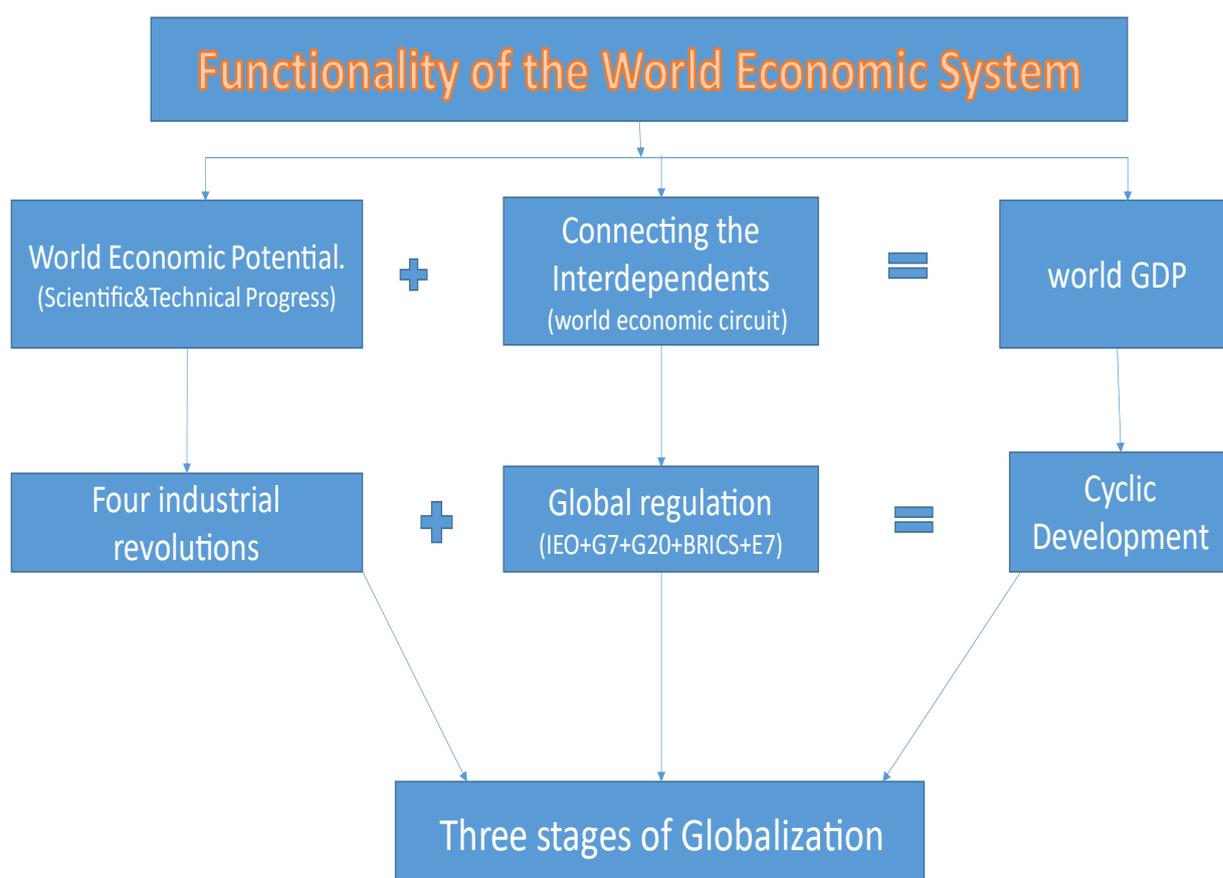
**Keywords:** global economic progress, harmonization of international economic relations, global interdependencies, BRICS, OECD

JEL Classification: F02, F15, F53, O19

### Introduction

The world we live in is a world of interdependencies, of increasingly close mutual ties between countries. No country, however rich it may be, can evade this legality, isolating itself from the rest of the world. Autarchic development is unthinkable in the contemporary world. Economic growth and development are the basis of all human progress, which, in turn, through four fundamental economic processes, Internationalization, Globalization, Transnationalization and Integration, ensures the functionality of the world economic system. There is a loop of development: factors of production - convergence of economic development models - economic growth. The history of mankind reflects, in general, the history of economic development and the improvement of production forces (capital) worldwide. And technical-scientific progress is the basis not only of the improvement of capital, but also the creation and development of the world's economic potential. Today we are in the fourth

industrial revolution, which has unimaginably changed the forces of production, starting from the use of water and steam power to today's artificial intelligence. But each stage of technical-scientific progress necessarily requires the connection of interdependencies, which express the essence of the world economic system, at the level of development of the world economic potential (see figure 1). And that adjustment can only be made by the people through the respective institutions. By the regulations provided by the statute of international economic organizations within the United Nations Organization, OECD, G7, G20, BRICS, E7, etc. It is not a continuous growing process. It is a cyclical one, also characteristic of the globalization process.



Source: developed by the author

### Applied research methods

To achieve the purpose of the research, the historical method was used, to examine the processes in their chronological sequence and development, and thus we identified the long-term and short-term trends, the comparative method analyzing the statistical data collected from various national and international sources. We applied the systemic approach, analysis and synthesis. Various threats of deglobalization to the world economic order are analyzed, which ensures the continuation of debates regarding the development of this field in the future. Official documents of the UN, the European Union, national and international statistical data, publications from specialized editions were used as informational support.

### Results and discussion

The process of globalization refers to the interconnection of economies around the world, facilitated by advances in technology, transportation, and communications. This interconnection led, in turn, to the international economic circuit and the fundamental economic processes underlying the functioning of the world economic system. The phenomenon of globalization, being a higher stage of internationalization, has been taking place for centuries, but only in the last century has it taken a truly global scale. We know three waves of globalization, which have had a significant impact on world economic growth, especially in developed countries, but also developing countries, especially in emerging economies. Each wave brought fundamental changes to the global economy, with varying effects on different types of countries. (see table 1). The transition from one stage of development to another is ensured by a level of productivity clearly higher than the previous stage, being the determining factor of economic growth, the creation of new jobs, ensuring prosperity in the world economy. Overall, the three waves of globalization have had a significant impact on world economic growth, and developed countries have been able to benefit from each wave.

The first wave of globalization created a strong foundation by proposing economic instruments to ensure economic growth around the globe. We refer, first of all, to the process of internationalization...

During the period 1870-1913, the global economy experienced significant growth, known as the "Belle Époque". This period was characterized by rapid growth in international trade, foreign investment and industrialization. The value of world exports increased tenfold from 1870 to 1913, at an average annual rate of 3.4 percent, substantially above the 2.1 annual increase in world GDP ([Maddison 2001, 262, table B –19 and 362, table F–4).

The causes were multiple and complex. Among the most important are the industrial revolution, which allowed for more efficient production and increased productivity, as well as the development of transportation and communications, which facilitated the process of internationalization. However, economic growth from 1870 to 1914 was not uniform in all regions of the world. For example, developed countries in Western Europe and North America experienced significantly higher economic growth than other regions of the world. This has led to an intensification of economic and social inequalities between rich and poor countries. Thus the main problem we are still talking about today, the growing gap and instability in the global economy, has its roots back in the period of the first wave of globalization.

Towards the end of the first wave of globalization there followed a period of recession due to increasing competition and falling export prices. Protection policies are back and rates have gone up. This trend was intensified by World War I and continued until after World War II. The rise of nationalism up to World War II manifested itself in mercantilism, bilateralism, and competitive exchange rate devaluations. There are several examples. In 1930, the Smoot-Hawley Act in the United States raised American tariffs to historic levels. The scope of the tariffs has also been expanded. Foreign countries have retaliated with additional protectionism. Global trade declined considerably, by about two-thirds by the mid-1930s.

The following period, the years 1950-1990, is known as one of the most prosperous in contemporary economic history, and the growth of the Gross Domestic Product (GDP) played a crucial role in this evolution, experiencing significant growth, at a rate alert and constant. First of all, it should be noted that this period was marked by a series of major changes, many countries began to rebuild and develop economically, which led to an increase in the demand for goods and services. In addition, globalization and trade liberalization have contributed to the growth of international trade

and the development of emerging economies. During the period 1951-1995, the volume of world trade increased, as a whole, at an average annual rate of 10%, compared with only 1% in the interwar period and 5%-6% in the period since the end of the 19th century.

During this period, the United States of America played an important role in stimulating global economic growth. The Marshall Plan, launched in 1948, provided financial and technical assistance for the reconstruction of Europe, and this support helped develop European economies and stimulate international trade. In addition, the US has invested heavily in research and development, which has led to innovation and increased productivity in a number of economic sectors.

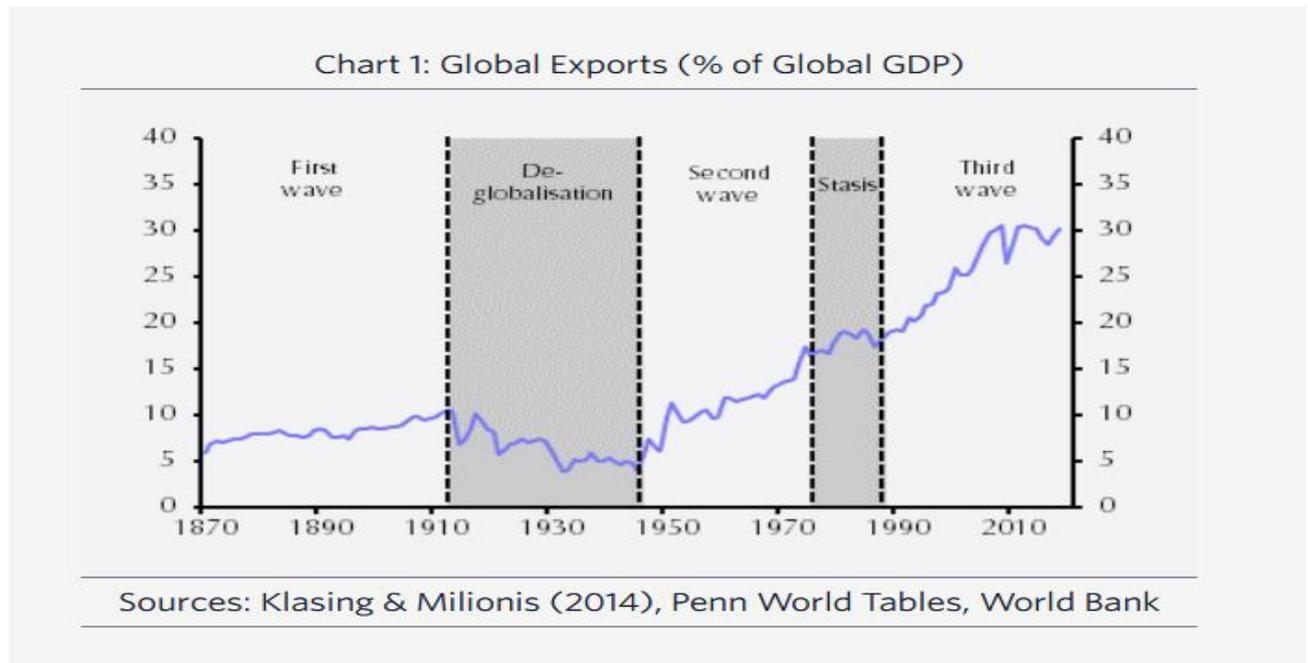
At the same time, Japan and other Asian countries began to develop rapidly, thanks to foreign investment and government policy favorable to economic development. The Japanese economy grew in the 1960s so rapidly that it had become the second largest economy in the world, and other Asian countries such as South Korea and Taiwan, but also West Germany followed suit. These countries are based on an export-oriented industrialization process, which helped them to increase the volume of production and exports, ensuring a significant economic growth. Other developing countries have struggled to keep up with the pace of change but have often fallen behind.

It should also be noted that this period was marked by a series of major technological innovations, which led to increased productivity and the development of new economic sectors. For example, the development of computers and information technology has led to a revolution in communication and information. In addition, the aerospace industry experienced rapid development during this period due to government investment in research and development.

In conclusion, world GDP growth during the 1950s to 1990s was the result of a complex set of factors, which included government investment in research and development, globalization and liberalization of international trade, major technological innovations, and the development of emerging economies.

The main characteristic of the second wave of globalization is the transition to the next stage of internationalization – transnationalization, which presents a complex process of homogenization (standards, principles, unique values...) of economic life, but also diversification of investments in other countries. CTN is characterized by the need to face the pressures of the host country and the global competitive demand at the same time, managing the business from a single center, supporting the research-development and marketing skills for each foreign market.

After the 1990s, the third wave of globalization begins, which highlighted (brought, identified) integration and emergence as beneficial processes for ensuring the growth of well-being worldwide (see table 1). The beneficiaries of this stage, along with the developed countries, are the emerging economy countries, while the other developing countries faced more challenges. The years 1990 – 2008 should be highlighted here. This period was one of the most prosperous in contemporary economic history and had a significant impact on long-term global economic development. At the same time, the crisis of 2008-2009 was a harbinger of the accumulated but unresolved problems in the world economy.



Source: <https://cursdegovernare.ro/analiza-istoria-nu-se-va-repeta-valuri-globalizare-deglobalizare.html>

The imbalances and instability in the world economy, being something inappropriate for sustainable development on the globe, is the biggest problem facing humanity at the contemporary stage. The latter, being a result of an unprecedented political attack on the economic, demand a new approach in terms of globalization as a process, but also in terms of ensuring the World Economic Order. In general, today we are at the stage of reconfiguring the set of interdependencies that constitute the essence of the world economic system. We are at the stage of the cardinal change of the set of values that are the basis of the development of society, because "Nothing has changed, but everything is different". This could serve as a starting point for a new global economic cycle, which is now taking new shape.

Table 1. Evolution of world real GDP in the years 1991 – 2024, %

	1991- 2000	2001- 2008	2011- 2021	2022 WB/IMF	2023 previziuni WB/IMF	2024 previziuni IMF
<b>World</b>	3,61	4,11	3,0	3,0(3,5)	2,8 (3,0)	3,0
<b>OECD</b>	2,78	2,44	1,66	1,7(2,4)	1,9(1,1)	1,6
<b>USA</b>	3,45	2,51	2,21	2,3(2,1)	2,5(1,8)	1,0
<b>CHN</b>	10,13	10,7	7,63	3,2(3,0)	5,6(5,2)	4,5

Source: author's calculation in the base WB and IMF data

In this context, as something abnormal (pathological) we mention the existence of wars between the countries of the world, both commercial ones (USA - China), and military interventions, which ultimately disrupt the results and efforts of mankind to ensure an increase in well-being at global level . In particular, we mention Russia's intervention in Ukraine, which had and continues to have a significant impact on the global economic system, the international economic order. One of the main ways the Russia-Ukraine war has affected the global economy is through the impact it has

had on the price of oil. Russia is one of the largest oil producers in the world, and the sanctions imposed on the country have caused oil prices to fall. This has been both a blessing and a curse for the global economy. On the one hand, low oil prices have led to increased demand for oil and other energy sources, which has helped boost economic growth in some countries. On the other hand, low oil prices also led to lower incomes for many other oil-producing countries, which had a negative impact on their economies.

So the conflict has led to volatile oil prices, shrinking trade between Russia and other countries, declining foreign direct investment, increasing uncertainty in financial markets, and increasing tensions between Russia and many Western countries. While it is difficult to predict exactly how these factors will evolve in the long term, it is clear that the conflict will continue to have a significant impact on the global economy for years to come. As such, it is important that policymakers around the world work together to find solutions that help mitigate these negative effects and promote sustainable economic growth.

Another way the Russia-Ukraine war has affected the global economy is through its impact on international trade. Sanctions imposed on Russia have made it difficult for companies from other countries to do business with Russian companies. This had a negative impact on trade between Russia and other countries, which in turn had a negative impact on the global economy. In addition, the conflict has caused many companies to rethink their investments in Russia, leading to a decline in foreign direct investment. In general, many trade routes established for many years have been compromised.

The Russia-Ukraine war also had an impact on the global financial system. The sanctions imposed on Russia have made it difficult for Russian companies to access international financial markets. This had a negative impact on the Russian economy, as many companies had to rely on domestic sources of financing. In addition, the conflict has led to increased uncertainty in financial markets, which has had a negative impact on global economic growth.

Finally, the Russia-Ukraine war along with the world crises had an impact on the political landscape of Europe and beyond. The conflict has led to increased tensions between Russia and many Western countries, making it difficult for these countries to work together on issues related to economic growth. In addition, the conflict led to the rise of nationalism in many countries, which made it difficult to achieve international cooperation on economic issues. These trends at the contemporary stage have occurred before in world history. The deglobalization process also took place in the interwar period, the stage of recession 1913-1950, which was characterized by exactly the same phenomena, the growth of nationalism, protectionism, volatility of exchange rates, etc. The specificity of the current Deglobalization is the fact that it follows a stage of Hyperglobalization, which took place in the post-war period.

Today China is using Russia to buffer the current world economic order based on the hegemony of the US and Western states. Several things confirm this thesis. The role of the G7 in the world economy is decreasing and that of the E7 emerging economy countries is increasing. (see figure 2). BRICS plans to expand its membership by six more countries. And the G20, at the last summit of which China found a plausible excuse not to be presented by the first person, expanded its composition with one more member – the African Union. Thus, the presence of the third world in this forum was considerably strengthened. All the mentioned express a clear tendency in the world economy to diminish the hegemony of the Western states. Humanity is moving towards a new global security architecture where the Global South wants a much more important role in terms of economic,

social, but also political and military decision-making. In principle, this paradigm shift would not be so bad if it were not contrasted with another change promoted by Russia. The latter, trying to justify its invasion of Ukraine and covering itself with the need to "liquidate" US hegemony in the world economy, promotes the idea of consolidating the global South in personal interests...

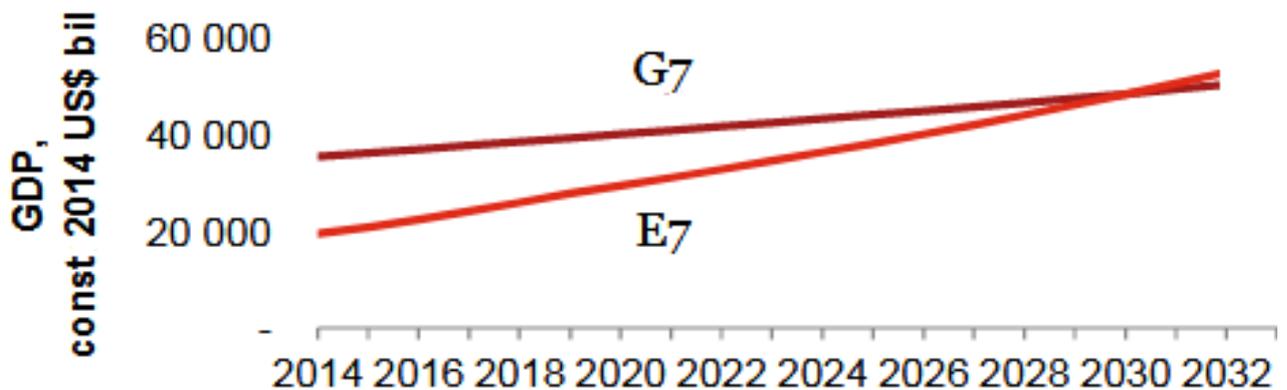


Figure 2. Global GDP evolution (forecasts)

Here, however, total manipulation takes place when, based on an idea that could be viable, he joins the forces of world autocracy against democracy. Russia is trying to convince autocratic, even totalitarian countries to form a common front against democracy. Examples would be Russia's unprecedented rapprochement with North Korea, China with Venezuela, Iran's involvement in the Russia-Ukraine conflict, etc. The formation of a common bloc of the mentioned countries with other totalitarian regimes in Africa and Asia is already a reality.

In this context, the global security architecture changes radically, focusing on the liberal-illiberal axis, democracy-autocracy. All these are a major obstacle to the process of globalization and international economic integration. Thus the political turns into a serious brake in the way of the economic. The fragmentation of the world economy, the deglobalization we are witnessing, can set world economic growth back several decades.

Important characteristics of the current stage of globalization are the fact that about 15 years have passed since the start of the biggest economic crisis in post-war history (the crisis of 2008-2009) from which, unfortunately, we did not manage to get out, but we entered - an increasingly unsafe and violent digital world, a world that is going through unprecedented political, social, economic and moral transformations in the post-war period. command of major actors with major and extremely active interests, directed against the landmarks of democratic vision. Finally, we are at the stage of fragmentation of the world economic circuit, regionalization of trade flows and most importantly we are at the stage of creating a new global security architecture.

## Conclusion

The present trend of deglobalization signifies a gradual reduction in interdependence and global integration. It entails the fragmentation of longstanding relations that have been meticulously crafted over decades, weathering numerous crises, conflicts, and shifts in development paradigms. This phenomenon underscores the emergence of regionalization within the global economic framework, reminiscent of the political blocs and confrontations of the Cold War era. It underscores

a critical mass of imbalances, instabilities, and volatilities within society, signaling the inadequacy of the existing Economic Order and prevailing value systems.

We stand at the threshold of a new cycle of modernity, marked by a profound shift in values and the overarching supercycle. The current phase of deglobalization serves as evidence of this transition. However, it is important to view deglobalization as a transient phase, a pathway leading to a state of REGLOBALIZATION. This assertion finds validation in the historical trajectory of human development.

The ongoing crisis represents a significant departure from the fundamental principle of aligning relations between the entities of the global economic system—reflecting the intricate web of interdependencies—with the advancements in production forces driven by technological and scientific progress. Despite the current state of deglobalization, there is a steadfast belief that it is a temporary phase, paving the way for a resurgence of global integration, albeit under a new paradigm.

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## CONCEPT OF “TIME”: CROSS-CULTURAL APPROACH

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“Time is the scarcest resource and unless it is managed nothing else can be managed”

Peter F. Drucker

**Abstract:** The present paper aims to describe the importance of time notion in today’s globalized world. Understanding over the time orientation and also time perception within of a specific culture is critical to the successful handling of social, diplomatic and business situations. Misunderstandings of chronemics (science about the time, its perception and attitude) can lead to a failure to understand intentions, especially in social business communication. Knowing the temporal profile of the representative of a specific culture will help to solve time-related issues and avoid problems. Time orientation: past, present and future and time perception: sequential/monochronic versus synchronic polychronic are dimensions that influence the specific behavior describing the cultural temporal profile that can predict the inclination of a specific society that focuses on how people structure time, ranging from single task to multitask approach. In order to describe the elements of the temporal profile we used different cultural models: Hofstede, Trompenaars, Hall, *Zimbardo*.

**Keywords:** time, temporal profile, time perception, time orientation, monochronic time, polychronic time, short-time orientation, long-time orientation, culture, cross-cultural approach.

JEL Classification: Z13

### Introduction

All major successes in personal life, but also in professional or business take time. Time is a limited resource and everyone needs to know how to manage it effectively. From the lowest to the highest position within the company, managing everyone personal time influences the quality of life. In professional and private life, achieving desired and planned goals is the priority of every individual, while time spent on the way to goals is the most valuable resource each of us has. It's not just about managing time in business, it's also about managing your own life.

Beliefs concerning the time are profoundly different from culture to culture. Cultural differences about the time can be as many as those between languages. Edward Hall described cultural rules of social time as the “silent language” (Hall, 1983). These informal patterns of time “are seldom, if ever, made explicit. They exist in the air around us. They are either familiar and comfortable or unfamiliar and wrong.”

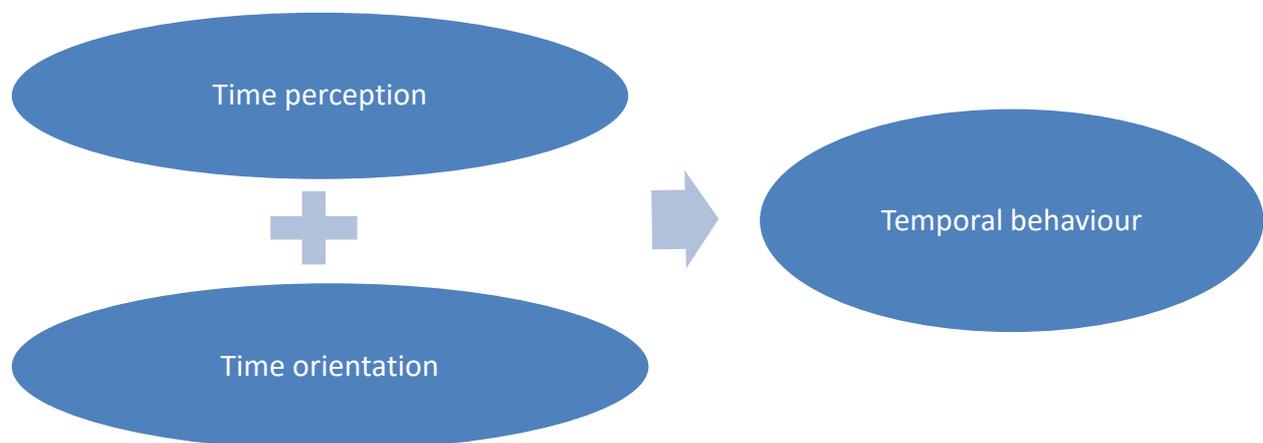
Chronemics, briefly and generally, is the field of study about the use of time, and the way that time is perceived and valued by individuals and cultures. These time perceptions include things like punctuality, willingness to wait, approaches to face-to-face interactions, and reactions to time pressure.

More specifically, “chronemics involves the study of both subjective and objective human tempos as they influence and are interdependent with human behavior. Further, chronemics involves the study of human communication as it relates to interdependent and integrated levels of time-experiencing” (Samovar *et al*, 2011).

According to Ashley Fulmer and Brandon Crosby, "as intercultural interactions increasingly become the norm rather than the exception, the ability of individuals, groups, and organizations to manage time effectively in cross-cultural settings is critical to the success of these interactions" (Fulmer *et al*, 2014).

### TEMPORAL PROFILE AND ITS ELEMENTS

There are critically cultural differences about how people perceive, measure and use their time. The cultural temporal profile describes some major dimensions of time that are “most prone to cultural variation”. Levine, R. V. (2023).



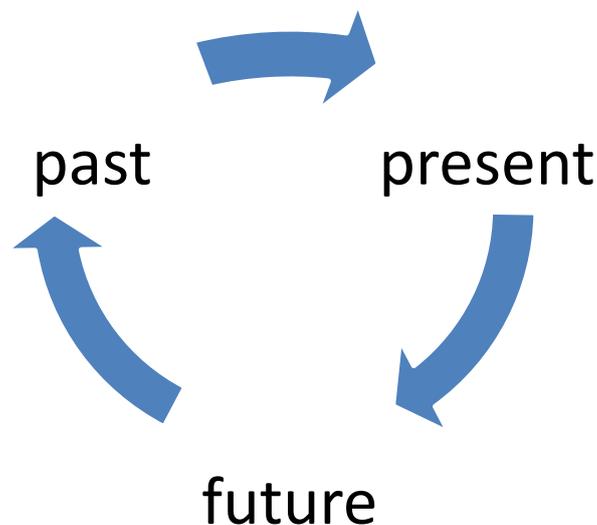
**Figure 1 Key elements of the Temporal Profile**

Source: author own study

#### Time Perception

The dimensions that describe the perception of time in different cultures focuses on how people in various countries structure time, ranging from a sequential (Trompenaars and Hampden-Turner, 2020) or monochronic (Hall, 1983) having single task approach to a synchronic (Trompenaars and Hampden-Turner, 2020) or polychronic (Hall, 1983) exercising multi-tasking approach. In business, how people prioritize time, its importance in planning, strategize and co-ordinate business activities with colleagues, partners, subordinates or managers.

Polychronicity or synchronous perception of time is a term that describes people who prefer to work on multiple activities at the same time, whether it be cooking while watching TV, texting while driving, etc.



**Figure 2 Polychronic/Synchronous perception of time**

Source: author own study based on Trompenaars, Hampden-Turner (2020)

In the perception of a polychronic person the time, at least to some extent, as a circle (fig. 2), a spiral line or a number of intersecting curves, representing past, present and future rather than as linear ones, and they respond to non-standard order of arranging tasks represented by multi-tasking.

Monochronicity or sequential perception of time, on the other hand, describes cultures with a much more linear (fig.3), clock- and schedule-focused approach to time. People who structure time and the activities sequentially view time as a series of passing events. They tend to do one thing at a time, tasks are preferred to be planned at each stage and keep to plans once they have been made. Time commitments are important and staying on schedule is a must.



**Figure 3 Monochronic/Sequential perception of time**

Source: Source: author own study based on Trompenaars, Hampden-Turner (2020)

Time is a consumable commodity, which is why expressions such as “wasting time” or “saving time” exist. This is true in business as well as in daily life.

**Table 1 Polychronic/Synchronous vs Monochronic/Sequential perception of time**

<b>Polychronic/Synchronous perception of time</b>	<b>Monochronic/Sequential perception of time</b>
• past, present, and future are seen as interwoven periods	• events happen in order
• people often work on several projects at once	• high value on punctuality, planning (sticking to plans)
• plans and commitments are viewed as flexible	• Respect and stay on schedule
• interruptions are acceptable and managed easily	• "Time is money" principle
• aim to build long-term relationships	• concentrate on the task at hand
• build life-long relationships	• build short-term relationships
• relations focused	• job and plan focused

Source: author own study based on Trompenaars and Hampden-Turner (2020), Hall (1983)

As mentioned before, synchronically oriented people view past, present, and future as being interrelated. They usually have a multi-tasking approach and do several things at once. For them, time is flexible and intangible. They are not concerned about punctuality. Time commitments are desirable rather than absolute, plans are easily changed as the value is placed on the satisfactory relation with others (table 1).

We cannot say that deadline-oriented cultures aren't concerned about doing a job well or nurturing relationships, but getting the job done on time is the primary driver of being “the first to the market”. It can often impact negatively relationships. Time often literally means money, in terms of costs, profit margins, and fighting the competitors for market share.

The differing cultural approaches to time often lead to conflicts between cultures because our values are at stake. In polychronic cultures, it's usually not a big deal if you interrupt someone who is busy, or turn up late to a meeting. In monochronic cultures, both would be seen as disrespectful and poor behavior.

In polychronic cultures it's usually important not to skip straight to business without first establishing relationships. In a monochronic work context, great value may be placed upon adherence to deadlines, such as finishing a meeting on time. In a polychronic culture, this may be seen as less critical and interpersonal interaction is valued above schedules and deadlines.

But the modern world isn't divided into either extreme (Pirlog, 2021). Cultures tend to exist along a spectrum (fig. 1, 2). When it comes to their attitude to time, for example, in Japan while it's considered important to stick to schedules (a monochronic characteristic), the culture also values relationships and prefers to discuss matters in depth (these are both polychronic traits).

**Time orientation**

Modern societies have to maintain some links with their own past while dealing with the challenges of the present and the future. They prioritize these existential goals differently.

Societies that have low score on this dimension, prefer to maintain time honoured traditions and norms while viewing societal change with suspicion.

The cultures, which demonstrate high scores, on the other hand, have a more pragmatic approach: they encourage preference and efforts in modern education as a method to prepare for the future.

Geert Hofstede developed the concepts of short-term and long-term time orientation.

The dimension of long-term orientation and short-term orientation deals with

the different ways cultures view time and the importance of the past, present and the future (table 2).

Long-term orientation is when people are focused on the future. "Long Term Orientation stands for the fostering of virtues oriented towards future rewards, in particular, perseverance and thrift. Its opposite pole Short Term Orientation, stands for the fostering of virtues related to the past and present, in particular, respect for tradition, preservation of 'face,' and fulfilling social obligations" (Hofstede *et al*, 2010).

Short-term orientation is when a person is focused on the present or past and considers them more important than the future.

In the business context, the dimension analyzed by Hofstede is referred to as “short-term/normative versus long-term/pragmatic”.

**Table 2. Characteristics of Long and Short Oriented Cultures**

<b>Long-time oriented cultures</b>	<b>Short-term oriented cultures</b>
• prefer thrift, effort to obligations	• have strong convictions and emphasize rights and values
• ask more “What” and/or “How”	• ask more “Why”
• have inclination to compromise	• are less willing to compromise, as it may be seen as a sign of weakness
• tend toward modesty	• tend to over appreciate themselves and their skills/abilities
• emphasis on persistence	• emphasis on quick results
• personal adaptability is important	• personal steadfastness and stability important
• relationships are managed by status	• status is not a major issue in relationships
• leisure time is not very important	• leisure time is important
• good or evil depends on the circumstances	• belief in absolutes concerning good or evil

**Source:** Author own work based on Hofstede *et al*. (2010)

Cultures demonstrating short-term orientation will be more concerned about the past and present and will concentrate their efforts and beliefs on matters related to the short-term. People value tradition,

the current social hierarchy and fulfilling the social obligations, they care more about immediate gratification than long-term fulfillment.

Cultures demonstrating a long-term time orientation are more concerned about the future and focus their efforts on future-orientated projects and goals, they are ready to delay short-term material or social success or even emotional gratification in order to prepare for the future. If they have this cultural perspective, they value persistence, saving and being able to adapt, perseverance.

Trompenaars theory on time dimension, also reflects the relative importance given to past, present and future.

In case a culture is predominantly oriented towards the past, the future is often seen as a repetition of past experiences. In a culture predominantly oriented towards the present, day-by-day experiences tend to direct people's lives. In a future-oriented culture, most human activities are directed toward future prospects. In this case, the past is not considered to be vitally significant to the future.

In business, this may manifest:

- for past oriented cultures as emphasis on projects successfully completed as evidence of capability;
- for present societies as a "come and see what we are doing now" approach;
- for future oriented cultures through emphasis on research and innovation.

According to Zimbardo and Boyd (2008), people look differently at time based on cultural and individual values:

- ✓ Past-oriented (negative or positive): people remember all the good old times, successes, happy birthdays while other people focus only on regrets, failure and all the things that went wrong.
- ✓ Present-focused (hedonists and fatalists) the hedonists live for pleasure and avoid pain. The fatalists are present oriented because they say, "It doesn't pay to plan" My life is fated by my religion – fated by my poverty – fated by the conditions that I'm living under."
- ✓ Focused on the future depending on religion life begins after the death of the mortal body.
- ✓ Sense of duration: Time duration is totally a function of whether you're bored, in pain, excited or not.
- ✓ Pace of life: for some people time is money and think it has to be spent wisely and are multi-tasking oriented, while for others, time is unlimited and they focus more on people and building relationships than being on time for any appointment

## **Conclusions**

- Nowadays, increasing workloads, new information constantly being received, overlapped obligations of the globalized routine lead to stress that can endanger physical and mental health. For this reason, one of the secrets of success is knowledge of temporal profile of people to interact and its efficient and rational use.
- Attitudes towards time (punctuality, responsibility to obligations, compromise) is culturally determined and understanding the values and assumptions of a culture places on the temporal profile the role to facilitate policies that enhance the quality of peoples' lives.
- It's helpful to have a level of self-awareness when dealing with a culture from the opposing end of the spectrum described in the paper. Recognizing approach should help to communicate more effectively and understand that your values are not necessarily shared by your partners. It's important to find a way to work together in cross-cultural situations and negotiate towards a mutually-agreed approach.
- When these differing priorities (task/time versus relationship) are unclear or not taken into account (ex. monochronists may view polychronists as undisciplined, lazy, irresponsible and

untrustworthy, while polychronists may consider monochronists to be obsessed with rules and formalities, and emotionally cold), the result is misunderstandings among individuals from different cultures that can lead to frustration, loss of trust between teams, missed targets and goals, and even financial penalties.

- Time management techniques and tools (planning, negotiations, meeting deadlines) depend on the temporal profile of people. Recognizing whether you are dealing with a polychronic or monochronic culture with a specific temporal orientation (present, past, future) and understanding the differences in how time and relationships are valued is crucial to being able to deal effectively across cultures.

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## DOMESTIC AND EU POLICIES FOR THE DEVELOPMENT OF THE ECOSYSTEM OF CREATIVE EDUCATION IN THE REPUBLIC OF MOLDOVA

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**Abstract.** The paper explores the domestic and EU policies aimed at fostering the ecosystem of creative education in the Republic of Moldova. Creative education plays a vital role in preparing students for the challenges of the 21st century, fostering innovation, and promoting cultural and artistic expression. Creative education is a fundamental driver of innovation, cultural preservation, and economic growth, serving as a bridge between artistic expression and practical application. In the Republic of Moldova, a nation with a rich cultural heritage and a growing creative industry, the development of a vibrant ecosystem for creative education is not just an aspiration but a strategic imperative. This paper delves into the intricate interplay between domestic and EU policies, exploring their roles in shaping and advancing creative education within Moldova's educational landscape. Also it aims to go deeper into the current state of creative education in Moldova, reviews EU initiatives and funding opportunities, and recommends strategies for enhancing the creative education ecosystem.

**Keywords:** human creativity, creativity resource, educational systems, creative industries, Republic of Moldova

JEL Classification: I20, I25, I31, J24

### Introduction

Creative education is integral to the holistic development of individuals and societies. It encompasses a broad spectrum of disciplines, including visual arts, performing arts, literature, and design, and cultivates skills such as critical thinking, problem-solving, and innovative thinking. In the Republic of Moldova, as in many other countries, nurturing a thriving ecosystem for creative education is essential for the nation's social and economic advancement.

Creative education serves as a cornerstone of human development, providing individuals with the tools to express themselves, think critically, and innovate. It encompasses a diverse array of disciplines, from the visual and performing arts to literature, design, and beyond. These disciplines not only enrich culture and artistic expression but also play a vital role in nurturing a dynamic, forward-thinking society. In the Republic of Moldova, as in many nations around the world, fostering

a vibrant ecosystem for creative education is imperative for the nation's social, cultural, and economic advancement.

Republic of Moldova, a country rich in history and culture, stands at a pivotal juncture in its quest to nurture the creative capacities of its citizens. In an era marked by rapid technological advancement and the global flow of ideas, the need for creativity and innovation is more pronounced than ever. Creative education is the key to preparing the next generation of Moldovans for the multifaceted challenges and opportunities of the 21st century. As the world undergoes a dynamic transformation, propelled by technological advancements and evolving cultural dynamics, Moldova's creative education ecosystem stands as an example of adaptability and innovation.

In this context, this paper addresses the limited access to qualitative creative education, issues related to infrastructure, the shortage of skilled educators, and the need for greater synergy between creative industries and educational institutions. However, it is also essential to acknowledge the growing interest in creative disciplines among Moldovan students, the existence of a small yet vibrant creative community, and the nation's rich cultural heritage, all of which can serve as a fertile ground for the development of creative education.

Furthermore, this paper explores the initiatives and funding opportunities offered by the EU, which can serve as a catalyst for the enhancement of creative education in Moldova. These include programs like Erasmus+, Creative Europe, Horizon Europe, and the Eastern Partnership experience sharing opportunities, each of which provides avenues for cooperation, exchange, and investment in creative education and cultural initiatives.

The development of a robust ecosystem for creative education in the Republic of Moldova is not merely a cultural endeavour but a strategic imperative for the nation's future. Through the exploration of the current state, EU support, and recommended strategies, we aim to provide a comprehensive framework for the advancement of creative education in Moldova, thereby nurturing the talents and creativity of its people while positioning the nation more firmly on the European and global stage.

The paper comprises Introduction, Research Methodology, Main Findings, Conclusion, Bibliography.

### **Research methodology**

Given the complex nature of our topic, we capitalized on a series of research methods. To review existing policies, their implementation, and their outcomes we relied on an exploratory and descriptive research design. In terms of data collection, we used the documentary analysis of the policy acts, reports, legislation, and educational materials related to creative education policies in the Republic of Moldova and the EU. As for data analysis we mainly drew on content analysis to identify key themes, trends, and changes over time.

Likewise, the authors relied on comparative analysis to compare the creative education policies in R. Moldova with those of other European countries and EU policies to identify similarities, differences, and potential areas for alignment or improvement. In terms of policy evaluation, the impact and effectiveness of creative education policies in Moldova was analysed by considering indicators such as student performance, access to creative programs, and outcomes in the creative industries. The practical implications of the research were revealed by discussing how the research findings can

inform policy recommendations and practical interventions to improve the creative education ecosystem in the Republic of Moldova.

## **Main findings**

### **Current state of the creative education in the Republic of Moldova, challenges and gaps**

Creative education in the Republic of Moldova faces a myriad of challenges and gaps that need to be addressed to unlock its full potential. These challenges not only impact the quality of education but also hinder the nation's ability to harness the creativity of its citizens effectively.

**Limited Access to Quality Creative Education.** One of the primary challenges facing creative education in Moldova is the limited access to quality programs. While there may be creative educational institutions in urban areas, access in rural regions is often inadequate. Approximately 75% of creative educational institutions in Moldova are concentrated in the capital city [1], Chisinau, leaving rural areas with limited access. This geographic disparity restricts opportunities for many Moldovan students to fully explore their creative potential.

**Underinvestment in Infrastructure and Resources.** Many creative education institutions in Moldova suffer from inadequate funding and underinvestment. This results in outdated facilities, limited access to modern equipment, and a scarcity of learning resources, ultimately hampering the development of students' creative skills and talents. On an average, schools based on creativity programs receive approximately 30-40% less funding than traditional educational institutions.[2]

**Shortage of Skilled Educators.** Another challenge is the shortage of skilled and qualified educators in the field of creative education. Moldova faces difficulty in retaining and attracting professionals who can inspire and guide students in various creative disciplines. The shortage of such educators not only affects the quality of education but also inhibits innovation within the field.

**Lack of Synergy between Creative Industries and Education.** Creative industries play a vital role in the economic and cultural development of Moldova. However, there is often a lack of synergy between these industries and educational institutions. This disconnect hinders students from gaining real-world exposure and experience in creative fields, limiting their ability to transition smoothly into the job market upon graduation.

**Limited Funding and Scholarships.** Moldova dedicates only 6% of its total educational budget to creative disciplines [2]. Creative education often requires specialized materials, equipment, and facilities that can be costly. Moldovan students who aspire to pursue creative careers may face financial barriers due to the lack of scholarships and financial aid dedicated to creative disciplines. This narrows the pool of talent that can access creative education.

**Curriculum Alignment.** The curriculum in creative education must be dynamic and aligned with contemporary practices and international standards. The lack of regular updates and alignment with global trends can result in an outdated education system that fails to prepare students for the challenges and opportunities in modern creative industries.

Addressing these challenges requires a concerted effort from both domestic policymakers and international partners, such as the European Union, to ensure that creative education contributes to

Moldova's socio-cultural and economic development. To cultivate a thriving creative education ecosystem in Moldova, a multi-faceted approach is needed that involves both domestic policy reform and collaboration with international partners, such as the European Union, to bring about positive change and transformation in creative education.

**International best practices as to the creative education policies**

Creative education policies form the cornerstone of fostering innovation, artistic expression, and cultural enrichment in educational systems around the world. While the specific implementation of these policies may vary from one country to another, there exists a common thread of best practices that have proven effective in nurturing creativity and artistic talent among students. These international best practices not only equip individuals with essential skills but also contribute to the vitality of the cultural and creative industries, shaping dynamic societies.

Creative education encompasses a broad spectrum of disciplines, including visual arts, music, drama, creative writing, and design. Its impact extends far beyond the realm of artistic expression, influencing cognitive development, critical thinking, problem-solving, and cultural understanding. As education systems evolve to meet the demands of the 21st century, the integration of creative education policies becomes an imperative.

By studying the international best practices, we gained valuable insights into how to structure effective policies, address challenges, and align creative education with broader educational objectives. Through this exploration, we aim to provide a comprehensive understanding of the core elements that underpin successful creative education policies and offer a global perspective on the role of creative education in shaping innovative and culturally enriched societies.

One of the most popular campaign worldwide is about supporting the concept of Creativity in STEM education [3], later developed in STEAM [4]. Best practices often involve recognizing the synergy between creativity and STEAM (science, technology, engineering, arts and mathematics) education. Creative education policies can encourage the integration of art and design principles into STEAM fields, fostering innovation and problem-solving skills.

The following table provides a snapshot of international best practices in creative education policies. It outlines the key initiatives and policies implemented in various countries and summarizes the outcomes and impacts of these policies on students, the creative industries, and cultural development.

**Figure 1. Selected best practices of countries in the creative education policies**

<b>Country</b>	<b>Key Initiatives and Policies</b>	<b>Outcomes and Impact</b>
<b>United Kingdom</b>	<ul style="list-style-type: none"> <li>- The Creative Industries Federation</li> <li>- The "Creative Learning in Schools" program</li> </ul>	<ul style="list-style-type: none"> <li>- Increased participation in creative subjects</li> <li>- Enhanced creativity and critical thinking among students</li> <li>- Positive impact on the creative industries</li> </ul>
<b>Finland</b>	<ul style="list-style-type: none"> <li>- National Core Curriculum for Basic Education</li> <li>- Arts Equal Research Initiative</li> </ul>	<ul style="list-style-type: none"> <li>- High-quality arts education integrated into the curriculum</li> <li>- Improved student engagement and creativity</li> <li>- Fostering cultural diversity</li> </ul>

<b>Country</b>	<b>Key Initiatives and Policies</b>	<b>Outcomes and Impact</b>
<b>Singapore</b>	- National Arts Education Program - Arts Education Masterplan	- Improved arts education quality and accessibility - Nurturing artistic talent - Boosting creative economy
<b>South Korea</b>	- Arts Education Promotion Act - Arts Education Support Centre	- Enhanced arts education in schools - Higher participation in cultural activities - Contribution to cultural identity and economic growth
<b>Australia</b>	- Australian Curriculum: The Arts - Creative Young Stars Program	- Comprehensive arts education curriculum - Encouragement of student participation in the arts - Recognition of artistic achievements

**Source:** elaborated by authors based on the data on the national core curricula of each country [5]; [6]; [7]; [8]; [9]

### **Achievements in the field of creative education in the Republic of Moldova**

In 2022, four universities from the Republic of Moldova undertook the mission of training specialists for the era of technologies and creativity: the Technical University of Moldova, the State University of Moldova, the State Pedagogical University “Ion Creangă” and the Academy of Music, Theatre and Fine Arts developed new study programs in prospective fields, called the Professions of the Future – Animation, Game Design and Multimedia Production or Engineering and Digital Fashion. The initiative was supported and implemented by the Future Technologies Project, funded by USAID, Sweden and the UK. Studying programs that are part of the creative industries, which currently register the fastest growth in the entertainment sectors, gives young people an additional reason to pursue an education at home, in the Republic of Moldova. The inclusion of these study programs in the professional training within higher education has been a proof of the connection of education to the current and future demands in the labour market.

As we can see in the table below, creative education in the Republic of Moldova still faces significant challenges, but there are also some notable achievements that reflect the national potential in fostering creative talent and innovation.

**Figure 2. Overview of domestic creative education policies in the Republic of Moldova**

<b>Policy Area</b>	<b>Key Policies and Initiatives</b>	<b>Implementation Status</b>	<b>Challenges and Gaps</b>	<b>Impact on Creative Education Ecosystem</b>
<b>Curriculum</b>	- Inclusion of creative subjects in the national curriculum - Arts education guidelines - Professional development for	- Partial implementation, some subjects fully integrated - Limited teacher training	- Incomplete curriculum integration - Need for continuous teacher training	- Enhanced creative education offerings - Improved access to arts and culture - Partial impact on student

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<b>Policy Area</b>	<b>Key Policies and Initiatives</b>	<b>Implementation Status</b>	<b>Challenges and Gaps</b>	<b>Impact on Creative Education Ecosystem</b>
	creative education teachers	- Lack of updated curriculum materials	- Limited student access to creative subjects	engagement and creativity
<b>Teacher Training</b>	- Teacher training programs for creative education - Promotion of professional development	- Limited availability of teacher training programs - Varied quality of creative education training	- Insufficient number of qualified creative education teachers - Need for standardized teacher training programs	- Enhanced skills among creative education teachers - Greater expertise in creative teaching methods
<b>Cultural Exchange</b>	- Cultural exchange programs with international partners - Promotion of Moldovan culture - Support for cultural events and festivals	- Ongoing cultural exchange initiatives - International collaborations in arts and culture - Support for local events and festivals	- Need for expanded cultural exchange programs - Better recognition of Moldovan culture on the international stage	- Increased cultural exchange opportunities - Enhanced global recognition of Moldovan cultural identity
<b>Funding</b>	- Allocation of funds for creative education projects - Grants for arts and culture initiatives - Support for creative education institutions	- Uneven distribution of funds - Limited financial support for smaller institutions - Administrative challenges in fund allocation	- Insufficient funding for creative education infrastructure - Need for improved transparency in fund allocation	- Improved resources for creative education institutions - Enhanced quality of creative education offerings
<b>Research and Evaluation</b>	- Research on creative education effectiveness - Evaluation of creative education policies - Data collection on student outcomes	- Limited systematic evaluation - Challenges in data collection and analysis - Lack of comprehensive research studies	- Need for standardized evaluation metrics - Enhanced data collection and analysis capabilities - Promoting a culture of research in creative education	- Incomplete understanding of policy impact - Limited data on student outcomes - Potential for data-informed policy improvements

**Source:** elaborated by authors based on data from the Education Code of Republic of Moldova [10]

**Growing Interest in Creative Disciplines.** In recent years, there has been a noticeable surge in the interest among Moldovan students in creative disciplines. This growing interest suggests a hunger for artistic expression and a desire to pursue creative careers.

**A Small but Vibrant Creative Community.** Moldova boasts a small yet vibrant creative community that actively contributes to the cultural and artistic landscape of the nation. This community includes accomplished artists, writers, musicians, and designers who have received recognition both within Moldova and internationally. Their success stories serve as sources of inspiration for aspiring creatives.

**A Rich Cultural Heritage.** Moldova is renowned for its rich cultural heritage, which encompasses a diverse range of artistic expressions, including music, dance, literature, and visual arts. The nation's cultural heritage serves as a wellspring of inspiration and creativity for its youth. Traditional Moldovan festivals, craft traditions, and folkloric art forms are celebrated and preserved, providing a unique platform for creative exploration and cultural expression.

**International Recognition.** Several Moldovan artists and creative professionals have gained international recognition and acclaim, demonstrating that Moldova possesses creative talent of global significance. Their achievements in fields such as filmmaking, music, and literature not only bring honour to the country but also serve as examples of the potential for Moldovan creatives on the international stage. Moldova has a cultural richness that can be developed and recognized further on the international stage.

These successes provide a strong foundation upon which Moldova can build and expand its creative education ecosystem. The growing interest in creative disciplines, the presence of a vibrant creative community, the rich cultural heritage, and international recognition offer promising indicators that, with the right support and policy interventions, Moldova can further harness its creative potential and contribute to the nation's cultural and economic development. Recognizing and capitalizing on these successes is key to advancing creative education in the Republic of Moldova.

#### **4. Paths to develop the creative education ecosystem**

Developing a robust and sustainable creative education ecosystem in the Republic of Moldova requires a comprehensive approach. The following paths could be used to address the challenges and capitalize on the potential of creative education in our country.

##### **4.1. Strengthen educational infrastructure**

A critical component of advancing creative education in the Republic of Moldova is the strengthening of educational infrastructure. This involves investments in physical facilities, learning resources, and the expansion of creative programs. A well-developed infrastructure not only enhances the quality of education but also ensures that students have access to the necessary tools and environments for creative expression and learning.

In terms of modern facilities and equipment, it is necessary to upgrade existing facilities, renovate and upgrade existing educational institutions dedicated to creative education, ensuring they have state-of-the-art facilities, including art studios, music rooms, performance spaces, and technology labs. With regard to equipped workspaces, specialized equipment and resources should be provided

to support creative disciplines, such as musical instruments, art supplies, recording studios, and digital design tools.

In respect of accessibility across regions, the regional disparities should be addressed in access to creative education by establishing new creative programs and institutions in underserved areas of the country. Additionally, mobile creative units could be implemented that can travel to rural areas, providing students with workshops, training, and access to creative experiences.

Developing Creative Hubs are about establishing collaborative spaces that would serve as hubs for creative education and innovation. These hubs can bring together students, educators, and professionals from various creative disciplines, fostering a sense of community and cross-disciplinary interaction. It is also important to offer networking opportunities within these hubs where students can collaborate, share ideas, and access resources beyond the traditional classroom setting.

In terms of investment in information technology, investments in digital learning resources, platforms, and online libraries must be accomplished that can enhance creative education by providing access to a vast repository of artistic and creative content. Developing virtual learning environments would enable remote and blended learning, ensuring continuity of creative education even in challenging circumstances.

Multifunctional Cultural Centres supposes to repurpose existing cultural centres, transform them into multifunctional educational spaces that blend traditional cultural activities with modern creative education. This not only maximizes the use of existing facilities but also encourages cross-cultural understanding.

Inclusivity and Accessibility is about Diverse Learning Environments, the design of learning environments that would be inclusive and accessible to all students, including those with disabilities. This would ensure that creative education is accessible to every segment of the population. Likewise it is essential to implement scholarship programs and financial aid to provide equal opportunities for students to pursue creative education, regardless of their socio-economic backgrounds.

Strengthening educational infrastructure is a fundamental step toward providing Moldovan students with the resources and environments they need to explore their creative potential. It also ensures that creative education is accessible to all, regardless of their geographic location or financial means. Moreover, by fostering collaboration and innovation within well-equipped facilities, Moldova can foster the growth of a vibrant creative community that contributes to both cultural enrichment and economic development.

### **Curriculum enhancement**

Enhancing the curriculum is central to the development of creative education in the Republic of Moldova. A well-designed and comprehensive curriculum ensures that students receive a high-quality education in creative disciplines. The following strategies could be used for enriching the curriculum and integrating creative subjects across the educational system:

**Integration of Creative Disciplines.** Cross-Curricular Integration: Encourage the integration of creative disciplines into other subjects across the curriculum. For example, incorporate art and music into science, literature, and history classes to promote a holistic educational experience.

**Multidisciplinary Approach.** Foster Multidisciplinary Projects: Promote multidisciplinary projects that bring together students from various creative disciplines to collaborate on innovative projects. These projects encourage students to apply their skills in real-world contexts.

**Modernizing Curriculum Content** supposes regular updates and focus on practical skills.

Ensure that the content of creative education curricula is regularly updated to align with evolving industry trends and technological advancements. This keeps students informed about the latest developments in their chosen creative fields.

The focus on practical skills requires emphasizing practical skills in the curriculum to prepare students for careers in creative industries. Practical coursework, workshops, and hands-on experiences should be integral components of creative education programs.

**Creative Thinking and Problem-Solving** requires teaching creative thinking skills – implementing courses that specifically focus on developing creative thinking, problem-solving, and critical thinking skills. These courses should be available to students across various disciplines. It is also about encouraging innovation, foster a culture of innovation in the curriculum. The students must be encouraged to develop innovative solutions to real-world challenges, applying creative approaches to problem-solving.

**Digital Literacy and Technology Integration** supposes digital literacy courses, offering courses that teach digital literacy and technology skills, which are increasingly important for creative professionals. These skills include graphic design software, video editing, 3D modelling, and coding. Virtual Learning Experiences are about integrating virtual reality (VR) and augmented reality (AR) experiences into the curriculum, allowing students to explore creative concepts in immersive digital environments.

**Industry Engagement and Real-World Projects.** Collaboration with creative industries is about fostering partnerships with creative industries to provide students with access to real-world projects, internships, and experiences. This industry engagement would offer students valuable insights into career opportunities and practical experience. Experiential learning matters too, that is incorporate experiential learning opportunities, such as field trips to cultural events, artistic exhibitions, and workshops, enabling students to connect with the broader creative community.

**Encouraging Cultural and Artistic Expression** supposes the support to student creativity via creating platforms for students to showcase their artistic and creative work, organize art exhibitions, music performances, literary events, and other avenues for students to express their creativity and gain recognition for their talents.

Enhancing the curriculum by integrating creative disciplines and fostering creative thinking not only provides students with a well-grounded education but also prepares them for the diverse and dynamic creative industries. Moldova's educational institutions should prioritize curriculum development that reflects the evolving nature of creative fields, equipping students with the skills, knowledge, and innovation necessary for successful careers in the arts and related sectors.

## **Conclusion**

Creative education is pivotal for the socio-cultural and economic development of the Republic of Moldova. While the nation faces challenges, it also possesses immense potential in the form of a burgeoning creative community and a rich cultural heritage. The EU offers significant support through various programs and initiatives, and Moldova can benefit from these to develop a more robust creative education ecosystem. By implementing the recommended strategies, Moldova can nurture the next generation of creative thinkers and innovators and elevate its position on the European and global stage.

The development of the creative education ecosystem in the Republic of Moldova is not just an educational imperative; it is a strategic investment in the cultural and economic vitality of the nation. Creative education plays a pivotal role in shaping the future of Moldova, nurturing talent, fostering innovation, and preserving the rich cultural heritage of the country. The recommendations outlined in this paper serve as a comprehensive framework for advancing creative education in Moldova and realizing its immense potential.

It is crucial to acknowledge the significance of creative education as a cornerstone of a thriving knowledge-based society. The comprehensive policy framework, investment in infrastructure, teacher training, curriculum enhancement, cultural exchange, and robust research and evaluation mechanisms are not merely isolated initiatives. They form an integrated ecosystem that nurtures creativity and innovation at every level of education.

In embracing this holistic approach, Moldova can expect to witness several profound transformations such as:

- the emergence of a generation of creative thinkers capable of addressing complex challenges in the creative industries and beyond;
- a cultural and artistic renaissance, the revitalizing of the nation's artistic traditions while allowing new voices and expressions to emerge;
- the economic growth, since a vibrant creative education ecosystem is a catalyst for economic growth. By equipping students with the skills and knowledge needed for creative professions, Moldova will foster an innovative and competitive workforce that can contribute to the nation's economic development;
- global recognition as through international collaborations, participation in European programs, and cultural exchange, Moldova's creative talents will gain recognition on the global stage.

Overall, the development of the creative education ecosystem in the Republic of Moldova is a multifaceted endeavour that encompasses educational, cultural, and economic dimensions. It is a journey toward nurturing creativity, preserving cultural heritage, fostering innovation, and equipping the younger generation with the tools to shape a brighter future. A journey which benefits will extend far beyond the educational realm, influencing the very fabric of Moldovan society and its place in the global creative landscape. Moldova's creative education ecosystem will be an enduring testament to the nation's commitment to its cultural heritage and the immense possibilities of the future.

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**SESSION IV: CARPE SCIENTIAM: THE  
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## GENERATION Z AND “NOISE” EFFECT. PERSPECTIVES WITHIN THE FIELD OF POST-PANDEMIC BEHAVIOURAL ECONOMICS

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**Abstract:** The rationale of this paper research concerns on the necessity to understand Generation Z as a distinct footpath within behavioural economics. With thin wallets and expensive tastes, they highly value convenience and a social conscience. They don't prize merchandises for they marginal utility anymore, but for the potential to be seamless and personal. Digitally native, they will define the next era of consumerism, and, to some extent, the behavioural economics.

The global financial crisis of 2007-09 and the ensuing recession and the Covid-19 pandemic from 2020 have accelerated the pace of Generation Z economic behaviour, affected their attention span and the long run anticipations in favour of instant gratification, or “buy now, pay later” mentality.

These two big economic shocks, one cyclical, one non-cyclical, have fostered pessimism among the young people who lived those provocative times. Many from Generation Z doubt they would be able to afford to retire or that they would ever own a home, hence the recklessness of their “all we have is now” behaviour. Luxury, wellness, self-care is a template embraced by as many youngsters.

The need for instant gratification is particularly influenced by the “noise” effect, a situation when people are to decide what to do, and not knowing what to do, they choose to do what they usually do by default.

Considering the arguments and the facts presented in this paper, new insights could be delivered from this study to understand economic way of thinking and outcomes from a shifting type of economic actors.

**Keywords:** Generation Z, Noise effect, Instant gratification, Covid-19 pandemic, behavioural economics.

JEL Classification: D01, D11, D12, B1, B21

### Introduction

Projected to constitute approximately 60% of consumer shopping by 2025, digital natives are individuals who are proficient in technology, digitally interconnected, and well-versed in utilizing

various technologies in the market. Their cognitive abilities and engagement with social media play significant roles in shaping their consumer behaviour.

Their introduction to technology occurred during their early childhood, ranging from Sega and Tetris to iPhones and MacBooks. Growing up alongside technology, this generation faces challenges, including a notable attention deficit disorder. The younger generation struggles to concentrate even on topics of interest, often engaging with their phones during lectures, while on the move, or even during dates, simultaneously watching TV. Fuelled by ambition, Generation Z is characterized by a desire for swift career progression avoids sticking with companies that lack clear growth prospects. Proficient in multitasking, these digital natives seamlessly handle various activities like texting, spreadsheet work, and listening to music simultaneously (Flippin, 2017), (Rohin, 2019).

In the context of the workforce, Generation Z is anticipated to drive the virtualization of organizations, 24/7 connectivity, and increased emphasis on social networking. Their demand for personal freedom is likely to reshape traditional hierarchical structures within organizations. Future research will illuminate the extent of differences in expectations, motivations, values, requirements, and talents between Generation Z and preceding generations, offering insights into potential shifts in HR practices (Paggi et al, 2021).

The primary goal of research is to explore the economic patterns of Generations Z, with a specific focus on the impact of social influence and technology. A structured questionnaire was administered to a sample of 355 respondents for the survey. Preliminary findings from this study reveal that Generation Z consumers are exhibiting novel shopping habits and preferences. These results can be employed to anticipate potential consumer adoption behaviours and to design favorable retail environments that align with these distinct consumer traits.

Consumer purchasing behavior is shaped by various factors, encompassing internal or psychological aspects, social influences, cultural elements, economic considerations, and personal factors. Economic factors, such as price, income, income distribution, utility, and consumer preference, were part of the study. Personal factors, including age, income, and occupation, were grouped together, while psychological factors incorporated motivation and perception.

**Table 1: Generations and characteristics (Wijayal et al, 2020)**

Gen Z	Gen Y	Gen X
1995-2005	1980-1995	1965-1980
connected	Book smart and savvy	Street smart and skeptical
Friends and family	Close to parents	Prepared rule settings
Internet ready available	Use of technology	Less use of technology

Gen Z has never experienced a world devoid of smartphones and social media. Diversity is not an issue for them; they only perceive it in its absence. Growing up during a period of rapid increase in bi-racial and minority populations, they themselves reflect greater diversity. Despite being raised in a time of constant conflict, Generation Z is often criticized for lacking good listening skills and interpersonal abilities. However, as a generation shaped by continuous global challenges, they may perceive the world as "unsafe" yet possess heightened global awareness. These experiences contribute

to a generation that potentially values fiscal responsibility, tolerance, education, employment flexibility and networking skills (Stillman & Stillman, 2017).

### **Research methodology**

The study comprised 355 Romanian students enrolled at Bucharest University of Economic Studies, pursuing their bachelor's and master's degrees in economics. Based on a review of existing literature, the target respondents were identified as management students born in 1995 or later, with no restrictions on factors such as mode of study (full-time or part-time), field specialization (strategy, finance, marketing, human resources), gender, or existing work experience. For the preliminary study, data collection was limited to a selected faculty to test the instrument, formulate initial findings, and consider potential adjustment for subsequent data collection and methodology. To explore career and life expectations, respondents assessed through open questions issues related to success, fears and road to follow in life. The study was then organized as a qualitative research.

A structured qualitative research questionnaire was used as a research instrument to collect primary data. The knowledge gained by the literature review and the information collected from the interviews was used to prepare a structured questionnaire. The initial section was used to gather general information (demographic factors and personality traits) about the respondent while the second section was used to measure the influence of different factors on the economic behaviour of Generation Z consumers (Garai-Fodor & Kelety, 2021).

### **Generation Z in economic aftermath of crisis**

In the aftermath of the pandemic, it seems that the virus has heightened existing inequalities, particularly among professionals, low-wage workers and younger demographic. Three socio-economical categories emerged in this post pandemic economic outlook:

- Professionals, referred to as Zoomers, have seamlessly transitioned to remote work with full pay, facing minimal disruption except for the challenges of managing lockdown situations with children.
- Key workers, which were confronted with increased risks, reduced wages, income cuts, and diminished job security
- Zeros, denoting key workers bound by zero-hour labour contracts due to sector shutdowns.

The Resolution Foundation predicts a 13% decrease in employment likelihood for graduates and a substantial 37% decline for those with fewer qualifications. Bart Cockx (2023) of Ghent University suggests that cohorts entering the job market during a downturn typically take around ten years to catch up with those who did not. Quoting Mark 4:25/27, „But whosoever hath not, from him shall be taken away even that he hath”, underscores the disparities in impact.

Generation Z reports heightened feelings of isolation compared to older colleagues. Remote work, once considered a perk, is now a non-negotiable demand. Workers aged 18 to 34 are 60% more inclined to consider quitting, with flexibility being crucial for them (McKinsey – The Economist). A quarter of Gen Zs doubt their ability to afford retirement, and less than half believe they will ever own a home, accumulating less wealth than Gen Xs or Boomers at the same age. Uncertainty about their future may lead to impulsive spending of limited resources. The attention economy has shifted

purchasing habits online, with 2/3 of 18 to 34-year-olds in the U.S. spending 4 hours a day on smart devices (Kirchmayer & Fratričová, 2017), (Ozturk & Yildirim, 2023).

They exhibit a diminished tolerance for prolonged delivery times and a inclination towards immediate gratification, as evidenced by their active engagement with social media. Their financial behaviour is characterized as „woke, broke and complicated”. Despite higher education levels, their participation in the labour force is less than that of Millennials (ranging from 71% to 70%) and Gen X (78%). Their key priorities include security, financial stability, flexibility. Their spending patterns are shaped by values, focusing on concerns such as climate change, race and gender issues, green activities, alternative proteins, meat substitutes, animal rights.

Around 50%, as opposed to overall average of 38%, are relocating due to the availability of remote work opportunities (according to the Microsoft Work Trend Index). A discernible trend is observed in the shift from Wall Street to Silicon Valley. There is a noted association between talent shortages and policies supporting flexible working, with substantial skills gaps identified in sectors such as construction, finance, hospitality, and manufacturing. Notably, there was a 50% increase in the study of computer science from 2011 to 2020.

### **The “noise” effect**

Daniel Kahneman speaks of noise as the undesirable variability of proposed solutions to the same problem, along with different outcomes ranging a big scale of values. This situation leads distress, rupture, inflicting the decision-making process. It is preposterous that judges are more complacent in the morning, after the lunch break, after a match won by their favourite team, under the good weather or on the birthdays of people on trial (Kahneman et al, 2021: 31). This variability of ideas and different outcomes to same perspectives are not always welcome (Kahneman, 2021: 42).

Random errors cancel each other out, but within systems disrupted by noise effect, the errors are not erased each one by another, instead they are summed (Kahneman, 2023: 44). Usually, in assessment process people tried to hide the first report, in order to avoid anchor effects and other bias pitfalls, but too big gaps prevailed. Therefore, the trends evolve in the direction of avoiding conflicts and disagreements, peace being more important than right decision and justice (Kahneman, 2023: 47). Post mortem analysis is the most well-known tool for this type of decision making, but is only an illusion of consents.

The noise effect inflicts the process of decision making, both recurrent and singular decisions (Kahneman, 2023: 49) Recurrent decisions are made in law and medical systems, for example, where a specific type of analysis should inflict a specific diagnostic and a specific treatment. In the moment when for the same health analysis, the outcome in treatment is a huge gap between different medical stuff, we say that a disruption is caused by noise effect in the process of a recurrent decision. The singular decision process is conducted when, for example, a virus outbreak is menacing an area. The main negative outcomes of noise effect can be summarized as follows:

- predictive judgements
- evaluative judgements, very bad for the losing trust in the institutional systems and authorities.
- big spread of prognosis processes. If measured, this can be reduced or controlled (Kahneman, 2023: 71)

There is no median point between errors. The way errors are summed by themselves is like estimating wrong half of the amount of time to finish the project, or estimating wrong twice the time implied for finishing the project. By average, one could say that there is no misjudgement on estimating the correct amount of time, but the error is doubled, mis locating the resources for the project.

### **Findings and results**

On the matter of success, preliminary results indicate that fulfilment of personal objectives and feeling of dreams accomplishment are the most important pillars of defining the concept. 70% of the students responded that they are interested to follow their dreams, unfortunately without being precise what would be these. Only 3% of the respondents were very specific about their success related to a particular job or career.

Out of all factors examined in this study, we would like to point out one that resonates too little than expected throughout the results, namely work-life balance. Results suggest that work-life balance does not seem to be a highly valued factor for Generation Z in terms of job search, only 11,66% of them taking it into account, which does not seem to be in line with existing research findings on Generation Y. Our preliminary findings are that on priority list of Generation Z are not clear paths. Almost 10% of them are on completely different or opposite professionals paths.

**Table 2: Structure of the questionnaire (authors)**

What is success?	Fulfilment of personal objectives and feeling of dreams accomplishment – 70%
	work life balance and family – 11,66%
	precise job – 3%
Fears and menaces	Fear of failure and disappointing the family or the beloved ones – 54 %
	loneliness – 31,66%
	expressing of feelings and public speaking – 7%
	lack of time or resources – 5%
	war, accidents, illness – 10%
	bad decisions – 5%
	Other: fear of losing control, fear of not achieving the maximum potential, getting old, embarrassment of making fun by themselves in front of others – less than 2%
Next steps in life, medium and long run	Desire to work in order to achieve financial independence – 28,33%
	Precise goals – 18,33%
	New experiences and live the moment – 7%

On the matter of fear and menaces, preliminary results indicate that fear of failure and disappointing the family or the beloved ones and loneliness are the major menaces responsible for their restless. More than half fear of the idea of failure, being educated in the wrong directions by family or educational system. And, in spite of social media and all, they are afraid of loneliness, almost a third from them. There is no wonder that loneliness became an important social and psychological issue, because in the realm of cyberspace, in spite of social media and all, individuals can amass numerous acquaintances without ever meeting anyone in person.

On their next steps in medium or long run, only 18,33% are sure about what they are going to do.

### Conclusions and recommendation for future work

The primary constraint in this study is the relatively modest sample size and structure in diversity, a consequence of limitations in time and budget. Caution is advised in interpreting research findings, considering the restricted generalizability inherent in the study's sample size. Recommendation for future research include expanding the sample size, as a comparison with results from a larger cohort would enhance result validation. Additionally, diversifying the sample across geographical areas, social strata, and other variables could offer a more comprehensive understanding of broader population.

People misunderstand one of the most important issues on decision making process: decisions are made by humans, not by the system by themselves. Systematic noise effect means incoherence and inflicts the level of trust people have in the society and its institutions.

The result of the present study carries noteworthy implications for retailers and managers, emphasizing the importance of addressing the technological and social expectations of Generations Z individuals as economic actors. It is apparent that the extent of technology and social media utilization in product marketing significantly shapes the consumer purchasing experience for this generation, potentially influencing their decision-making process. The overall findings indicate that manufacturers and sellers should prioritize improving product features, encompassing both soft and hard aspects.

The initial findings outlined in this paper offer a glimpse into the evolving perspectives on various work-related factors from the viewpoint of the emerging Generation Z. nevertheless, these findings are preliminary and lack generalizability. The research sample is limited in diversity, as all participants in this phase of the study are currently enrolled at the same faculty at Bucharest University of Economic Studies. Additional research is imperative to validate and expand upon these findings.

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## SOCIALLY INCLUSIVE KNOWLEDGE ECONOMY FOR SUSTAINABLE DEVELOPMENT

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**Abstract:** Terms like "One Earth" and "One Globe" are simply concepts until everyone has access to possibilities without compromising the protection of nature. Is knowledge actually knowledge if it hasn't been implemented to benefit society and the environment? A prosperous society is built on a foundation of interrelated economic and social justice. The concept of social wellbeing is diminishing. Social inequality and marginalized populations in society are expanding alarmingly post-COVID. In the knowledge economy, innovation and competitiveness can deliver effectiveness, quality, establish a solid foundation for harmony with nature, while addressing social vulnerability. The knowledge economy can play a role in tackling global issues such as changing climate concerns and the accessibility of alternative ways to live at every corner of globe. For a prosperous future and for generations to follow, a knowledge economy which puts a strong emphasis on nature and inclusive social well-being may provide positive results. This paper will emphasize the significance of a knowledge economy that is socially inclusive and promotes sustainable growth for the benefit of both people and nature. The paper uses qualitative methodologies to show how a socially inclusive knowledge economy supports social and economic justice while also progressing society towards sustainable growth and development.

**Keywords:** Knowledge Economy, Socially Inclusive Economy, Well-being, Social Justice, Economic Justice

JEL Classification: Z18, D69, F69

*“The notion of social justice is considered inadequate unless justice is extended to all segments of society, even the most marginalized. The provision of social justice is a duty that rests upon those who possess the privilege of experiencing it. Neglecting this responsibility would classify them as perpetrators of injustice”.*  
Abrar Ashraf

### Introduction

The concept of sustainable development and the knowledge economy are interdependent in achieving the goal of sustainable development inclusively and in harmony with nature. This relationship highlights the importance of integrating economic growth with environmental protection and social equity.

In a knowledge economy that prioritizes social inclusivity, the emphasis is not exclusively on the acquisition of knowledge for the advantage of a privileged few, but rather on establishing a milieu where knowledge is disseminated and employed to augment the welfare of all members of society. This necessitates the elimination of impediments to entry and engagement, such as socioeconomic disparities, gender inequities, and geographical constraints.

In the year 2009, the United Nations General Assembly officially designated the 22nd of April as International Mother Earth Day. This decision was made with the recognition that the Earth and its ecosystems serve as a shared dwelling for humanity. Member States expressed their firm belief in the imperative of fostering Harmony with Nature, as it is crucial for attaining a fair equilibrium between the economic, social, and environmental requirements of both current and future generations. Concurrently, the General Assembly passed its inaugural resolution on the subject of Harmony with Nature.

During the World Bank/IMF Spring Meetings held in Washington D.C., The Director-General of the International Labour Organization (ILO), Gilbert F. Hounbo emphasized the imperative of social justice as a means to surmount the multifaceted obstacles confronting economies and societies worldwide.

According to Hounbo, “Social justice makes societies and economies function more cohesively and productively by reducing poverty and hunger, inequalities, and social tensions. Given its central importance to inclusive and sustainable socio-economic development, social justice should be seen as one of the cornerstones of the renewed multilateralism that is required to overcome current challenges.”.

The establishment of Economic, Social, and Cultural Rights serves as the fundamental basis for the promotion and protection of these essential aspects of human well-being.

The United Nations established the Commission on Human Rights in 1946, which was led by Eleanor Roosevelt. Under her guidance, the Commission drafted the Universal Declaration of Human Rights (UDHR), which encompasses essential rights such as the right to life, liberty, and security, as well as a comprehensive array of civil, political, economic, social, and cultural rights.

On December 10, 1948, the Universal Declaration of Human Rights was unanimously adopted by 48 member states of the United Nations, with eight countries choosing to abstain. Presently, the promotion of human rights is guided by what is commonly referred to as the International Bill of Rights. This framework comprises the UDHR and two international treaties: the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social, and Cultural Rights.

The campaign slogan "Only One Earth" serves as a powerful reminder of the limited resources our planet possesses and the urgent need to protect and preserve them. It encapsulates the idea that we have only one Earth, and it is our responsibility to ensure its sustainability for future generations.

These treaties expound upon the rights delineated in the Universal Declaration of Human Rights (UDHR) and, upon being ratified by individual states, possess legal authority. Each treaty establishes the presence of autonomous experts who oversee governmental actions and necessitates regular reporting by governments to ensure compliance with treaty provisions.

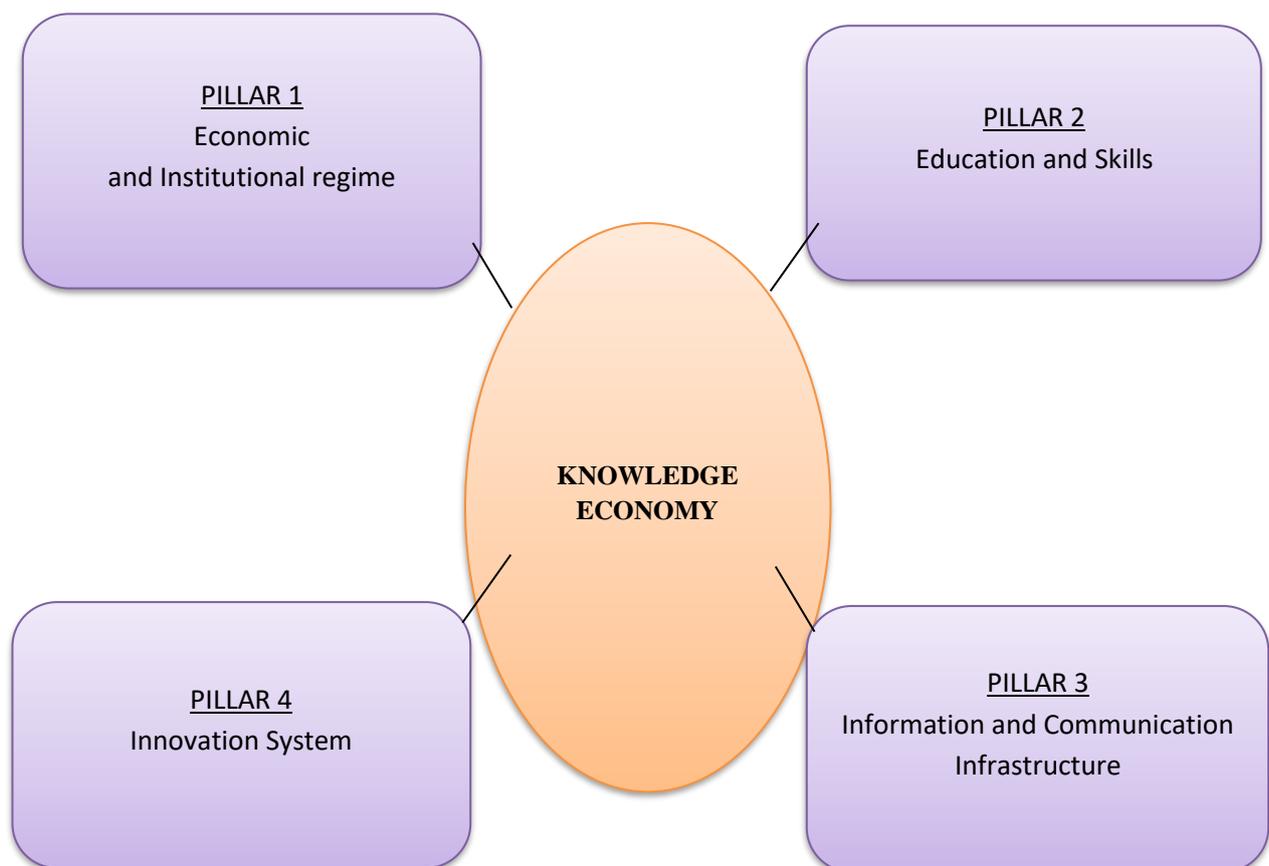
Articles 16 and 22-29 of the Universal Declaration of Human Rights (UDHR) outline economic, social, and cultural rights. These articles enumerate a remarkable array of human rights issues.

## **Knowledge Economy**

According to Walter W. Powell & Kaisa Snellman the Knowledge Economy (or the Knowledge-Based Economy) is an economic system in which the production of goods and services is based principally on knowledge-intensive activities that contribute to advancement in technical and scientific innovation.

The notion of a knowledge economy gained prominence through the influential works of the esteemed business management consultant Peter Drucker. Drucker initially introduced this concept in his publication, "The Effective Executive," in 1966, and further elaborated on it in his book "The Era of Discontinuity" encapsulates Drucker's visionary concepts that revolve around the paramount importance of knowledge, skills, data analysis, quantifiable performance, and strategic Management by objectives (MBO).

The World Bank Institute has identified four fundamental pillars that make up the Knowledge Economy as shown in Figure 1:



**Figure 1 The World Bank Institute Knowledge Economy four fundamental pillars**

Source: World Bank Institute (2008)

Pillar 1. Institutional structures.

These structures play a crucial role in offering essential incentives for fostering entrepreneurship. They encompass governmental or non-governmental entities that facilitate small business innovation by means of grants or professional assistance.

#### Pillar 2. Proficient labor and education.

Education plays a pivotal role in the process of knowledge construction. This crucial element encompasses both formal and informal educational practices. It is imperative to acknowledge that without the essential skills and education, one's ability to contribute to the knowledge economy is severely hindered.

#### Pillar 3. Innovation systems

Innovation systems are complex networks comprising of various entities such as firms, research centers, universities, consultants, and other actors, both governmental and non-governmental, that collectively contribute to the advancement of innovation.

#### Pillar 4. Information and communication

Information and Communication Technology (ICT) infrastructures facilitate internet accessibility, which plays a pivotal role in the advancement of knowledge in contemporary society. Furthermore, it is imperative that these infrastructures are universally accessible, enabling the global and interconnected dissemination of economic growth.

### **Sustainable Development and Knowledge Economy**

The Lisbon European Summit, held in March 2000, had the main goal of setting a clear objective for the Union. This objective aimed to improve employment, encourage economic reform, and promote social cohesion in a knowledge-based economy. The official statement of the Lisbon European Council on March 23 and 24, 2000, outlined this objective.

The combination of sustainable development goals and the knowledge economy has the ability to utilize the inherent potential of knowledge and innovation in addressing global challenges. This merging effectively aligns the principles of sustainable development with the generation, sharing, and use of knowledge and information. By promoting industries and sectors that rely on knowledge, policymakers and stakeholders can increase productivity, encourage innovation, and ultimately achieve the Sustainable Development Goals (SDGs)<sup>4</sup> in a sustainable and lasting way.

The 2023 SDG Summit in New York on September 18th and 19th kickstarted a new phase 312 progress towards the SDGs as shown in Figure 2. Led by the President of the General Assembly, it marked the halfway point towards the 2030 deadline and provided political guidance on fast-tracked measures. The Summit was a significant milestone during the General Assembly's High-level Week, addressing global crises and reigniting hope for the 2030 Agenda. At this event UN Secretary General

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<sup>4</sup> The short titles of the 17 SDGs are: No poverty (SDG 1), Zero hunger (SDG 2), Good health and well-being (SDG 3), Quality education (SDG 4), Gender equality (SDG 5), Clean water and sanitation (SDG 6), Affordable and clean energy (SDG 7), Decent work and economic growth (SDG 8), Industry, innovation and infrastructure (SDG 9), Reduced inequalities (SDG 10), Sustainable cities and communities (SDG 11), Responsible consumption and production (SDG 12), Climate action (SDG 13), Life below water (SDG 14), Life on land (SDG 15), Peace, justice, and strong institutions (SDG 16), Partnerships for the goals (SDG 17). More information can be found on <https://www.undp.org/sustainable-development-goals>

António Guterres said “The SDG Summit in September must be a moment of unity to provide a renewed impetus and accelerated actions for reaching the SDGs”.

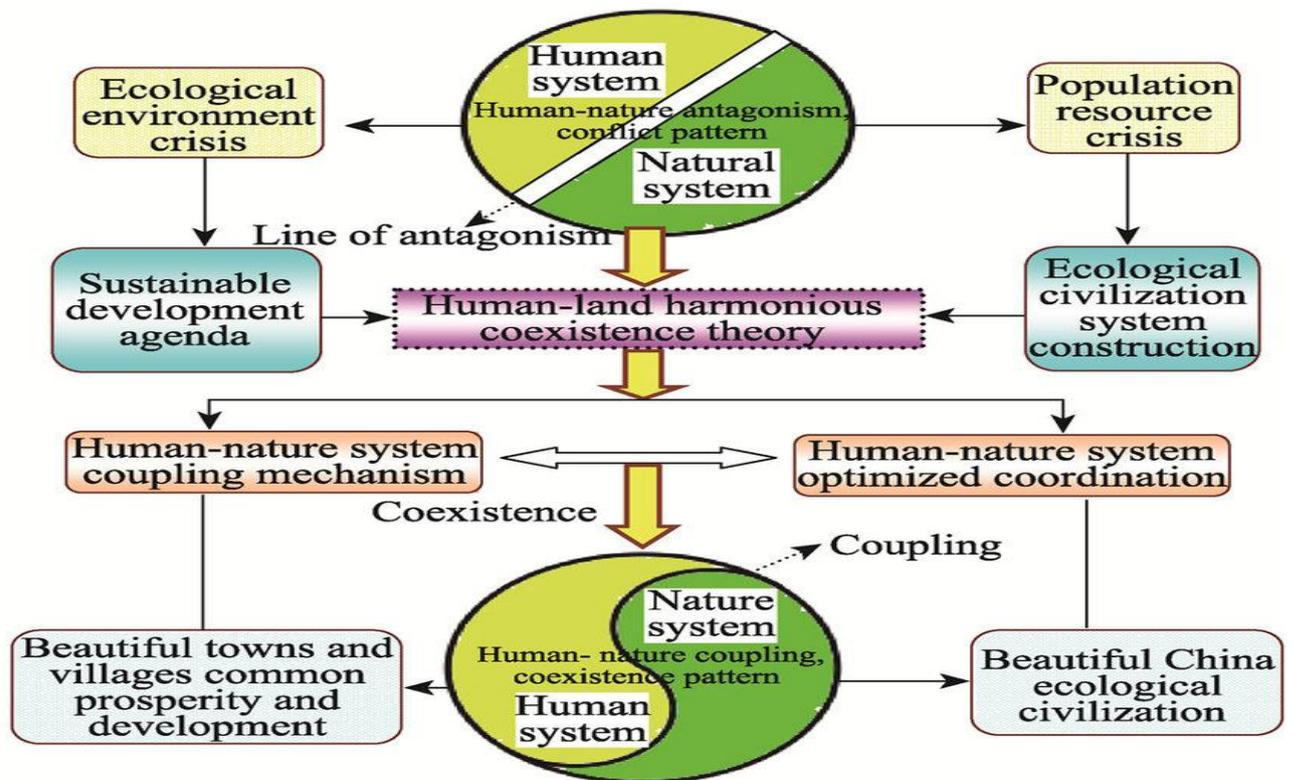


**Figure 2. The 17 SDGs**

**Source:** <https://www.un.org/sustainabledevelopment/blog/2015/12/sustainable-development-goals-kick-off-with-start-of-new-year/>

The Sustainable Development Goals (SDGs) prioritize the interrelated environmental, social, and economic dimensions of sustainable development by placing sustainability at their core. The Sustainable Development Goals (SDGs) will serve as the foundation for promoting inclusive development within a knowledge-based economy, ensuring equal opportunities.

Sustainable Development Cohesion with Harmony with Nature



**Figure 3. Human-nature harmony theory, evaluation index system and application**

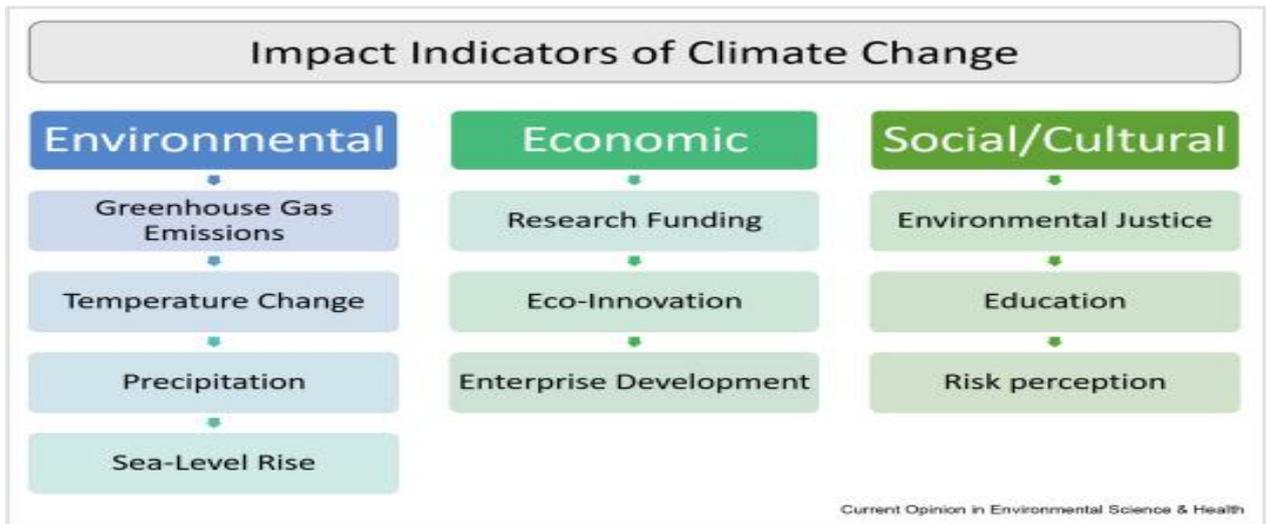
Source: Chuanglin Fang, Zhenbo Wang & Haimeng Liu, Beautiful China Initiative

The schematic diagram of the man-earth harmony theory of BCI is presented on the figure above. As shown in Figure 3 the Beautiful China Initiative's theory of man-earth harmony has been rephrased as the human-nature harmony theory. This academic terminology emphasizes the importance of a balanced relationship between humanity and the natural environment.

The BCI initiative offers a platform for examining the coexistence and interconnectedness between a knowledge-based economy and Nature.

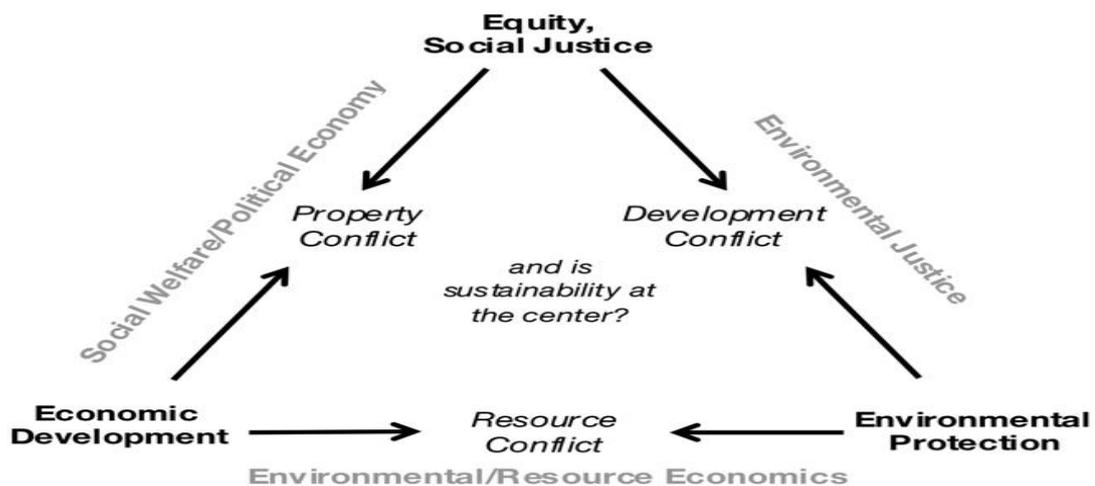
In the year 2009, the United Nations General Assembly officially designated the 22nd of April as International Mother Earth Day. Since 2009, the primary objective of the General Assembly has been to establish a comprehensive understanding of the recently discovered connection between humans and nature, which is not centered solely on human interests. This objective has been pursued through the adoption of nine resolutions on Harmony with Nature. These resolutions encompass diverse perspectives on the development of a novel, non-anthropocentric paradigm that redefines the ethical framework for environmental decision-making. The intention is to move away from a human-centric approach and embrace a broader perspective that considers the well-being of the natural world. This progressive approach was further reinforced in the outcome document of the United Nations Conference on Sustainable Development (2012), titled "The future we want." "We recognize that planet Earth and its ecosystems are our home, and that "Mother Earth" is a common expression in a number of countries and regions, and we note that some countries recognize the rights of nature in the context of the promotion of sustainable development."

The concept of sustainability has the potential to yield positive effects on the climate, as depicted in Figure 4. When the knowledge economy is intertwined with sustainable development, it can foster economic and social justice, thereby influencing lives across all continents. By mitigating the adverse consequences of climate change, an atmosphere conducive to equal opportunities for all can be established.



**Figure 4 Sustainable measurement indicators to assess impacts of climate change**

**Source:** Implications for the New Green Deal Era Author links open overlay panel Darren Barry, Seamus Hoyne "The science continues to show that we are not doing enough to lower emissions and meet the goals of the Paris Agreement - as the world prepares for the first global stock take at COP28, we must increase our ambition and action, and we must all do the real work to transform our economies through a just transition to a sustainable future for people and planet," said Inger Andersen, Executive Director of the UN Environment Programme.



**Figure 5. The Campbell's framework exhibits the three distinct categories of sustainability conflicts that arise from the collision of its comprehensive objectives**

Source: <https://quod.lib.umich.edu/m/mjs/12333712.0001.007?view=text;rgn=main>

Figure 5 illustrates that the absence of equity and equal opportunities in the pursuit of sustainability

inevitably leads to discord and an unceasing cycle of strife. This observation underscores the importance of addressing issues of fairness and inclusivity in any sustainable development endeavor.

### SUSTAINABLE DEVELOPMENT THROUGH INCLUSIVE GROWTH

According to the Organization for Economic Co-operation and Development (OECD), inclusive growth is an economic development that creates opportunities for all socio-economic groups of the population and is able to distribute the monetary and non-monetary growth fairly across society<sup>5</sup>. According to the planning commission of India, inclusive growth is a multifaceted concept that encompasses several specific components essential for attaining comprehensive economic and social development. These<sup>6</sup> components, as depicted in figure 6, collectively play a pivotal role in fostering the advancement of social and economic justice.



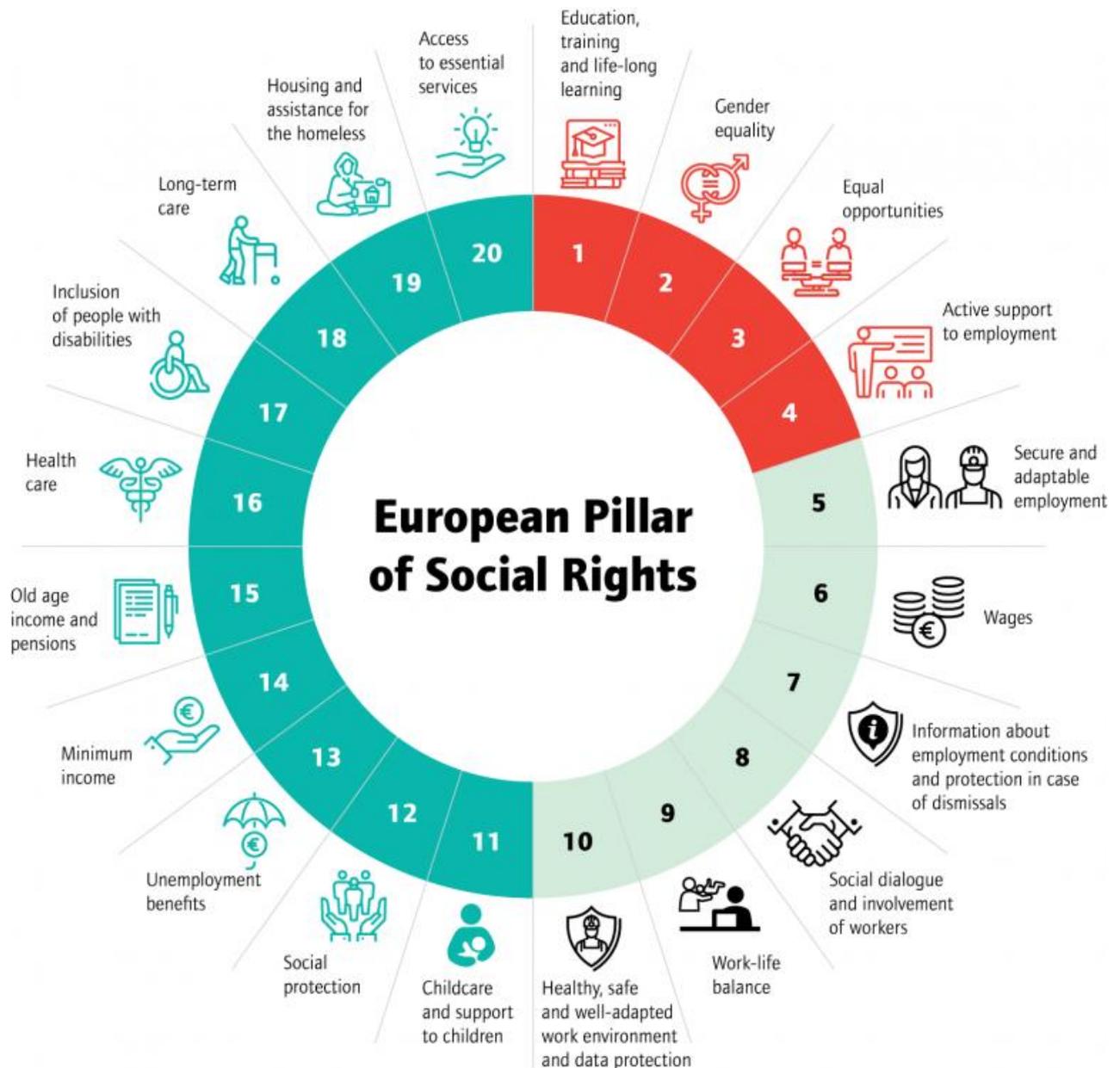
**Figure 6. According to the Planning Commission of India (Planning Commission, 2007)**

Source: <https://intueriglobal.com/inclusive-growth-in-india/>

The European Pillar of Social Rights is a comprehensive framework that comprises 20 principles and rights, as illustrated in figure 7. This initiative has been endorsed by several European institutions with the objective of promoting social convergence, social justice, and sustainable social well-being by 2030, while ensuring the welfare of all European Union citizens. To achieve and maintain social rights across society, it is essential to adopt an inclusive approach to sustainability. This approach should prioritize the needs of all individuals and communities, regardless of their social, economic, or cultural background. By doing so, it will be possible to create a more equitable and just society that encourages the well-being of all its citizens.

<sup>5</sup> OECD: All on Board. Making Inclusive Growth Happen, Paris 2014; OECD: Report on the OECD Framework for Inclusive Growth, Paris 2014.

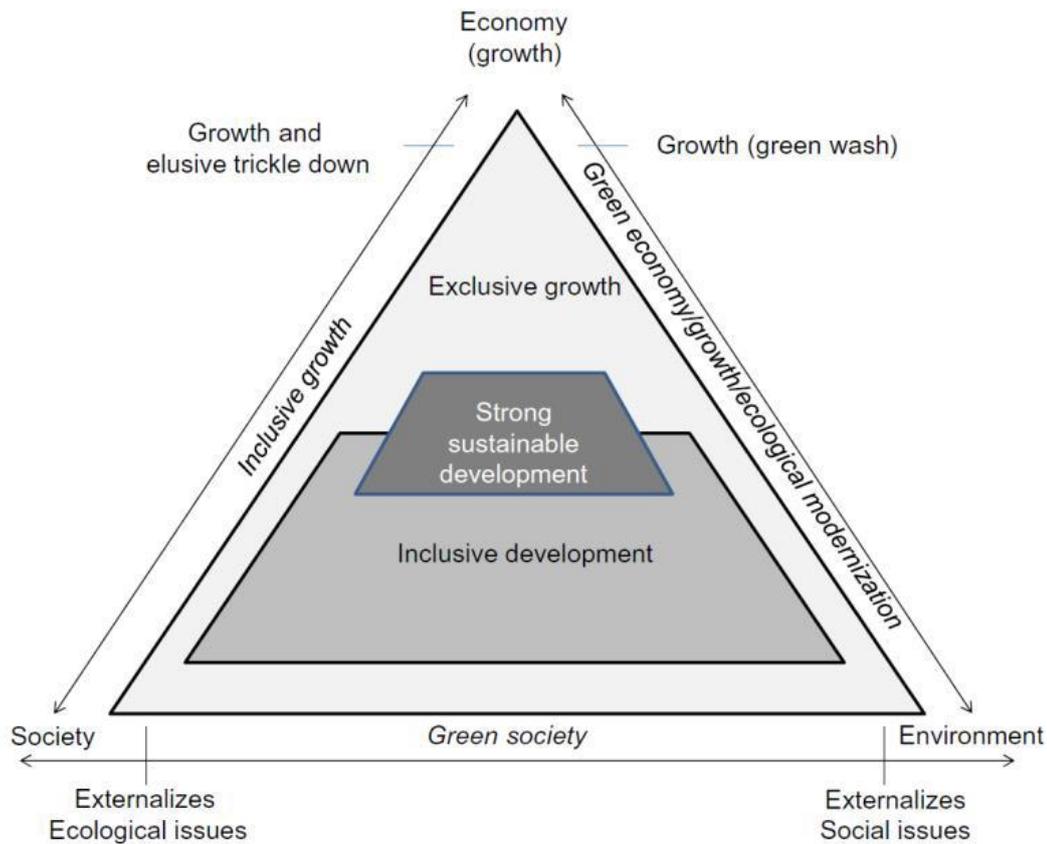
<sup>6</sup> Elements of Inclusive growth: Employment Generation, Poverty Alleviation, Industrial Development, Reduction in Regional Disparities, Environment Protection Equal Distribution of Income



**Figure 7. The European Pillar of Social Rights in 20 principles**

Source: [https://www.etui.org/facts\\_figures/20-principles-european-pillar-social-rights](https://www.etui.org/facts_figures/20-principles-european-pillar-social-rights)

The interconnection between inclusive development and sustainable development is illustrated in figure 8. Inclusive development, being a discursive approach, encompasses three dimensions that involve social inclusiveness, environmental inclusiveness, and relational inclusiveness at different levels. This concept involves “marginalized people, sectors and countries in social, political and economic processes for increased human well-being, social and environmental sustainability, and empowerment” (Gupta et al. 2015, p. 546).



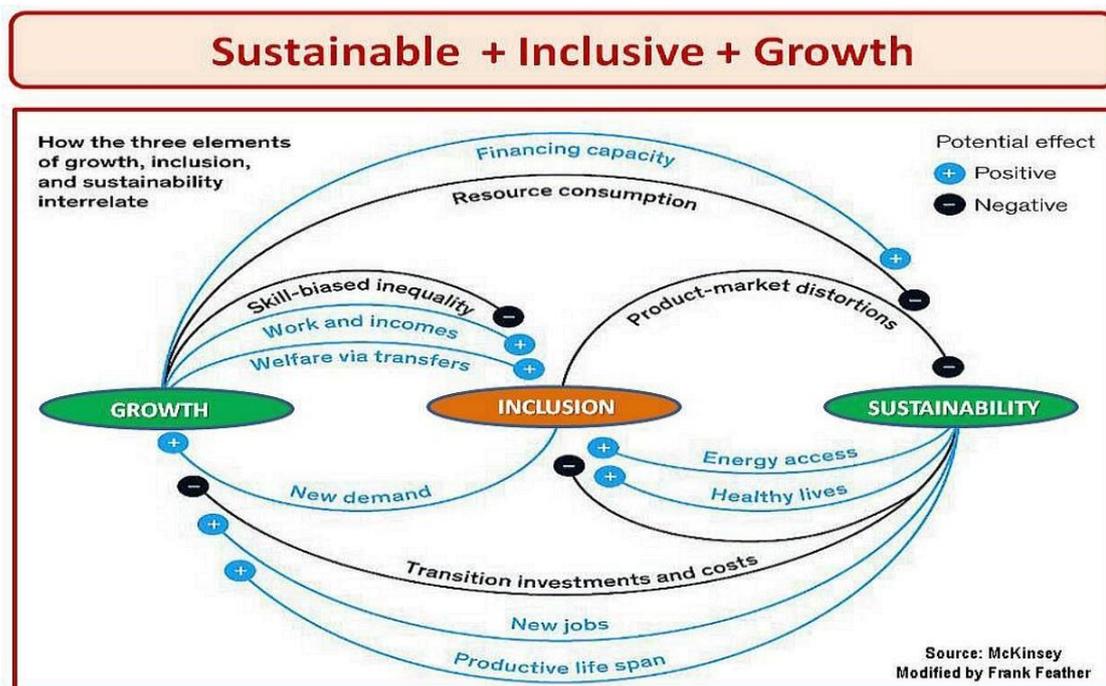
**Figure 8. The relationship between inclusive development and sustainable development**

Source: Joyeeta Gupta & Courtney Vegelin (2016)

The concept of harmony interactions between sustainability, inclusivity, and growth is illustrated in Figure 9. The objective of sustainability is to achieve environmental resilience, which entails mitigating climate risks and safeguarding natural capital while ensuring inter-generational equity. This goal is evaluated based on the economic and societal costs and benefits associated with it, thereby promoting a holistic approach to sustainability.

Incorporating growth into the framework of inclusion is achieved by the creation of significant employment opportunities, the elevation of income levels, and the rectification of deficiencies within the labor market. Additionally, growth plays a pivotal role in achieving sustainability by actively promoting investment endeavors.

Both inclusion and sustainability contribute to the advancement of growth by generating fresh demands and presenting new avenues for investment. Inclusion, through its emphasis on equal participation and representation, ensures that diverse perspectives and talents are harnessed, thereby stimulating economic growth. Simultaneously, sustainability reinforces both inclusion and growth by facilitating an energy transition, which not only mitigates environmental concerns but also bolsters economic progress. By intertwining the principles of inclusion and sustainability with the concept of growth, societies can achieve a more equitable and prosperous future.



**Figure 9. Relation between Growth, Inclusion and Sustainability**

Source: MCKinsey, modified by Frank Feather

In case of Moldova, she is currently implementing an inclusive growth model to tackle a range of significant development challenges within the Europe and Central Asia region. These challenges encompass the lowest fertility rate, an aging population, and the highest net emigration rates, resulting in a depletion of social capital and a brain drain. Additionally, Moldova faces the lowest employment rate in Europe, which negatively impacts labor productivity and the overall competitiveness of the economy. The economy's growth is primarily driven by consumption, leading to a negative trade balance.

In light of the aforementioned circumstances, Moldova has placed significant emphasis on the attainment of inclusive growth as a fundamental goal. In order to accomplish this, it is imperative to tackle the existing regional disparities by establishing economic prospects, enhancing the availability of high-quality education and healthcare services, facilitating the advancement of Moldova's economic competitiveness, improving the accessibility and effectiveness of public services, generating employment prospects, and fostering a conducive business environment.

### Conclusion

The relationship between sustainable development and the knowledge economy is mutually beneficial. The knowledge economy, by fostering innovation, creativity, and technological progress, can greatly support sustainable development and the achievement of a balanced relationship with the environment. On the other hand, sustainable development is essential for the long-term success of the knowledge economy, as it ensures the preservation of the environment and fairness in society. Therefore, it is crucial to incorporate economic, social, and environmental factors in decision-making in order to achieve inclusive sustainable development that is in harmony with nature.

**ANNUAL INTERNATIONAL SCIENTIFIC CONFERENCE “COMPETITIVENESS AND INNOVATION IN THE KNOWLEDGE ECONOMY”**

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There is a significant level of uncertainty surrounding the potential benefits and outcomes of both Sustainable Development Goals (SDGs) and a knowledge-based economy. However, these uncertainties can be eliminated through the implementation of inclusivity. Inclusiveness plays a crucial role in the success of developing a self-sustainable society and achieving sustainable development that positively impacts all segments of society. Until inclusiveness is excluded from progressive endeavors, no substantial achievements will be made, or if any are made, they will only be temporary.

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DOI: <https://doi.org/10.53486/cike2023.32>

UDC: 330.59:354(478)

## IMPROVING THE STANDARD OF LIVING IN THE REPUBLIC OF MOLDOVA BY ENHANCING PUBLIC ADMINISTRATION PERFORMANCE

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**Abstract:** The study is based on the analysis of the standard of living in the Republic of Moldova through the prism of enhancing public administration performance. Public administration plays a key role in improving the population's economic performance and living conditions. The paper highlights that economic growth is a crucial condition for improving living standards. Countries with a high economic potential provide their citizens with structural conditions that favor a high standard of living and a good quality of life. In Moldova, economic growth performance in recent years has been suboptimal, leading to a considerable decline in the standard of living for the population. This work aims to analyse the prospects for improving the standard of living of the population by improving the performance of public administrations. Various research methods were used to achieve this goal, including *quantitative and qualitative analysis of relevant documents and statistical data, synthesis method, comparative method, induction and deduction method, etc.* The status of a candidate country for EU accession, obtained by the Republic of Moldova in June 2022, obliges the government to undertake a series of measures to improve economic performance and the living conditions of its citizens. The modernization of public administration and the creation of the necessary capacity to effectively fulfil its role as a facilitator of economic development and the enhancement of the population's standard of living becomes a major condition. The administration is obliged to create the necessary conditions to ensure that each person has access to the goods and services of civilization.

**Keywords:** standard of living, public administration reform, governance indicators, Effectiveness of the Administration

JEL Classification: H41; I31.

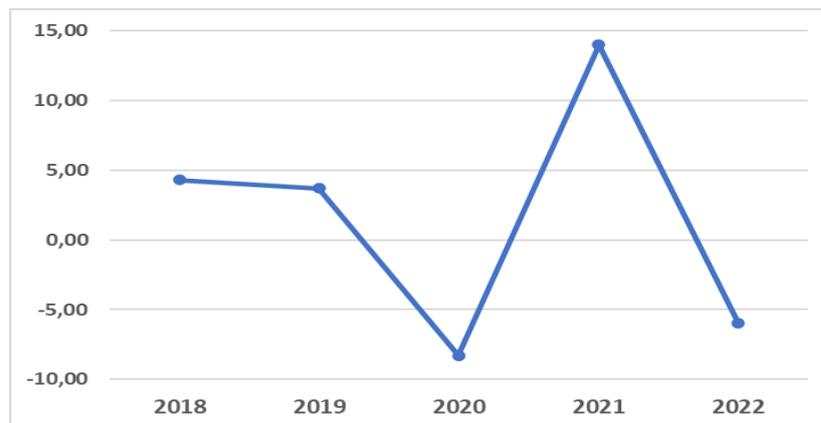
### Introduction

Enhancing the standard of living for citizens is a priority on the agenda of all democratic governments. To achieve this objective, public administrations aim to improve their performance, becoming stronger and more efficient. An efficient public administration guarantees a decent standard of living and an improvement in the quality of life, as its objectives and actions focus on the individual and their aspirations for well-being.

Most often, discussions regarding the standard of living for citizens consider economic performance and its indicators, such as national income, gross domestic product, national economic growth, and economic stability, etc. Beyond these, social, political, security, and other factors are of major importance, including life expectancy, overall and infant mortality rates, political stability, political and religious freedom, environmental quality, climate, and safety.

The standard of living is often used to compare different geographical areas, such as the standard of living in the Republic of Moldova and Romania or the standard of living in the capital versus rural communities. At the same time, the standard of living can be used to compare measurements over time within the same geographical area. For example, compared to a century ago, the standard of living in European Union countries has significantly improved. Over time, specialists from various fields have determined a series of objective indicators that can be used for accurate measurements and evaluation of the standard of living and the quality of life for citizens. Furthermore, an increasing number of studies conducted by experts consider people's perceptions of their standard of living, with the satisfaction with the standard of living being a key indicator. Elements such as health, social participation, occupation type, etc., can significantly influence satisfaction with the standard of living. All of these efforts share a single purpose - to identify optimal solutions for increasing citizens' living standards. Moreover, the results based on objective and subjective indicators are relevant to the public policy developed by public administration authorities. Administrations must decisively contribute to improving living conditions to achieve the standards of civilization. Their main obligation is to ensure, in addition to the right to income (salary, pension, etc.), access to the goods and services of civilization: education services, healthcare, cultural services, access to modern technology, transportation means, services from service enterprises, etc.

**Research results and comments.** To ensure an increase in the standard of living and quality of life, the state administration must achieve strong economic performance. The standard of living and the well-being of people depend primarily on the country's economic potential and national income. Countries with high economic potential provide their citizens with structural conditions that favor a good quality of life on an individual level. Moldova's economic growth performance has been suboptimal in recent years. Against the backdrop of the devastating economic consequences caused by the banking fraud, in 2018, Moldova is experiencing real economic growth of 4.3%, and 3.7% in 2019. In 2020, being severely affected by the Coronavirus pandemic and severe drought, the country's economy once again registered a decline. This was followed by a favorable economic growth of 14% in 2021, marking the highest growth since independence. In 2022, a new profound economic decline was caused by the war in Ukraine and the serious effects of the energy crisis. [5, p.9]



**Figure1. GDP growth, 2018-2022 (annual %)**

Source: developed by the author based on European Bank for Reconstruction and Development

Official data presented by public authorities reflect an extremely low standard of living for the population of the Republic of Moldova. Unfortunately, incomes, which represent the basis of human sustenance, do not provide citizens with a comfortable living in Moldova. Low income levels and increased poverty risks result from limited economic opportunities.

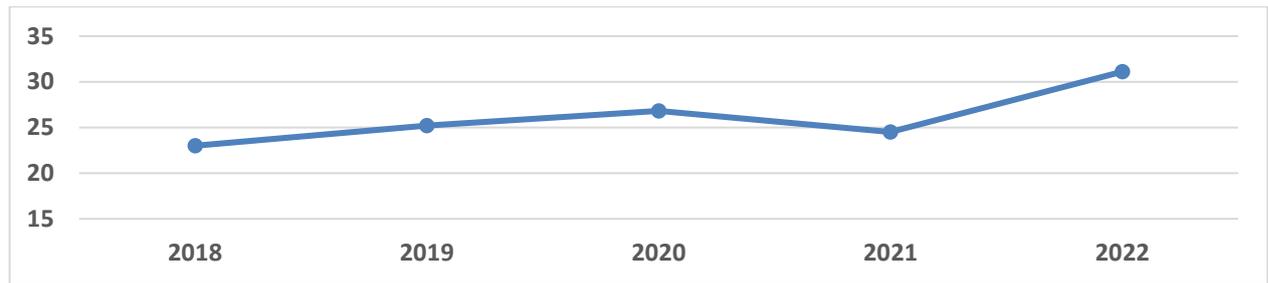
**Tabelul 1. The disposable incomes of the population, 2016-2022**

	2016	2017	2018	2019	2020	2021	2022
<b>Average disposable incomes per person, MDL</b>	2060,0	2244,9	2383,1	2880,6	3096,6	3510	4252,7
<b>Nominal increase in% compared to the previous year</b>	5,3	9,0	6,2	20,9	7,5	13,4	21,2
<b>Real increase in% compared to the previous year</b>	1	2,2	3,1	15,3	3,6	7,8	-5,9

Source: developed by the author based on National Bureau of Statistics

Over time, the average disposable income of the population has steadily increased, although the real growth has been very modest, except for 2019 when it saw growth of over 15%. In 2022, on the contrary, population incomes decreased by 5.9%. Despite economic performance over the past two decades, Moldova has not achieved the aspiration of faster convergence with EU income levels, with the population's incomes remaining the lowest in Europe.

Poverty is an extreme form of economic insecurity that reflects the failures of market mechanisms and social protection. The poverty rate has consistently increased in the Republic of Moldova over the last five years, except for 2021 when poverty decreased by 2.3%. The severe price increases that occurred in 2022 led to the highest increase in the poverty rate in decades, by 6.6%. [2] In rural areas, the risk of extreme poverty is four times higher than in urban areas. Although rural areas are much more affected by poverty, poverty rates have increased more in urban areas than in rural ones.



**Figure 2. Absolute poverty rate, 2018-2022 (%)**

Source: developed by the author based on National Bureau of Statistics

Among the measures taken by the state administration to reduce poverty are the increase in the minimum wage to 4,000 lei for a full-time program, starting on January 1, 2023, the increase in the proportion of pensioners receiving pensions to 94.6% of the total number of elderly people, improving social protection for families raising children and individuals with disabilities, and providing support to the population during the cold season. The budget allocated to the Energy Vulnerability Reduction Fund in the previous heating season amounted to nearly 6 billion MDL.

An analysis conducted by international organizations such as the World Bank, United Nations Development Programme, Social Progress Imperative, etc. reveals that the population's standard of living in Moldova remains low, despite some notable improvements in certain areas, which, however, have not been able to significantly increase the overall standard of living.

Improving the standard of living can only be achieved in the presence of a professional, efficient, responsible, and transparent public administration at all levels. However, public administration in the Republic of Moldova continues to face a high degree of politicization, a lack of appreciation for public policy analysis, an exaggerated emphasis on procedures at the expense of content, a lack of prioritization, and budget resources allocated without performance criteria, as well as outdated control systems for managing human resources and budgets. The reduced effectiveness and efficiency of public administration are also due to capacity-building policies that have had a limited impact on the public administration system.

Evaluating performance and efficiency in the public sector, in general, is challenging, sometimes due to the inability to quantify outputs, imprecise and unclear objective formulation, and somewhat arbitrary criteria selection, etc. While the efficiency of economic effects can be quantifiable, the efficiency of social effects is not. The population's **satisfaction level and trust** in state administration and its institutions are used to assess the efficiency of public administration and its social effects. Increasing the satisfaction level and restoring citizens' trust in public administration is extremely important, especially considering that according to the Public Opinion Barometer, from 2005 to 2020, trust in central authorities experienced a declining trend. The lowest level was reached in 2015-2016, amid the 2015 political crisis and the limited impact of reforms undertaken by public institutions over the years. Justice is still perceived as the most corrupt state authority and inefficient in protecting people's interests, which is why citizens have the least trust in the judiciary. [1]

Public administration performance is also evaluated through Worldwide governance indicators (WGI), calculated by the World Bank since 1996, particularly in three relevant dimensions: administrative effectiveness, regulatory quality, participation, and accountability. The estimated values of these indicators can range from (-2.5 to +2.5). [8]

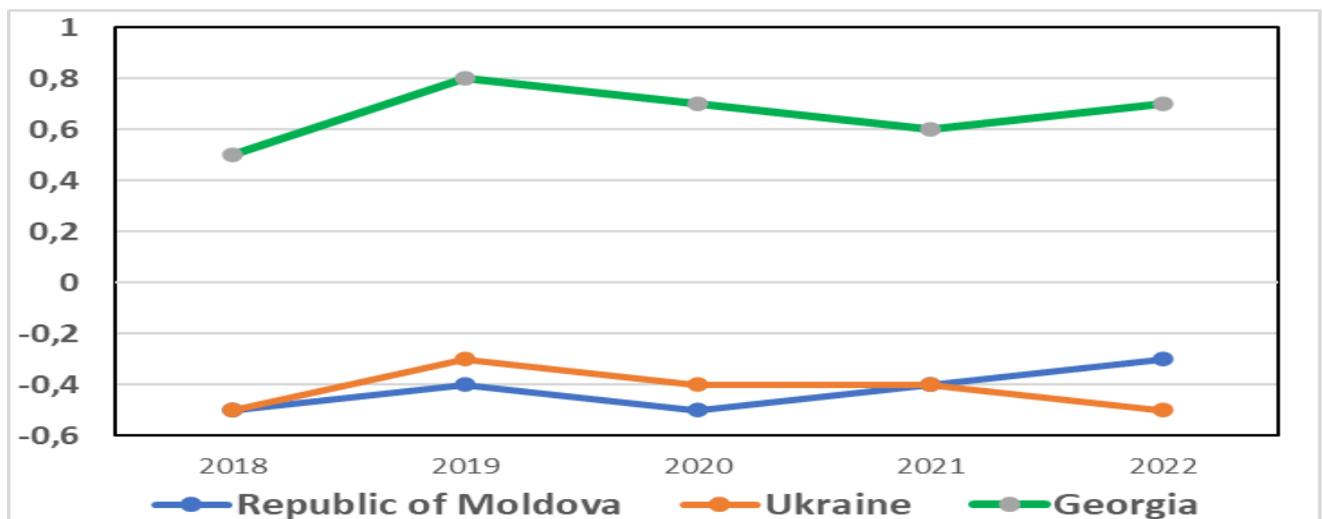
**Tabelul 2. Worldwide Governance Indicators, Republic of Moldova, 2018-2022**

Indicators	2018	2019	2020	2021	2022
Government Effectiveness: Estimate	-0.5	-0.4	-0.5	-0.4	-0.3
Regulatory Quality: Estimate	0.0	0.0	0.0	0.0	0.1
Voice and Accountability: Estimate	-0,1	-0,1	0,0	0,0	0,1

Source: developed by the author based on World Bank data

From the presented data, we can observe that our country has extremely poor results in all three dimensions, with a slight improvement in recent years.

As Moldova, along with Ukraine and Georgia, has obtained the status of a candidate country for EU accession, the comparison of results with these two countries is worth noting.

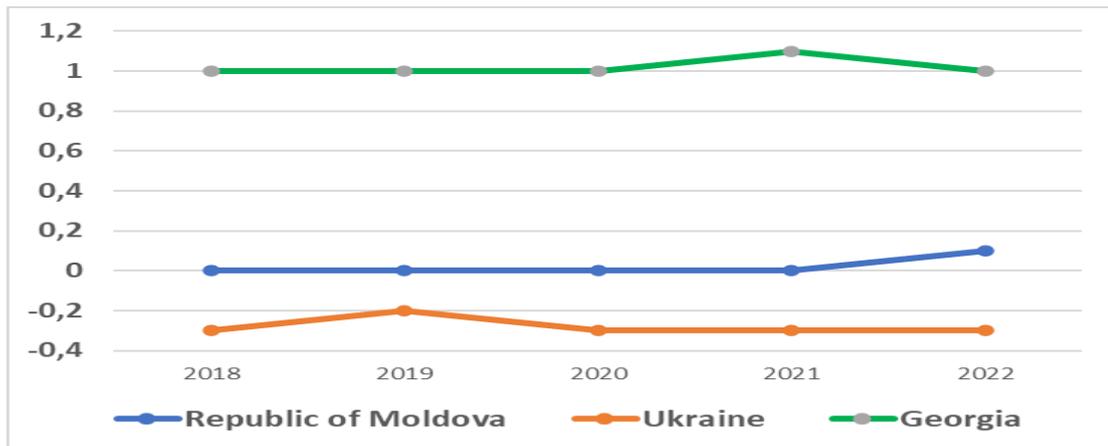


**Figure 3. The Administrative Efficiency indicator of Worldwide Governance, 2018-2022**

Source: developed by the author based on World Bank data

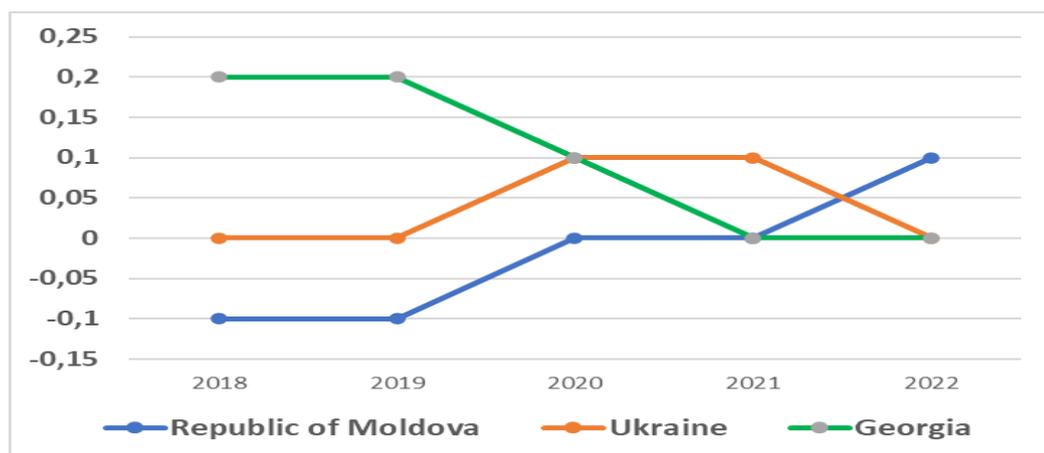
From Figure 3 we can see that on the Administrative Efficiency dimension Moldova is ranked the worst, except for the year 2022. The reason for Ukraine's lower score is obviously due to the war with Russia.

Only on the Regulatory Quality dimension, Moldova ranks better than Ukraine.



**Figure 4. The indicator Regulatory Quality of Worldwide Governance, 2018-2022**  
Source: developed by the author based on World Bank data

The third dimension, Voice and Accountability, also reflects an extremely weak positioning of our country compared to the other two candidate countries. However, we can see that in 2022 Moldova performs better than Ukraine and Georgia.



**Figure 5. The indicator Voice and Accountability of Worldwide Governance, 2018-2022**  
Source: developed by the author based on World Bank data

Analyzing the Worldwide Governance Indicators presented in Figures 3, 4 and 5, we can observe that our country is in the worst situation, with few exceptions. The most significant deficiencies are in the key dimension - *Administrative Effectiveness*, for which the gaps compared to the mentioned countries are indisputable, especially in comparison to Georgia, with Ukraine facing a development stagnation due to the war initiated by Russia in February 2022. In this context, the severity of our state's situation becomes even more evident.

The ex-post evaluation report of the Public Administration Reform Strategy for 2016-2020 highlights certain progress made during the reference period, but these are still too modest and unstable. At the same time, the report identifies several issues faced by public administration that need to be addressed through rapid implementation of reforms, especially if we desire a faster integration into the European community.

The most acute problem is the limited administrative capacity, driven by low attractiveness, low remuneration, an inefficient system of recruitment, promotion, and evaluation of public servants, political pressures, as well as extremely low economic and social development levels, regional disparities, etc. evident. [4, p.12]

In order to address the issues faced by public administration and improve its performance, authorities aim to intervene transparently and efficiently in all areas of development, using modern technologies and innovative services that comply with European integration requirements through an impartial, professional, and responsible administrative process. These objectives are included in the content of the legal acts underlying the public administration reform, initiated this year. At the same time, to strengthen the central public administration's capacities to meet the requirements of the candidate country status for EU accession, at the request of the Government and with the assistance of the European Union Delegation and OECD/SIGMA (Support for Improvement in Governance and Management), a partial evaluation of the central public administration of the Republic of Moldova has been launched from March to July 2022, through functional analysis focusing on the assessment of the central public administration's capacity to formulate public policies. This process will be generalized through a comprehensive evaluation in 2023, also with technical assistance from OECD/SIGMA. [7, p.16]

Improving the performance of public administration is a major objective for every democratic state, based on arguments that aim to rationalize the activities of public administration and create the necessary capacity for it to effectively fulfill its role as a facilitator of socioeconomic development and provider of quality public services. Furthermore, the National Development Strategy "European Moldova 2030" states that "the development objectives set are derived from the modern concept of quality of life and the major issues identified at the national level. In the context of Moldova's development, the most important dimensions of quality of life are: income, living conditions, education, culture, health, social solidarity, respect for human rights, trust in government, trust in justice, human security, and environmental quality." [6, p.4] At the same time, the status of a candidate country for European Union accession, obtained by the Republic of Moldova in June 2022, obliges the administration to align with the values and principles of the European administrative space, compelling the government to undertake a series of measures to improve economic performance and the living conditions of its citizens.

In line with the imperative of European integration, directly expressed through the implementation of the Association Agreement between the Republic of Moldova, on the one hand, and the European Union and the European Atomic Energy Community and their Member States, on the other hand, the "European Moldova 2030" Strategy adopts the concept used by European Union countries to measure the quality of life for people across ten dimensions, *with the strategic goal of enhancing the quality of life*. [6, p.5]

One of the nine commitments our country must fulfill to join the European Community is the reform of public administration and public services. Modernizing public administration and improving

governance quality, revising the institutional framework of central public administration, developing e-services, and enhancing local public administration are among our country's major tasks to join the European Community. In this context, the executive authorities of the state have proposed initiating an extensive reform of public administration tailored to modern visions, population demands, and the current socioeconomic context of the Republic of Moldova. The Strategy for Public Administration Reform in the Republic of Moldova for the years 2023 - 2030, recently adopted by the government, represents the new vision for transforming central and local public administration in the context of EU integration and the new socioeconomic realities. Thus, the need for a comprehensive reform of public administration arises from its challenges. The current public administration system is characterized by numerous structural problems, which can negatively affect the next period.

Starting from when it took office in 2021, the current administration announced an ambitious reform program to be implemented gradually. In the first stage, the Government set four lines of action:

1. Managing the health crisis caused by the COVID-19 pandemic;
2. Launching the justice and anti-corruption reform package;
3. **Increasing the population's income and social protection for vulnerable groups;**
4. Restoring external financing.

In the next stage, the government focused its efforts on structural medium and long-term aspects covering almost all sectors. These refer to: *low governance quality, corruption, conflicts of interest, the rule of law, and state administration; poverty, inequality, and socioeconomic vulnerability; the small number of well-paid jobs; underdeveloped infrastructure; vulnerability to climate change; environmental degradation, water resource pollution, forest management; an education system insufficiently adapted to society's needs; poor population health; a high rate of accidents and crime; vulnerability to threats and security risks for the state.* [3, p.26]

The Strategy for Public Administration Reform in the Republic of Moldova for the years 2023 - 2030 sets as a **vision**: *an efficient, transparent, and responsible central and local public administration, capable of continuous improvement, offering accessible and quality services to the citizens and the business environment of the Moldova, thus contributing to the society's well-being and social cohesion.* The goal of the reform is that *by the end of 2030, the Republic of Moldova will have a central and local public administration capable of providing conditions for the country's sustainable development, with a high level of integrity and competence, to (a) efficiently manage and deliver quality public services through professionalization and stability, simplification and rationalization, predictability, and coordination; (b) gain the respect and trust of citizens through honesty, transparency, and responsibility, accessibility, and openness; (c) strengthen its capacity to substantiate and implement public policies so that it can respond to the challenges raised by the EU accession process.* [7, p.54]

The impact of the Strategy, first and foremost, will be the improvement of governance quality, the capacity of public authorities to define and implement effective and efficient public policies, which

will be reflected in stimulating economic growth, local and regional economic development, reducing administrative compliance costs for businesses and citizens, and increasing the quality and access to essential public services.

Therefore, *the public administration reform strategy aims to enhance the performance of the administration, capable of providing conditions for sustainable societal development and improving the standard of living for its citizens.*

Among the priorities of public administration reform is the administrative-territorial reorganization by creating 10 regions/districts based on the 36 level II districts of local public authorities. The consequences of this reorganization will lead to increased management and development capacities at the local level and administrative efficiency through the reduction of costs of local public administration. This will also result in increased revenue from new taxes and levies, an increase in high-quality human resources and better technical resources. Simultaneously, it is anticipated that this will lead to increased foreign investments with higher added value due to a high absorption rate of international donor funds, especially EU pre-accession funds, which the Moldova could access from 2024. These actions will ultimately have a favorable impact and contribute to an increase in the standard of living for the population.

To ensure social and economic development and reduce regional disparities, which is one of our administration's most challenging tasks, authorities should aim to align national public development policies with European regional development policies. Regional development is a significant objective of the EU to prevent regional disparities caused by being part of a single market without protectionist barriers. Since disparities can lead to political, social, and economic instabilities, the EU provides cohesion funds to reduce these disparities, primarily measured by differences in GDP per capita. Funded programs are designed to increase the population's income in regions with below-average incomes, mainly by increasing employment rates. More than one-third of the EU budget is dedicated to this policy.”

## **Conclusions**

Public administration plays a key role in improving citizens' economic performance and living conditions. The population's standard of living is directly dependent on the policies promoted by the administration. Beyond the administration's obligation to create the necessary conditions for every individual to have the right to obtain the income needed for a human livelihood, it is tasked with ensuring everyone's access to the goods and services of civilization. Until 2020, public administration recorded modest performance and failed to provide its citizens with the conditions for a decent life. It is only in 2021 that a certain improvement in our country's performance in public administration efficiency may be observed. Some indicators, such as the Quality of Regulation, reflect a more favorable state in the field, but others, such as the Effectiveness of the Administration, show insignificant progress. In this context, an important role in increasing the performance of the public sector and the quality of public services, decisive for increasing the standard of living of citizens,

belongs to the reform of the central and local public administration. The strategy for public administration reform for 2023–2030 aims to significantly enhance the quality of public administration at all levels following the European Union standards.

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## NEW FORMS OF EMPLOYMENT IN THE CONTEXT OF THE CHANGE OF THE WORK PARADIGM

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**Abstract.** The present scientific research aims to discuss the new forms of employment, as a premise of the workforce enhancement. In an increasingly digitalized environment, the new conditions in which national economies are developing, are requiring policymakers at the national level to improve the legal framework of employment reports and to regulate their new forms. Thus, by elaborating this paper, we are aiming to put forward new forms of employment, recently implemented on the labor market, but which have direct implications on employers and employees. In this research work, we refer to the following new forms of employment: employee sharing, job sharing, casual work, ICT-based mobile work, interim management, crowd employment, portfolio work and voucher work. Each of these new forms of employment has certain effects on the labor market, and by applying one or another form, employers intend to ensure their demands in terms of human resources and national governments- to reduce unemployment and undeclared activities.

**Keywords:** labour market, employment, forms of employment, employers, workforce.

JEL Classification: J21; J53; J54; J62;

### Introduction

New trends on the labour market are leading to the reform of the content of our work, but also to the expansion of new employment alternatives, differing from the traditional ones. As well, the digitalisation of work determined many employers to identify new forms of recruitment, by diversifying their methods of work organization in order to satisfy workforce needs.

These new forms of employment are characterized by flexibility, which represents the first element of the work flexicurity. At the organisational level, flexicurity has been examined from an economic perspective, that of spendings, as a result of the implementation of flexibility policies in employment (Rubery et al., 2016). The authors' thesis is that flexibility could enhance incomes and limit public spendings by stimulating employment thus, raising tax revenues and reducing social support costs. Heggebø, K. (2016) analyzed employment and the general state of health in Scandinavia in the light of the Danish model of flexicurity, upholding that employers are more reluctant to recruit someone with a sensitive health. Indeed, this could only further damage the person's state of health, also conducting to a long-term medical leave.

In their analysis of work flexibility, Hill et al (2008) adopted two perspectives: organizational and the employees' view. According to the authors, the organizational perspective of flexibility does not pay enough attention to employees. As a matter of fact, it prioritizes practices such as: „just in time”

flexible production systems (Beyers & Lindahl, 1999); dynamic adjustments of the personnel by using temporary workers or contractors, unlike full-time, permanent employees. (Huang & Cullen, 2001); the adoption of alternative processes of work organization like: work groups, the rotation of staff and the evaluation of employees' performance by colleagues (Gittleman et al., 1998). Furthermore, if considering the employees' perspective, flexibility reveals their capacity of making choices regarding essential aspects of their professional life, namely those linked to the location, moment and duration of their activity (Hill et al., 2008).

The increasing proportion of the workforce capable of carrying out a “mobile work” also positively affected this tendency towards new forms of employment. This expanding interest for “mobile work” is due to certain evidence reporting that an increasing proportion of the workforce has more than one job (Felstead et al., 2005, Hislop and Axtell, 2007). Additionally, there are various opinions in regard to the developing interest for mobile work and precisely: the transformative potential of technology (Sherry and Salvador, 2001); the declining significance of the location in a globalized world with constant flows (Urry, 2000); the reform and the upsurge of space „abstraction” (Brown and O'Hara, 2003) and the greediness or the limitless activity (Baines and Gelder, 2003).

Simultaneously, it should be mentioned that for many segments of the labor market, employment contracts have also undergone substantial changes. In this context, as examined by McDowell and Christopherson, for young middle-class men, the combination of multiple jobs or the freelance work became the new “portfolio” or the carrier of “free agent”, as they are called in the USA.

### **Defining characteristics of the new forms of employment**

The expression “new forms of employment” is not synonymous with the atypical work contracts, well known by all European legislative systems, such as: temporary employment, part-time work, or distance contracts. Because of a pronounced precarity regarding work conditions and hiring terms, they involve much more different profiles. On the one side, this diversity of new employment forms, a factor allowing a quicker integration of the available workforce on the labor market, expresses the employers' specific needs in order to adapt to the current business environment. But, on the other side, they are also a reflection of the general opinions promoted by the latest European policy, which consider these unprecedented work arrangements as valuable instruments in their fight against unemployment, and, implicitly, in stimulating hirings (Dimitriu, 2016).

According to Eurofund (2015), “the new forms of employment” are characterized by the following components:

- relations between employees and employers are distinct from those between individuals. In this case, it may exist labor relations implying several employers for a single employee, one employer for more employees or multiple employers for multiple employees.
- work is performed intermittently or for brief periods of time
- a place of work, other than the employer's headquarter, in which the employee is mobile and performs his activity from diverse locations, including his own office, without considering the traditional teleworking.
- a significant or prominent ICT support, such as: mobile phones, personal computers or other similar devices, in the case in which the use of these tools redefines the nature of human relations at work or its standards.

Redardless of the nature of labor relations, Eurofund (2018) determined 9 new forms of employment: employee and job sharing, voucher work, interim management, casional work, ICT-based mobile work, portfolio work and crowd employment.

### **Employee sharing**

Employee sharing, this recent work arrangement, seeks to boost employment rate. Initially, the implementation of this practice had as purpose the reduction in absenteesim, both by demand and supply. (Florkowski 1987; Long 1980).

Companies have two pathways of sharing employees: strategic and ad-hoc. In a strategic sharing of employees, several companies create a common structure, used for the hiring of workers and the coordination of tasks sharing, related to a certain job (Lyutov). This common structure also covers the companies' legal responsibility for financial rewards, benefits and personal development of employees. However, De la Mora Velasco et al. (2021) uphold that in strategic agreements of sharing workers, the latter may alternate the tasks related to their work with two or more employers, on the basis of previous programs and agreements. Regarding the ad-hoc employee sharing, it consists in a temporary division of workers in order to balance the needs in human resources of two companies (for instance, the first one with a low workload and the second one with a shortage of workers). If considering this form of employee sharing, it presents more advantages. Firstly, it enhances job security for staff members and conjointly, maintains the employer's experience and professional competencies, even in a period of economic crisis. Secondly, at a regional level, it contributes to avoiding or reducing unemployment. Additionally, it may serve as a restructuring instrument for the original company. And finally, it may present a desirable, positive impact for the qualification level of the labor force, whereas the placement in a different company stimulates apprenticeship.

### **Job sharing**

Job sharing is considered as an innovative approach of employment, since it enables employees to find a balance between private and professional life. This method allows 2 or 3 persons to share a work week of 40 hours (full-time). Hence, a person may work for 4 hours, in the first half of the day, and the second one, continue the same activity for the next 4 hours. Another option is to alternate working days, but for a full-time activity (Robbins, 2007). While at first, this mechanism was applied by the medical and educational systems, currently, this possibility is proposed by both public and private employers (Eick, 2001).

According to Wheatley (2013), job sharing may help address modern, prevailing challenges of the labor market, related to youth unemployment and the ageing of the active population. Indeed, if considering job sharing as a mentoring strategy, it can be applied as “a slow exit” from the labor market for the elderly workers, and in the same time, as a form of apprenticeship for young employees. In this context, the Slovenian planned model of subsidizing unemployed agents in their effort of sharing a position with other staff members, reaching pre-retirement or retirement age, may constitute an example. This approach would ensure elderly employees with a gradual exit from the labor market, and propose a transfer of knowledge and experience to their younger successors. [28].

### **Interim management**

Interim management, an expanding form of employment, was associated with the corporate changes that occurred at the end of the 20<sup>th</sup> century and considered as a flexible work practice, specific to managerial positions (Blyton, 1992). The purpose of this new form of employment is the reduction of fixed costs related to hiring, by limiting staff administration and marginal benefits, and maximizing the control of the workforce use (Goss). Likewise, the presence of an interim manager in a company could enhance knowledge and the employee's professional skills, but also favor the substitution of some work practices, traditional for the company, with others, further innovative and presenting a more significant economic efficiency.

### **Casual work**

A major impetus in expanding casual work was determined by reforms related to the content of work, inclusively the impact of casual hiring. Casual work is the only form of untraditional activity, regulated in the Republic of Moldova. The legislation of the country defines a casual activity as an occupation that does not require particular skills or knowledge, being carried out sporadically. Individuals performing such activities are considered to be daily laborers and the main area of activity is consisted of agriculture. According to Eurofound (2000), there are 2 forms of employment for casual laborers: intermittent work and on-call work.

Intermittent work implies an employer attracting the workforce on a regular or non-regular basis, in order to perform certain tasks, often linked to individual projects or seasonal jobs. On-call work obliges a continuous working relationship between an employer and an employee. In this case, the employer is not required to constantly offer working duties to the employee. Instead, when necessary, the former has the option to request the services of the latter.

Casual work already shows certain effects on the labor market. Among them, this form may help some categories of the available workforce (young people and unemployed) to enter the labor market and acquire a professional experience, thus, conferring them a higher value.

### **ICT-based work**

Employees and/or freelancers from the digital field are characterized by two specific work practices. Firstly, they are using on a large-scale, personal computers, smartphones, cloud services, internet and emails, and this for a considerable part of their professional activity. Secondly, their work time is not exclusively spent at the employer's head office (not even in their own office, if considering independent contractors), mainly because the possibilities of work locations are much more diverse, like: personal residence, the client's office, hotels, public transportation or other public workplaces.

ICT-based work refers to work arrangements that can be deployed partially and regularly, outside the “main office”, either at the employer's office or in a personalized home office, using ICT for an online connection to the common computerized systems of the company (Andriessen and Vartiainen, 2006). According to the authors, the activity may be carried out anywhere and at any time, provided to be conformed to an occupation, work assignments and schedule, life style. Consequently, the activity is not necessarily carried out in a certain place, but also “on the road”.

ICT-based work, as a form of work organization, offers a valuable advantage to the company, since the employees can be permanently available, even outside office hours, conforming to the clauses of the contract concluded between the two parties. In such a case, the employee needs to have a

permanent access to the company’s network. Additionally, in the contract signed between the employer and the employee, the latter may have the freedom to personally manage his working time, provided to accumulate the necessary number of working hours.

### **Crowd employment**

Crowd employment, as form of workforce occupation, appeared in the early 21<sup>st</sup> century, with the rapid advent and rise of the Internet. In recent years, crowd employment registered a major expansion, following the development of digital platforms, and the COVID-19 pandemic crisis only accentuated this progress.

Crowd employment targets a specific category of workforce. For Brabham (2012), workers participating in crowd employment need a high level of qualifications, creativity and well-developed digital skills. From a perspective of the workers, crowd employment provides several advantages: learning opportunities, social exchanges, recognition from other workers and clients, possibility of a personal marketing development, a better work-life balance and finally the prospect of generating additional income (Klebe and Neugebauer, 2014).

In Felstiner’s opinion (2011), crowd employment could be considered as a successful approach for economic development of rural areas, but also as a formidable instrument, that can be applied in regions affected by war or natural disasters. For the workforce, this form of employment may contribute to the labor market integration of people with special needs, offering them an opportunity to carry out a professional activity.

### **Work based on voucher**

This is a form of employment in which an employer purchases a voucher from a third party (generally a governmental authority) in order to be utilized as a reward for the work of an individual. This option may be thought as a version of casual work and can be applied in areas such as: household services and agriculture. At the moment, work based on voucher is at an incipient stage, being practiced only in several EU states (household services- Austria, Bulgaria, France, Greece and Italy; agriculture- Greece, Italy, Lithuania). The reason for implementing this form of employment was the objective of curbing or even eliminating undeclared work. Indeed, this phenomenon is the most prevailing in these two fields: agriculture and household services. Accordingly, individuals carrying out an activity based on voucher may benefit from the status of employee, freelancer, unemployed, student or pensioner.

As for employers, they are determined to apply this form of employment for precautionary reasons and ethical considerations. As for employees, they opt for a job based on voucher, because they have access to new hiring opportunities in their local area, and flexibility in terms of working time. Furthermore, employees prefer a professional activity based on voucher, in the interest of having a declared job, rather than undeclared, this offering them a further degree of insurance, social protection and a guarantee of income. However, the workforce, in the absence of standard jobs, may accept a voucher-based job as an alternative to unemployment or other forms of casual work.

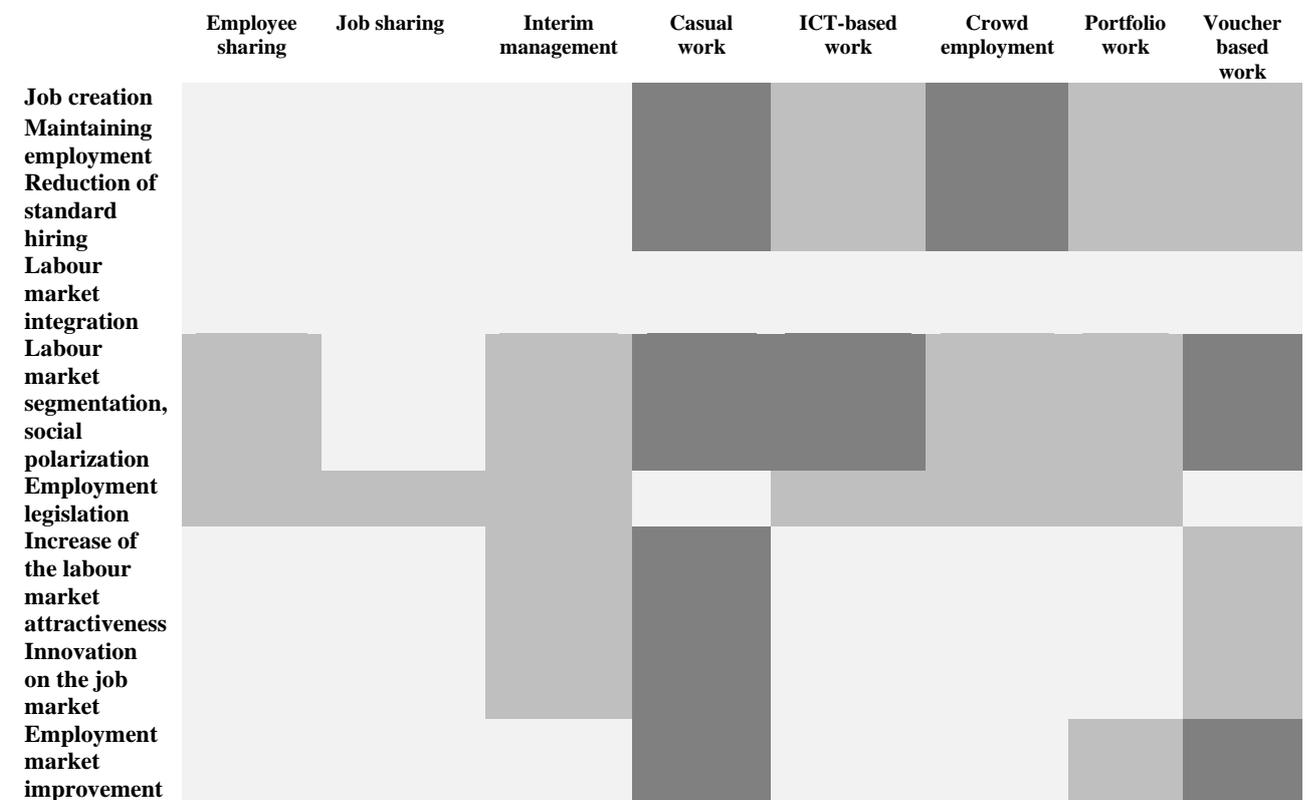
### **Portfolio work**

Portfolio work is also considered as a new form of employment, currently applied in several EU states. If referring to Chipman (1992), portfolio workers are the individuals holding a large number of jobs or contracts, in various fields of activity and with many different companies. Addressing this

topic, Mallon (1998) argues that portfolio work represents a tool for employees in order to obtain a certain independence from their employer, and their knowledge and skills may be redeemed by a greater number of entities.

At this moment, portfolio work is frequently practiced among workers from the creative sectors: journalists, interpreters and the staff from the media industry. Portfolio work provides a flexible form of employment, prolonging working life among an ageing workforce, even after retirement. In such cases, it offers the possibility of earning an extra-income after retirement, with increased flexibility for both employers and employees, based on the recognition of professional experience acquired by the ageing workforce (Platman, 2004).

The forms of employment described in this research paper present certain effects on the labor market: some with a more beneficial impact and others with a poorer one (Figure 1).



Legend:

- Beneficial effects for the labour market
- Neutral effects for the labour market
- Unfavourable effects for the labour market

**Figure 1. The effects of the recent forms of employment on the labour market**

Source: Adapted from [28]

### **The presence of the new forms of employment in the EU Member States**

The new forms of employment are more or less implemented at the level of each country. In order to efficiently implement these new forms of employment, the existence or the adjustment of the legal framework to the new social and economic realities is much needed. This could allow both employers and employees to develop favourable working relationships, based on trust and mutual respect. At the EU-level, these new forms of employment are more present in the states with a high level of economic development. (Table 1)

**Table 9. The presence of new forms of employment in EU member states**

<b>Employee sharing</b>	<b>Job sharing</b>	<b>Interim Management</b>	<b>Casual work</b>	<b>ICT-based work</b>	<b>Crowd employment</b>	<b>Portfolio work</b>	<b>Voucher based work</b>
Austria	Czechia	Czechia	Belgium	Belgium	Belgium	Cyprus	Austria
Belgium	Ireland	France	Croatia	Cyprus	Czechia	Denmark	Belgium
Bulgaria	Italy	Greece	France	Denmark	Denmark	Greece	France
Czechia	Poland	Latvia	Ireland	France	Germany	Italy	Greece
Finland	Slovakia	Hungary	Italy	Germany	Greece	Latvia	Italy
France	Slovenia		Netherlands	Greece	Italy	Lithuania	Lithuania
Germany	Hungary		Romania	Latvia	Latvia	Netherlands	
Greece			Slovakia	Lithuania	Lithuania	Portugal	
Luxembourg			Slovenia	Netherlands	Portugal	Hungary	
rg			Sweden	Portugal	Spain		
Hungary			Hungary	Slovenia			
				Spain			
				Sweden			
				Hungary			

Source: Adapted from [28]

As it results from the Table.1, the new forms of employment are more or less implemented at the level of each country. ICT-based work is applied in 14 EU Member States and presents the greatest prospects for expansion, due to the accelerated progress of ICT, thus creating new hiring opportunities for various categories of workforce. Casual work is the second most frequent form of employment in EU member states- 11 countries. It should be mentioned that the Republic of Moldova also adopted a legal framework in order to implement this approach of work. Nevertheless, the presence of the other forms of employment is much more limited at the European level.

## **Conclusions**

Under the present circumstances, considering that the digitalization process includes the whole spectrum of economic activities, it is natural for modifications related to the labour market organization to appear. The transformation of social values among the workforce, namely for the young generations that orient themselves to particular jobs and professions, may disrupt more or less the behaviour of the labour market. In such conditions, employers need to adapt to new requirements, in order to have the guarantee of benefiting from a qualified and motivated workforce, with the aim of achieving their organizational objectives. Furthermore, the COVID-19 pandemic crisis, that initially restricted people’s movement, finally determined employers to implement teleworking as a solution for the achievement of their pre-established goals. The forms of employment discussed in this research paper are considered as an alternative to a standard work framework, allowing the economic mechanisms to take place continuously within the organization. Besides, these new forms

of hiring provide a certain social comfort to employees, since they offer them a work-life balance and the possibility of earning additional incomes.

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## HUMAN RESOURCE COMPETITIVENESS ON THE LABOR MARKET

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**Abstract:** In this article we highlighted a key aspect of organizational success - the competitiveness of human resources. The statement emphasizes the critical role that human resources play in driving innovation and overall growth within an organization. Let's break down the key points in this statement.

The success of an organization relies on having a workforce that is competitive and skilled. The skills and capabilities of the workforce can be cultivated and improved over time, offering a reliable foundation for success. A competitive workforce contributes to the organization's ability to stay ahead in its industry. Employees who are competitive are more likely to think creatively, propose new ideas, and drive the development of innovative processes and products. The connection between human resource competitiveness and scientific/technical innovations is highlighted. Organizations with skilled and competitive employees are better equipped to push the boundaries of what is technologically and scientifically possible. In a competitive environment, organizations need to continuously adapt and evolve, which requires a workforce capable of driving such changes.

Competitive workforce is vital for an organization's innovation, growth, and survival. To remain competitive, organizations need to invest in employee development, foster a culture of innovation, and ensure that their workforce is equipped to handle the challenges of a dynamic business environment.

**Keywords:** skills, abilities, human capital, competitiveness, competition, labor market.

JEL Classification: J0, J08, J4, I2, I25, I28

### Introduction

Competition is a fundamental aspect of labor relations. It's present at various stages of the employment process, from both the employer's and the employee's perspective.

Employers compete with each other for the best talent in the labor market. They seek individuals with specific skills and qualifications, but they also often have to consider factors like experience, work ethic, and cultural fit. The level of competition in this area can vary depending on the industry and location.

Job seekers compete with each other to secure employment. The competition begins during the job search, as multiple candidates may apply for a single position. The more appealing the job (in terms of pay, benefits, and growth opportunities), the more intense the competition among job seekers.

### Competitiveness, their characteristic features in the field of labor relations

Competitiveness is the ability of a person or group of people to win in competition for economic goods.

Human capital is a sum of traits, all the knowledge, talents, skills, but also the experience, intelligence, education, judgment and wisdom held individually and collectively by the individuals of a population. Human capital is also a person's ability to generate income. [1]

It is necessary to distinguish between the competitiveness of the human capital of the individual and the competitiveness of the person himself in the labor market. The first is related to its potential to succeed in employment or career development; the second depends on the realization of this potential, which depends on both objective and subjective factors: labor productivity, attitudes of chiefs, possible discrimination and their own behavior.

The competitive human capital of an employee is the property not only of him, but also as a rule, of the organization which in turn is interested in its harnessing.

The competitiveness of economic agents plays an important role in any market segment. The labor market is not a exception. Here many aspects of the relationship between employer and employee are determined by the employee's competitiveness.

On what factors does the competitiveness of an employee depend, who and why is interested in it increasing?

Competition can also occur after employment, when employees compete with each other for a certain level of remuneration, for career advancement, leadership, for sphere of influence, for being close to chief, etc. And in this case - a more competitive employee has more chances to win.

Based on the definition of competitiveness proposed above, the following important factors must be specified: what is the object of competition (what is the fight for), who are the subjects of competition (who participates in it), what are the methods used (legal or illegal, ethical or unethical, etc.), as well as the key factors that determine the winner.

The competitiveness of participants in the competition process in the field of labor relations is inextricably linked and determined by these four aspects of competition. That is why it is not fair to reduce the employee's competitiveness to evaluating only the benefits he brings to the organization.

### **Competitiveness of the employee's human capital**

Most significant, in fact, the key factor in the employee's competitiveness is his human capital, which can be defined as a measure of a person's ability to generate income [2, p. 87]. Therefore, many components of an employee's human capital will also be simultaneously factors in his competitiveness on the labor market.

There are many such factors. The factors of individual's competitiveness can be divided into: those that do not depend on his behavior (for example, the person's physique or skills inherited from parents, etc.) and those that the person has acquired through sacrifices and efforts, namely by investing in his qualities and natural abilities.

It is necessary to distinguish between two concepts: the competitiveness of the person's human capital and the competitiveness of the person himself on the labor market. The difference between them is not so obvious, but on closer examination, it is noted, that these are different interpretations of

investments in human capital. Human capital is usually assessed taking into account a person's potential in his economic activity; investments in human capital increase a person's ability to earn more money, to receive a more significant social package, etc.

The competitiveness of a person's human capital is directly related to his potential to succeed in competition with other people. Labor productivity or more generally, the benefits that the employee brings to the employer, depends on realization of the employee's potential, expressing his competitiveness, but not his human capital.

In order for an employee to win in the competition in the labor market, a number of conditions must be met. The first condition is to possess a more qualitative and therefore more competitive human capital; other conditions are associated with the action of factors that affect the nature and results of competition, but are not directly related to the employee's human capital.

Do organizations need competitive employees? Among the trends that determine the emergence of new components of human capital that increase the competitiveness of the employee, it should be noted the increasing role of the knowledge economy and innovation.

The competitiveness of the human capital of a modern worker is increasingly determined by his ability to participate in innovation activities of the organization. It is this ability, being a special and in many respects unique component of an employee's human capital, that has become the most important factor in his competitiveness in the modern world.

The ability of employees to participate in innovation, influencing the nature of the company's economic activity, has become an important factor in their competitiveness. This objectively contributes to the convergence of interests of the organization and the employee regarding the capitalization of the innovative components of its human capital.

Technological development in recent decades as well as the phenomenon of globalization have led institutions and specialists around the world to look for the skills that everyone needs to successfully integrate into social life in a „knowledge-based economy that ensures economic development, better jobs and greater social cohesion”. [3, 4]

The competitiveness of employees largely depends on the operating system of human resources in the production and commercial activities of the company.

In the process of creating and developing staff competitiveness, the organization highlights the unity of social and economic processes: employees are interested in increasing individual competitiveness, and the employer, in turn, has the opportunity to achieve its objectives (improving product quality, generating new income, etc.) by using the most of the competitive qualities of employees. Thus, in the formation of competitiveness of a specialist, a significant role is played not only by personal qualities, possession of a set of certain knowledge and skills, but also the desire to permanently improve them.

There are three groups of labor market variables that characterize staff competitiveness [5]:

- the first group of **variables associated with work activity**. Variables in this group can change rapidly during crises and under the influence of targeted corrective actions or, they can change gradually, under the influence of many factors. They can be both favorable and undesirable for all types of activities of the organization;

- the second group of **variables associated with human resource**, which influence: a decrease or increase in the need for new employees, a change in staff structure and also determine the competitive advantages of its employees on the market;

- the third group of variables associated with staff perception of the stability of the organization's internal environment. This group of variables characterizes the activities of entire organization as a whole, from production to the management system.

The competitiveness of labor resources is that set of characteristics of active population that determines the success of its participation in the socio-economic activities of any territory. The capacity for own achievements in the activity, which bring organizational benefits is considered as the competitiveness of the employee.

Employee competitiveness is considered as a criterion for dividing employees according to the possible or already existing level of work efficiency, for further professional advancement. [6].

The employer must from time to time change its tactical and strategic objectives in relation to its human resources by introducing new concepts to achieve their competitive advantages. These strategies would include, among other things, that the employer is interested in the survival and future development of organization.

Employer philosophy, ideology, strategy and policy, focused on the fullest achievement of staff benefits as a subject of economic life - is the concept of maintaining staff competitiveness.

There are several types of concepts regarding staff competitiveness [6]:

**Concept of maintaining staff competitiveness** is a system of theoretical and methodological concepts for understanding and defining the essence, content, objectives, criteria, principles and methods, as well as approaches and practical organizational training of a functional mechanism for managing staff competitiveness under the concrete conditions of company's activity.

Essence of the **concept of consumption or concept of perfecting the process of accumulation of human capital** consists in performing and guaranteeing the most complete endowment of jobs with staff. The required number of workers changes in proportion to changes in production volume. In this context, the employer is interested in a workforce, which is widely available and offered at a low price.

**Concept of increasing the quality of human capital** is based on the fact that employers will be more predisposed to employees who perform their work at the highest level of quality. According to this concept, the "consumers" of the workforce will focus on using the "product" that will have the highest level of technical, operational and quality, thus ensuring the organization the greatest benefits. In this regard, the employer focuses on activities of creation, training and constant maintenance of a highly qualified workforce.

According to the **concept of competency** to maintain competitiveness, employer focuses on changes in employee qualifications in line with changes in workloads, as well as on maintaining and stimulating the use of different flexible employment, remuneration and motivation strategies. In particular, organization offers attractive prices for the workforce, in order to attract and retain employees.

**Career-based concept** or theory of stimulating the use of growing human capital is based on the statement that if employees are given the right to decide independently on the accumulation of their human capital as well as on the development of their skills, then it may decrease or it even depreciate the organization's supply of goods and services.

The criterion for optimizing labor consumption strategy is the income or expenses from the process of combining work capacity with capital and natural resources, as affirmed by the **traditional concept of marketing, or concept of efficiency of satisfying the wishes and preferences of the employer**. Due to the analysis of revenues and expenditures, it becomes possible to use more profitable ways of managing production, eliminating the least productive ways, as well as stimulating the migration processes of resources in order to use them more efficiently. This concept of maintaining the competitiveness of staff gives the possibility of prompt responses to the influence of changes in production requirements on the professional-qualifying structure of the workforce and makes it possible to ensure compliance of available human capital with the development of functional quality of work.

**Modern concept of developing employee competitiveness** is based on the absolute subordination of all aspects and activities in order to achieve competitive advantage in the labor market, as well as to satisfy the demand for goods and services on the labor market in the most profitable way. With development of a system for the rapid management of employees' capacities, it becomes possible to obtain an increased performance of the activity of qualified specialists in the enterprise. This concept is also systemic and based on principles of labor resource development in the world economy, taking into account the aspects and barriers that may hinder the development of the competitiveness of this resource. Factors that make it possible to achieve the best effect on the labor market to fully meet market demand are the volume and structure of corporate competence, life cycle, measurement of all labor costs, level and dynamics of labor efficiency.

## **Conclusion**

Every company formulates and executes new, efficient strategies for navigating the internal labor market. Drawing insights from the practices of their industry peers, they have the capacity to craft unique methods and behaviors. Through examining the lessons learned from others, an organization can expedite its growth and enhance its potential to attain synergy while overseeing employee competitiveness.

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## EFFECTIVE EMPLOYEE MOTIVATION STRATEGIES

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**Abstract.** In a constantly changing business world, motivating employees within a company and attracting new human resources become strategic priorities for companies. In order to achieve these objectives, it is crucial to implement effective motivational strategies, which lead to the retention of employees and the attraction of new valuable candidates. An effective motivational strategy not only attracts valuable candidates, but also determines the existing employees to make their maximum contribution to the success of the organization.

Managers are increasingly concerned with assuming an important responsibility, namely that of motivating their employees to achieve performance. More and more companies realize the need to awaken the interest of employees to participate to a large extent in the company's success. Companies that maintain a focus on employee motivation will always have an advantage because a motivated employee is a productive employee. This will positively influence the results of the companies. That is why the motivational process is an important one, and managers should juggle motivational strategies to drive performance and help the company thrive.

In this article, we will explore various forms of motivation, the causes for lack of motivation and what are the benefits that motivational strategies bring.

Therefore, investing in effective strategies regarding the motivation of staff and candidates not only increases the attractiveness of the company on the labor market, but also strengthens the solid basis for the long-term success of the organization.

**Keywords:** motivation, employees, strategies, rewards, efficiency, manager

JEL Classification: J24, J28, J33, M2, M52

### INTRODUCTION

In today's economy, the extent to which a company's employees are motivated determines its progress. The essence of a company is its human resource. It is the only creator of value, that is, a flow of creativity and originality necessary to discover the possibilities of knowing one's own limits.

The employee is the key factor in the success of a company and, for this reason, the human resource must be shaped, supported and motivated for the most intense involvement in order to achieve performance. The most effective solution to ensure a company's survival and maintain competitive success is investment in people. That is why the process of motivation is a very important one and

managers should implement effective motivation strategies to drive performance and help the company grow.

Motivating employees is a dimension of work in human resources and not an easy one. Jean-Marie Peretti (2010) states: At the basis of motivation is the theory of equity. The employee thinks about what his contribution is and what he receives in exchange for his work from the organization. The comparison develops in two directions, one internal, within the company, and one external, towards the employees of other companies. Of course, this ratio is not the same in all countries, but the same is the mechanism that puts the employee into action, that motivates him, is the same and is based on the appreciation of the salary in relation to the work and effort put in. As a result, the salary policy developed is very important in motivating the employee, and its transparency is essential. Also, in order to be motivated, employees must have confidence in the performance appraisal system practiced in the organization, to know the rules according to which they are evaluated, to be explained to them the connection between contribution and remuneration. (Lefter et al., 2012, p.130)

The term motivation comes from the Latin *movere*, which, of course, means movement. We can say that an individual is motivated when he wants to achieve something. The reason is not the same thing as the incentive. An individual's motivation covers all the reasons why he chooses to act in a certain way (Adair, 2006).

Other management specialists, Nicolescu, Verboncu (2008, p.291), define motivation as, in a broad sense, "a set of decisions and actions by which the organization's stakeholders are determined to contribute directly and indirectly to the realization of functionalities and superior performance overall, based on the correlation of their interests in approaching and achieving the objectives of the organization and its subsystems".

In a narrow sense, from the perspective of human resources management, motivation, in the authors' view, consists in correlating the needs, aspirations and interests of human resources within the organization with the achievement of objectives and the exercise of tasks, competencies and responsibilities assigned within the organization. (Lefter et al., 2012, p.131)

The ability of motivation to determine a series of characteristics of work behavior is very well captured by Pinder (1998) who stated that motivation is a set of energetic forces that originate both inside and outside the individual to initiate the associated behavior with work and to determine its form, direction, intensity and duration.

Therefore, all these approaches, although sometimes considered antagonistic, justify the need to carry out further studies and research on work motivation, effective motivation strategies, in order to be able to understand and explain organizational behaviors and the way in which the management of an organization must act in this direction to achieve its final goal - performance.

## **BENEFITS OF EMPLOYEES AND CANDIDATES MOTIVATION**

An effective motivation strategy not only attracts valuable candidates, but also determines the existing employees to make their maximum contribution to the success of the organization. When a candidate is strongly motivated by the company during the recruitment process, he is more likely to choose the job offer and join the team. Also, once employees are motivated and actively involved, there is a

higher degree of retention of employees within the organization in the long term. (Motivarea angajaților, 2023)

Motivation helps employees achieve excellent results in the workplace, but when they are dissatisfied, demotivated people can achieve poorer results. There are many factors that can generate lack of motivation: personal problems, disagreements with colleagues, dislike of the type of work that the employee has to do, or other individual reasons. This is because people are different, each person has their own character, principles. From this statement it is important to understand that individual solutions must be found to help demotivated employees find their "interest" in the work they do.

Motivating someone means understanding their needs, what motivates them to work better and make them want to get better results. (Costin, 2020, p. 118)

Motivation itself is an extremely complex activity and affected by many factors in the business. The benefits of employee motivation are numerous; however, we would like to list some of the most important ones:

➤ **Increases employee engagement**

Motivational strategies can help employees feel more involved in their work, leading to higher levels of job satisfaction and commitment to the organization. Connecting to the company's mission and values leads them to give their full contribution and to work with passion and determination.

➤ **Productivity increase**

Motivation stimulates employees to focus their efforts to achieve the organization's goals. When employees are motivated, they are more likely to actively seek ways to improve their performance, take on new challenges and exceed expectations. They may be more willing to go beyond their responsibilities and take more responsibility for their work. This can lead to increased productivity.

➤ **Talent retention**

Motivated employees are less likely to leave the company. This means cost savings associated with new hires, as well as maintaining knowledge and expertise within the organization.

➤ **Reducing staff turnover**

High employee turnover can be costly to organizations, such as increased recruitment and training costs, decreased productivity, and lower morale.

By implementing effective employee motivation strategies, organizations can create a positive work environment that promotes growth and development, which can improve employee retention rates.

➤ **Increasing creativity and innovation**

Motivated employees are more open to new, innovative ideas and to taking constructive risks. Employee motivation strategies can encourage employees to be more creative and innovative in their work, leading to new ideas and approaches that can benefit the organization.

➤ **Better collaboration and teamwork**

Motivated employees may be more willing to share their ideas and collaborate with others to achieve common goals. They may be more open to feedback and constructive criticism, which can help improve communication and team trust, and are more willing to support and help their teammates, which can help foster a culture of positive team. Motivated employees are more inclined to work together, offer mutual support and develop constructive relationships.

➤ **Increases attractiveness for candidates**

A strong employer brand, based on solid motivational practices, can attract talented and high-potential candidates who will want to join the team.

➤ **Creates a positive public image**

An organization that invests in employee motivation creates a reputation as a top employer, thus attracting the attention of candidates and other key stakeholders.

➤ **Increasing profitability**

Effective employee motivation strategies can improve an organization's profitability in several ways.

- This improves employee productivity such as increasing sales, increasing customer satisfaction and improving the organization's reputation in the market.
- This helps employees to come up with new ideas and approaches that can benefit the organization to remain competitive in the market.
- This helps reduce employee turnover and associated costs such as hiring and training.
- This creates a positive work culture and helps improve the reputation of the organization by attracting top talent and reducing recruitment costs. (Джейн, 2023)

Once people are motivated, maintaining this condition will require constant vigilance, but the effort will be rewarded: highly motivated people will behave well and get more than satisfactory results.

In terms of compliance with deadlines, many studies suggest that pay isn't the biggest motivator for employees, but it sure helps. When there is a structured process to tie performance appraisal scores to merit increases, employees are more motivated to meet deadlines and get things done.

Well-motivated people harness their creativity and top management skills to re-engineer their workflows and resources to finish the job faster and exceed expectations

In an organization, the success of the the qualitative side of the human factor and his motivation towards the work performed are ensured to the greatest extent. Satisfaction with work is associated with performance up to a point, from which performance influences satisfaction. The direct link

between performance and work satisfaction is mainly provided by the feedback and reward system. (Costin, 2020, p. 118)

Therefore, investing in effective strategies regarding the motivation of staff and candidates not only increases the attractiveness of the company on the labor market, but also strengthens the solid basis for the long-term success of the organization. This proved to be extremely important when it was necessary to motivate employees during the pandemic, because the distance was a factor that could have easily broken up the teams.

## **CAUSES FOR LACK OF MOTIVATION OF EMPLOYEES**

here are countless reasons that lead to workplace demotivation and low morale, and they vary by individual.

Here are some possible causes for lack of motivation at work:

- **Invasive or authoritarian management:** can inhibit creativity, initiative and active involvement of employees;
- **Insecurity and instability:** can reduce commitment and involvement at work. Job security is the most important factor in employee motivation. If an employee is in an expendable job or working in an unstable company, he may put in the effort necessary to continue receiving his salary. The rest of his energy will be spent updating his resume, gossiping with coworkers, looking for a more stable job elsewhere, and planning his jump.
- **Distrust in management and ineffective communication:** lack of open communication, preferential treatment or lack of respect can undermine employee trust. In the absence of information, rumors thrive. Employees end up second-guessing, confused and frustrated. If there is no way to communicate to management for clarification, it becomes even worse. Clear communications throughout the organization not only ensure an efficient workplace, but also have a major impact on employee morale and confidence.
- **Lack of recognition and rewards:** can lead to disengagement and demotivation. When employees are not recognized for a job well done or the immense effort they put into a project, they become demotivated. They lose interest and may not even want to try to think innovatively, do extra work or even perform their role with only feelings of obligation and energy because their superior does not seem to care or notice the hard work and devotion. (Ghid resurse umane și management de personal)
- **Lack of development opportunities:** limited learning opportunities or stagnation in unchallenging positions can lead to demotivation. Most employees feel happy when there is continuous learning potential in their company and a sense of growth in their knowledge and skills. Even progress in the form of small achievements at work are motivation triggers. If, on the other hand, employees feel uninspired and stagnant, their enthusiasm and commitment will decrease.
- **Lack of connection with the organization's values:** the feeling of not identifying with the organization's culture or of not seeing a meaning or an impact in what they do, can diminish involvement and dedication;

- **Monotonous tasks and lack of challenges:** this can lead to boredom and demotivation;
- **Lack of balance between professional and personal life:** extended working hours, lack of flexibility or support for personal needs can lead to exhaustion and demotivation. (Motivarea angajaților, 2023)

## EFFECTIVE EMPLOYEE MOTIVATION STRATEGIES

Currently, the salary is not enough to ensure the existence of employee motivation and involvement. The context constantly demands new ideas when it comes to ways to reward and retain employees. They perform in such a way that they stay in the company for a long time.

Organizations can create a positive work environment that supports employee well-being, engagement and productivity by implementing effective employee motivation strategies. This, in turn, can lead to a number of benefits, including greater job satisfaction, reduced turnover and improved organizational success.

### Determining employee needs

Identifying employee needs is an important step in creating effective employee motivation strategies. This includes understanding what motivates employees and what challenges they face in the workplace. Conducting surveys, focus groups, or one-on-one meetings with employees can help gather this information.

- *Question and Answer Surveys.* They can be useful tools for collecting anonymous feedback from employees. An online survey can be conducted on a range of topics such as job satisfaction, work-life balance, opportunities for growth and development, and recognition and reward.
- *Focus group.* These group sessions involve a small number of staff and are led by a trained moderator. These can provide a deeper understanding of employee needs and identify common themes or issues.
- *One-on-one meetings.* These meetings can give employees a safe space to discuss any issues or concerns they are facing and help build trust with managers or supervisors.

By understanding the needs of employees, customized motivation strategies can be created that address their specific concerns and challenges.

For example, if employees report feeling stressed or overwhelmed, consider providing additional support or resources, such as counseling services or wellness programs.

### Rewarding employees by recognizing merits

It is important for employers to provide constructive feedback and highlight the valuable contributions of employees to motivate them to continue to engage and achieve exceptional results.

Employee motivation improves significantly when their work is known and recognized by superiors. Small and medium-sized companies can take small steps to value and recognize the work of employees. With small gestures, the employer can demonstrate that he cares about his employees and their contributions. Such gestures increase the morale of employees. (Ghid resurse umane și management de personal)

When employees feel that their contributions are valued, they are more likely to be motivated and engaged in their work.

Recognition and reward can take many forms, from public praise to bonuses, rewards or promotions.

- For example, a bonus can be given to an employee who meets or exceeds a certain performance target, or a promotion can be given to an employee who consistently demonstrates leadership in their task.

However, rewards and recognition should be linked to significant achievements or behavior and not just given arbitrarily. This ensures that employees feel that their efforts are truly appreciated and that there is a clear link between their actions and the rewards they receive.

### **Providing work-life balance**

Flexible working hours, remote work or the possibility to set their own working hours allow employees to better balance their personal and professional lives and to feel more satisfied and motivated at work.

By prioritizing work-life balance, organizations can create healthier workplace cultures and reap the benefits of a more engaged and productive workforce.

Providing flexible work arrangements such as telecommuting, flexible hours or extra days off can help employees balance their personal and professional commitments. This can lead to reduced stress, increased employee satisfaction, increased levels of motivation and productivity, and cost savings.

- For example, allowing employees to work from home can reduce the need for office space and overhead costs.

However, it is important to remember that providing work-life balance should not be seen as a privilege or an afterthought. This should be a fundamental aspect of a healthy workplace culture that promotes employee well-being and engagement.

### **Transparency in professional development**

Employees who understand how they can progress in the organization and who see concrete development opportunities are more motivated to make efforts and achieve their professional goals.

Not all people want to climb the career ladder - this requires responsibility, high levels of commitment and long hours. Others want to, but are not up to it. To ensure that expectations and reality coincide

and that both the company and the employees achieve their goals, it is necessary to draw up a career plan for each employee and supervise his professional activities.

It is important for the subordinate to understand: it is impossible to come to work as a consultant and a month later take the position of boss. Even if we hypothetically assume such a development of events, the result will most likely be disastrous. A career is built progressively and depends on many factors. However, a manager can set a lower but still good bar for a potential manager.

Companies are interested in employees becoming better, because professionalism directly affects the profitability of the business. And by the way, a career can develop not only vertically, but also horizontally - a company does not need an endless number of managers, but strong experts in their field are always needed. (Якыба, 2022)

### **Opportunities for personal development**

Employees who see that they are offered the chance to grow and improve their skills are more engaged and involved in their work.

Organizations can provide opportunities for growth and development by offering training, coaching and mentoring programs. These programs can help employees develop new skills and knowledge that can benefit both the employee and the organization.

- For example, an employee who is trained in a new technology or process can work more efficiently, resulting in improved productivity and results.

Additionally, these programs help employees feel valued and supported, which leads to greater engagement and motivation.

For example, an employee who has the opportunity to lead a project may feel proud of their work, which leads to increased motivation and productivity.

### **Team spirit**

Team atmosphere, team spirit - these are things that cannot be measured and counted, but they greatly influence the company's efficiency. This is communication between employees and at the "manager-subordinate" level. If the relationship is friendly, built on mutual respect and trust (but without familiarity), then the work will be better. Here are some ways to do this.

#### *Building a team*

In simple words: this is an event whose purpose is to unite the team. It can be organized after a working day or week or combined with a corporate or holiday event.

What can be team building. Various games, missions and other activities where the team has to solve puzzles together, get out of difficult situations and just have fun and relax. As a rule, after such events the work process goes better - employees get to know each other better and establish mutual assistance.

### *Team meetings*

It is advisable to organize regular meetings - not only in critical situations, but also when something relevant simply needs to be discussed. The manager must praise people openly, express gratitude to them, talk to them about offers and prospects for success.

### *Personal conversation*

If we talk about communication between a manager and a subordinate, personal conversation and feedback bring people closer and help them quickly achieve company and personal goals. It is advisable for the boss to have a general idea about the employees: do they have a family, children, parents, where do they live, why do they work in his company. The team must ensure that everyone in it is respected and not neglected.

### **Creating a positive work environment**

A positive work environment is one that is supportive, inclusive and fun. This environment can be created by:

- *Encouraging cooperation and teamwork.* When employees feel they are working together toward a common goal, they are more likely to be motivated to succeed.
- *Providing opportunities for social interaction,* such as team building or company events, can also help create a sense of community and support among employees.
- *Creating a culture of respect and trust.* This can be achieved by encouraging open communication and feedback, recognizing and rewarding positive behavior and dealing with any workplace issues quickly and effectively. (Джейн, 2023)

### **Encouraging respect and transparency in the team**

It is important that employees feel respected and appreciated by colleagues and hierarchical superiors. Also, the role of managerial communication in motivating employees is very important. Promoting constructive feedback and active involvement can create a motivating and sustainable work environment.

### **Financial motivation of employees**

Of course, financial rewards are also important and an extremely large motivational factor because they satisfy a number of people's main needs. The financial motivation of employees contributes to the development of the feeling that their work is appreciated and respected. These are one of the best ways to support, well and efficiently, the behavior of employees and help them to be satisfied with what they do and the company they work for.

### **Capitalizing on employees' opinions**

Employers can create an environment where employees feel listened to and valued, by organizing brainstorming sessions, collecting feedback and encouraging their contributions to projects and processes.

### **Respecting promises to employees**

When employees see that their rights are respected and their promises are fulfilled, they will be more motivated to stay involved and contribute to the success of the organization. (Motivarea angajaților, 2023)

### **CONCLUSIONS**

In the near future, policies will continue to be revised by both organizations and legislation to emphasize people-centered solutions that motivate employees, enable them to celebrate, recover, easily manage personal events, to take care of others.

Revising leave policies and adopting creative motivation solutions will give organizations a competitive advantage for top professionals in parts of the world with low unemployment, while helping companies comply and stay ahead of growing regulations.

Motivation plays a very important factor in a person's life. Be it individual improvement or organizational performance. Motivated employees do not need to be told how to do things, they take initiative, are willing to assume on additional responsibilities, are innovative and good entrepreneurs.

Hence, motivation plays a very important factor that ensures that employees remain active and contribute their best to their organization.

To successfully include efforts aimed at motivating employees, managers must have a real picture at both the macro and micro levels of the company. The macro level supports a motivational initiative through logic and context, and the micro level gives it consistency in action. As long as the employee sees his relationship with the company as an important one, the activity he performs brings with it personal fulfillment. In this way, the result of the motivation approach will have a decisive impact on personal motivation.

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**ANNUAL INTERNATIONAL SCIENTIFIC CONFERENCE “COMPETITIVENESS AND  
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**SESSION V: INNOVATION AND  
COMPETITIVENESS IN ACCOUNTING  
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## DEALING WITH KEY AUDIT MATTER ASSERTIONS IN THE CONTEXT OF REPORTING ENGAGEMENTS

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**Abstract.** The objective of the study is to analyze the professional requirements related to the treatment of assertions regarding the key aspects of the audit in the context of reporting missions. During the audit missions, they must monitor whether the data collection and processing procedures are well established and permanently applied. The idea that it is the duty of the auditor to detect violations of the legislation is unanimously shared. At the same time, the auditor cannot be expected to report issues that do not belong to his competence. Mistakes in financial statements can be committed not only because of non-compliance with the principles of accounting standards, but also for other reasons explained in the article. In order to discover the errors and frauds listed above, the procedures recommended by the International Auditing Standards and those proposed in this paper can be extended.

Presentations or disclosures made by an entity's management through financial reports are treated in various ways, which are not limited to the accuracy with which accounting information is processed. Affirming that the information in the financial statements is presented in accordance with the provisions of the accounting and financial reporting framework respectively, it can be concluded that the management, implicitly or explicitly, assumes responsibility for the recognition, evaluation, quantification, presentation and disclosure of the various elements in the statement financial statements and related explanatory notes.

In practice, all cases of incorrect financial reporting a serious problem for accountants who want to properly apply accounting provisions, but it is also a challenge for independent auditors. The objective of an audit mission is to provide an assurance that the financial position and financial performance are adequately presented in the financial statements taking into account the provisions of the financial reporting standards. It is important that when starting the audit, the auditor will first of all obtain a sufficient understanding of the terms and conditions of the engagement.

**Keywords:** financial statements, international auditing standards, key aspects of the audit, policy monitoring, reporting missions.

JEL Classification: M42

### Introduction

From the point of view of both external and external users of the financial statements, but at the same time taking into account the expectations of investors, thus correlating the accounting aspect with the financial one, it is now necessary to expose ourselves regarding the applicative nature of the audit standards.

The auditing of financial statements and related services can only be carried out by experienced accounting specialists. This is also reflected in the Statements issued by the International Auditing and Assurance Standards Board. All the more so as the objective of an audit mission consists in expressing the opinion regarding the authenticity of the financial position and financial performance of the entity reported in the financial statements.

ISA 200 "General objectives of the independent auditor and the conduct of an audit in accordance with International Standards on Auditing" notes that the auditor does not aim to establish the authenticity of the financial statements, but gives his independent opinion on the authenticity or fairness of the financial statements, that is, whether the financial reporting is based on the requirements of the legislative and regulatory accounting framework. [2, par. (3)].

To express the opinion, ISA 700 (Revised) „Formulating an opinion and reporting on the financial statements” recommends the auditor to use the following expressions: „the financial statements present fairly, in all material respects” or „the financial statements give a true and fair view , which are equivalent [3, par. (7) ].

And in order to test the veracity and completeness of the financial information, the auditor undertakes the responsibility to investigate various sources of information and accumulate the necessary evidence to find the answers regarding:

- The correctness of the data regarding the value of the patrimonial elements reported in the balance sheet;
- The accuracy of the data regarding the entity's financial performance (profit or loss) presented in the profit and loss statement;
- The amounts of dividends calculated to the shareholders and founders of the entity;
- The real value of the receivables and the actual repayment possibilities in the near future;
- The reality of the reported financial debts and their certainty in the absence of other debts not reported in the balance sheet;
- Assessing the probability of the entity's bankruptcy.

Based on these answers, the users of the audit report, being more confident in the authenticity and truthfulness of the information in the financial statements, are more firm when they rely on this reporting in the process of taking the attitude of making some purchases, investments, or offering loans, to assign some debts.

Errors committed when preparing financial reports can be not only due to non-compliance with the regulations of the accounting framework, non-compliance with the principles of accounting standards, but some mistakes can also be made for other reasons. Misstatements committed in accounting, according to ISA 240, can occur for the following reasons [4, par. (12)]:

- Manipulation of registrations and registrations in accounting, falsification of documents;
- Carrying out transactions of illegal use of the entity's property;
- Loss, scrapping and destruction of accounting records and analytical records;
- Accounting in the absence of supporting documents of fictitious operations and facts;

- Non-compliance with the provisions of the accounting policies when keeping the accounts and drawing up the financial statements;
- Intentionally committing mathematical mistakes in supporting documents, accounting registers and other accounting data record documents;
- Distorting the economic content of operations and transactions by drawing up the wrong accounting formulas.

In order to test the errors and frauds stated above, the audit works stipulated by the International Auditing Standards and those proposed by specialists in the field can be detailed. For example, we believe that procedures for uncovering errors and fraud committed in the process of preparing financial statements are necessary for the accumulation of audit evidence, such as:

- Carrying out inventory works of the entity's patrimonial elements;
- Examining the financial indicators and performing a dynamic analysis of the data from the financial statements;
- Remaking the trial balance and testing the accounting records;
- Mathematical verification of the accuracy of the totals in the accounting registers;
- Reconciliation of the indicators from the trial balance with the data from the financial statements.

When the management of the audited entity declares that the financial statements report the real situation, taking into account certain requirements of the accounting regulatory framework, in this way the management presents with responsibility explicit or implicit statements regarding the financial position and the financial performances exposed in these statements.

### **Results obtained and discussion**

The purpose of reporting the financial position as well as the financial performance is to satisfy the needs of internal and external users who do not have the possibility to ask an entity to prepare and present reports according to their informational needs. By meeting the needs in financial information is meant the presentation and publication of financial statements accessible to third parties, including real and potential financiers and founders regarding the entity's financial performance, resources, equity and economic liabilities of the entity.

Therefore, it is essential that in the confirmation letter drawn up by the management of the audited entity and presented to the auditor, it should be emphasized that this letter is part of the audit mission file and serves as a basis for expressing an opinion on the true and complex picture of the reported financial statements.

By means of this letter, the management representatives of the audited entity declare knowingly and also in good faith, that they have made available to the auditor all the information necessary

to accumulate sufficient audit evidence. At the same time, through this communication it is confirmed that there are no irregularities in the functioning of the accounting and internal control system, likely to have a significant impact on the authenticity of the information reported through the financial statements.

In the context of this communication, it is fundamental to declare that all accounting information, all related supporting documentation and all minutes of general meetings, of the board of directors, respectively those held by the entity, have been made available to the auditor.

**Table 1. Categories and forms of presentations in financial statements**

<b>Categories</b>	<b>Types</b>	<b>Content</b>
<b>Presentation of information by categories of transactions and events</b>	<i>Appearance</i>	The operations and transactions accounted for were carried out by the entity in reality
	<i>Fullness and integrity</i>	All transactions and events that actually happened have been accounted
	<i>Accuracy</i>	The value expression of the transactions and events realized during the reporting period are accurately accounted
	<i>Closing date</i>	The reporting period of transactions and events is correct
	<i>Systematization</i>	Information about transactions and events is correctly reflected in the appropriate accounting accounts
<b>Information on account balances at the end of the period</b>	<i>Existence</i>	All existing assets, liabilities and equity items reported in the financial statements exist
	<i>Claims and liabilities</i>	The assets and liabilities owned by the entity are controlled by it
	<i>Fullness and integrity</i>	All patrimonial elements that had to be accounted for were reported
	<i>Evaluation and allocation</i>	The value expression of the asset and liability elements reported in the financial statements expresses their real value
<b>Presentation and disclosure of financial information</b>	<i>Recognition of assets, receivables and liabilities</i>	The transactions and events reported actually occurred
	<i>Completeness</i>	All information regarding financial position and performance has been reported
	<i>Systematization and degree of understanding</i>	The necessary information has been properly disclosed in the explanatory notes to the financial statements
	<i>Accuracy and evaluation</i>	All reported information has been presented appropriately

*Source: developed by the author based on the professional normative framework [5, IAASB Handbook]*

During the audit missions, they must monitor whether the data collection and systematization works are well established and applied regularly. The idea that it is the duty of the auditor to detect violations of the legislation is unanimously shared. At the same time, the auditor cannot be expected to report issues that do not belong to his competence. Auditors must provide assurance that the financial statements reflect the effect of fraud and that all necessary details are disclosed.

Each stage of the audit mission of the financial statements involves the performance of several categories of work, all with the role of allowing the audit team to obtain the evidence needed to formulate the audit opinion.

Recognition is the process of incorporating in the balance sheet or in the profit and loss statement an element that:

- Corresponds to the definition given to a structure of financial statements (assets, liabilities, equity, income and expenses);
- It is probable that any associated future economic benefits will flow into or flow into or out of the entity;
- The item has a cost or value that can be reliably assessed.

The statement of the management of the audited entity regarding the occurrence of transactions and events that have been recorded in the accounting is a confirmation that they actually occurred. The management of the entity declares that the transactions and events that were recorded in the accounting took place, occurred in reality and are related to the respective entity, nothing was recorded in addition, no overvaluations were allowed. This allows the auditor to ensure the completeness and value of the accounts. Therefore, it is recommended to reconcile the circulations from the trial balance with those presented in the accounting books. The proper preparation of the accounting registers is appreciated.

Completeness is a criterion applied in the audit for the accumulation of evidence attesting that all transactions and events that should have been recorded have been recorded. The management of the entity affirms that all transactions and events have been recorded, that there are no omissions or understatements. It is recommended to use the sampling procedure in order to obtain audit evidence regarding the accounting treatment applied by the entity regarding the accounting during the financial reporting year. For accounts with significant variations, it is proposed to request and receive explanations from the management of the audited entity.

The auditor also verifies the accuracy of the values and other data regarding the transactions and events accounted for if they have been properly recorded. By means of this statement it is declared that the transactions and operations have been properly evaluated and recorded with due care. The auditor must obtain due assurance regarding the accuracy and valuation of the accounts, as well as the fact that they are not materially misstated. For this purpose, it is recommended to apply audit procedures such as: interviewing and observation.

Also, the entity declares that the transactions and operations or events were recorded in the correct accounting period, in compliance with the requirements of an "accrual accounting" and in compliance with the "principle of financial independence". It is recommended to follow the recording of the amounts in accounting from the point of view of the period of the transaction and the nature of the transaction.

In practice, there are cases when, during the checks carried out, invoices registered in January of the following year are identified, but the products were delivered to the client in December of the financial reporting year. Taking into account the provisions of the independence of the exercises, the auditor in this case will propose adjustments to the audited entity in order to properly correct the records of the revenues for the period to which they refer.

Based on the statement regarding the classification of transactions and events for their correct accounting, the management of the entity declares that the transactions and operations have been recorded or imputed in appropriate account groups: fixed assets; Current assets; current liabilities, long-term liabilities.

At the same time, the auditor is concerned with collecting evidence that confirms that the management of the entity is responsible for all elements of assets, liabilities and equity to be accounted for in the accounting accounts that existed at the balance sheet date. For example, it is checked that the stocks of goods and the quantities documented in the fiscal invoice correspond to those in the shipping documents, while at the same time it is followed that the goods have reached the buyer by examining the receipt signature. The non-conformities identified by the auditor are reflected in the work documentation in the mission file. It is recommended, based on audit selections and tests, that the auditor ensures that the prices documented in the invoices are the same as those in the accounting books.

Managers state that the entity reviews the future economic benefits of the assets and that the reported liabilities are treated as current liabilities of the entity. All reported assets represent rights of the entity at the reporting date, while they are controlled by the entity based on a right of ownership or a right of claim. Financial reporting assumes that all liabilities belong to the entity and are not the responsibility of shareholders, managers, affiliated entities, etc. It is recommended that the auditor test this information and discuss with the entity's representatives matters related to significant changes compared to the previous year and examine the authenticity and validity of the contracts based on a sample of transactions with the entity's debtors and creditors.

The management of the audited entity declares through the financial statements that the information related to the balances of the accounting accounts has been correctly calculated, taking into account the adjustments related to depreciated or devalued elements. The systematization of data and their reflection in the accounts is recommended to be tested by the auditor depending on the economic content of the transactions and the legal form of the patrimonial elements. For example, testing the correctness of revenue accounting for the period it refers to provides evidence that ensures the accuracy and value of the financial results presented in the Profit and Loss Statement.

By observing and interviewing the entity's representatives, the auditor will ensure the value and accuracy of the accounts. Based on the accounting register, samples of transactions will be selected for which the supporting documentation will be checked.

The presentation and description of information in the financial statements refers to their form and content, including additional information in the explanatory notes. The statements or affirmations made by the management through the financial statements are grouped in different ways, in the following we limit ourselves to presenting their structure according to the following types:

- Presentations of information relating to material misstatement for classes or groups of transactions;
- Extracts of information from accounting accounts that are correlated with the balances and presentations in the financial statements;
- Management statements regarding the description and presentation of the entity's financial position and performance.

By declaring that the financial statements of an entity are in accordance with the provisions of the accounting framework for the presentation of financial statements, the management of this entity implicitly or explicitly records the correctness of the application of the requirements regarding the accounting, evaluation, presentation and disclosure of the various patrimonial elements in the financial statements.

## **Conclusions**

In conclusion, it can be stated that the auditors must test the points of view of the management regarding the statements presented in the financial statements. Management's responsibility is continuous, while the auditor's opinion is based on a situation established at a given point in time. The public expects the possibility of fraud to be minimized. Therefore, the management of the entity must take measures to organize and maintain the accounting and internal control systems that reduce the chances of erroneous reporting of the financial position and performance.

In practice, all cases of incorrect financial reporting a serious problem for accountants who want to properly apply accounting provisions, but it is also a challenge for independent auditors. The objective of an audit mission is to provide an assurance that the financial position and financial performance are adequately presented in the financial statements. When starting the audit, the auditor will first of all obtain a sufficient understanding of the terms and conditions of the engagement.

It is also necessary to emphasize that audit missions are a useful and important source in order to develop, review and implement strategies that have an important role for the existence of the entity in its competitive environment, and to help it achieve its established objectives. In this sense, it is recommended to apply procedures and sources of information specific to the field of financial audit that refer to:

- Studying the client's business environment by identifying the necessary changes in approaching the audit mission through the prism of economic crisis conditions;
- Sufficient and adequate nature of the audit evidence in the collection and analysis of data applied to the substantiation of the audit opinion;
- Application of cloud computing technology to minimize costs and streamline processes in carrying out audit missions;
- Assessing financial and operational risks and examining the probability of bankruptcy, taking into account uncertain trade receivables.

In the process of testing disputes and complaints from third parties in which the entity is involved and which implicitly may generate a risk of significant distortion, it is proposed to apply the following procedures:

- Questioning the management and other employees within the entity, including the lawyer;
- Studying the minutes drawn up during the meetings of the governing councils, as well as the correspondence between the entity and its lawyer;
- Analysis of legal expenses accounted for by the entity during the reporting period.

Intentionally committing fraud, irregularities and errors, as well as illegal acts related to the incorrect application of accounting treatment can have the following consequences: an erroneous reflection of transactions in the financial statements for the wrong period and their incorrect recording in accounting. Given the periodic nature of the presentation of information in financial statements, even simple errors in the accounting of transactions can be of particular importance, despite the fact that these omissions can be compensated in the next reporting period.

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## FEATURES OF ACCOUNTING AT ENTERPRISES PROVIDING TRANSPORT AND FORWARDING SERVICES

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**Abstract.** Competent accounting of freight forwarding companies has a number of nuances. A freight forwarding company can act as an intermediary between the customer and the carrier or independently carry out transportation with its own transport. In the first case, only the remuneration of the freight forwarder for the provision of services will be recognized as revenue, in the second case, the entire amount of the transaction. Important points that you should pay attention to when organizing accounting for a forwarding company: non-resident income tax; accounting for exchange rate differences; multimodal transportation; accounting for penalties for downtime; insurance: the cost of cargo insurance can be carried out both at the expense of the client and at the expense of the forwarder. When choosing a taxation system, a freight forwarding company should pay attention to the following factors: the share of exports in the volume of services; the share of costs that includes input VAT.

**Keywords:** transport, freight forwarder, services, income, expenses.

JEL Classification Codes: M41

### Introduction

The crisis in the international logistics market, which hit Moldovan freight carriers, affected intermediaries (forwarders) much less. More than a hundred forwarding companies operate in Moldova today. Their share accounts for over 70% of the international transport market of the Republic. Typically, forwarding companies in the Republic do not own their own vehicles. For the purpose of transportation, they rent it from carriers.

Forwarders - guides in the darkness of the market.

For a Moldovan or foreign client who is inexperienced in matters of logistics, forwarders act as a kind of “Charon”, helping to navigate the complex world of transportation.

This is facilitated by the good knowledge of forwarders about the location of vehicles, thanks to which suitable transport is promptly chartered in any country. Forwarders minimize transportation costs by applying significant discounts, as they are the largest customers of transport enterprises.

For the customer, cooperation with a forwarding company is an opportunity for more profitable delivery of their cargo, a chance to avoid unprofitable (idle) runs and downtime, a way to avoid falling for the bait of unreliable freight carriers, since forwarders monitor the reputation of those who work with whom.

True professionals in the field of support - international freight forwarders - are able to profitably organize and carry out logistics procedures.

Namely:

- know the features of international transportation by various types of transport: road, water (sea and river), railway, air

- know how to choose the best route and delivery method

quickly search and hire means of transporting goods

- ensure timely delivery of means of transportation to loading or unloading points

are involved in the preparation of the necessary documentation (customs and shipping)

- know the agreements, conventions, traditions and legislation of different countries in the field of logistics, which helps to avoid problems during customs clearance of documentation

carry out coordination for the transportation of special cargo (oversized and dangerous)

accompany cargo, control the transportation process, etc.

- bear full responsibility for the cargo [1].

In the conditions of the formation of market relations, road transport has long received a new impetus for its development and, as a result, has become one of the most rapidly changing and growing sub-sectors of the Moldovan economy today. The change in the system of economic relations and the development of domestic and international commodity markets have opened up great prospects for motor transport.

In our opinion, income and expenses from the ordinary activities of road transport enterprises in the Republic of Moldova can be classified **as follows**:

a) by type of route:

- urban

- suburban

- long-distance

- international

b) according to the specifics of the activity:

- regular

- irregular

- expeditionary

c) by type of transportation:

-passenger

-freight

- expeditionary

Both passenger and freight transportation can be carried out along the following routes:

**urban transportation** – road transportation of passengers, luggage and cargo within the city;

**suburban transportation** – road transportation of passengers, luggage and cargo between populated areas of the Republic of Moldova along routes up to 50 km from the city of Chisinau inclusive;

**intercity transportation** – road transport of passengers, luggage and cargo between populated areas of the Republic of Moldova along routes over 50 km long;

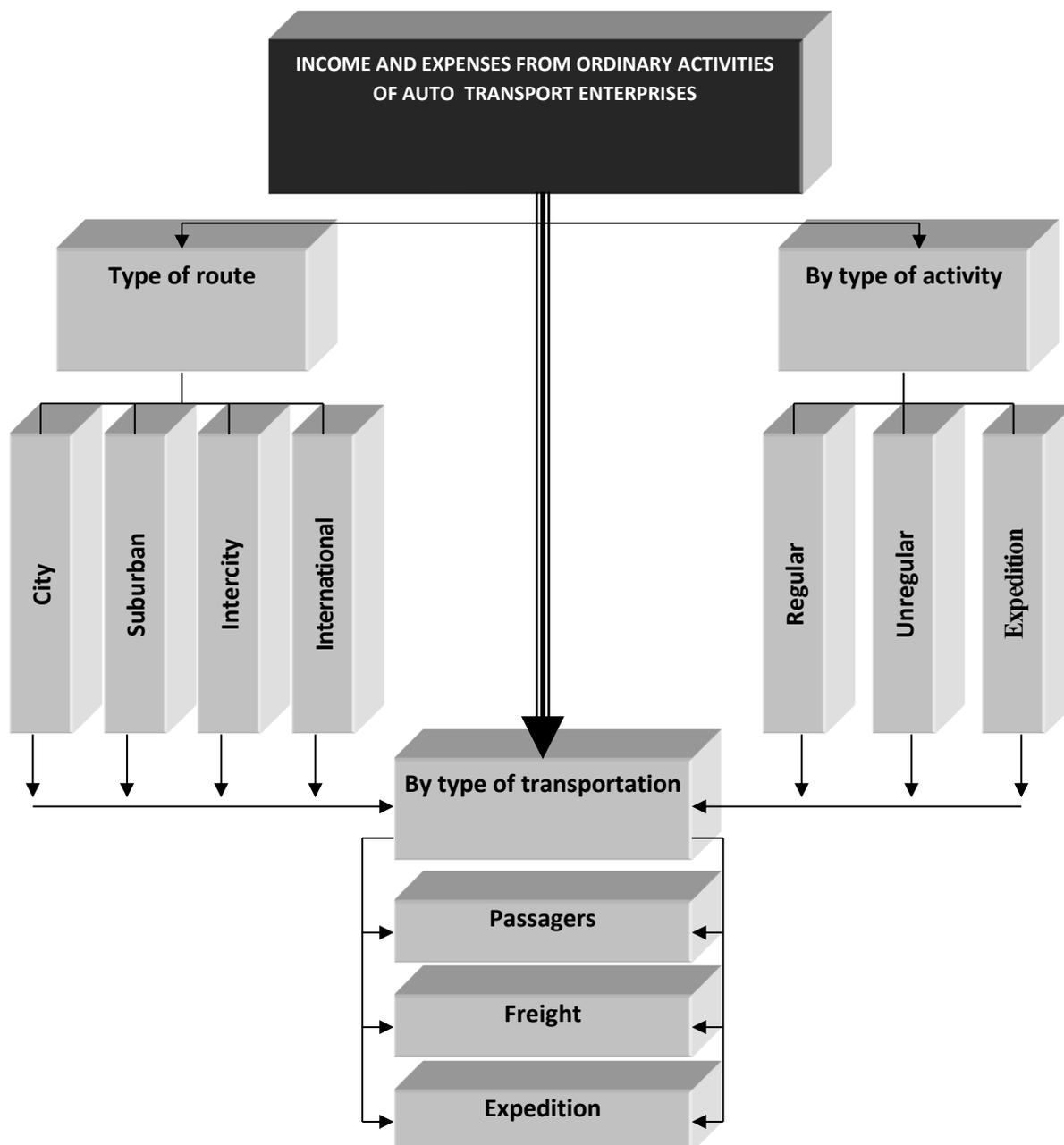
**international transportation** – road transport of passengers, luggage and cargo outside the Republic of Moldova or to the Republic of Moldova from abroad [2].

As additional services, the forwarding agreement may provide for obtaining documents for export or import, performing customs and other formalities, checking the quantity and condition of the cargo, loading and unloading it, paying duties, fees and other expenses imposed on the client, storing the cargo, receiving it at the destination, as well as performing other operations and services.

With the client’s consent, the forwarder can determine what type of transport to transport the client’s goods, taking into account the client’s interests, the level of tariffs and delivery times.

If the expedition agreement does not provide for the forwarder’s obligation to fulfill his duties personally, the forwarder has the right to involve other persons in the performance of his duties. Assigning the fulfillment of an obligation to a third party does not relieve the forwarder from responsibility to the client for the fulfillment of the contract.

An expedition agreement is not a contract for the carriage of goods.



**Image 1. Classification of income and expenses from ordinary activities of motor transport enterprises**

Source: elaborated by the author, based on the auto transport codex [2]

Transportation of passengers and luggage by buses (minibuses) is divided into regular and irregular.

**In terms of freight transportation, it is proposed to include income and expenses from the provision of services by motor transport enterprises:**

for the transportation of goods on urban, suburban, intercity and international routes.

**Regular transportation** is carried out on pre-announced routes with a frequency established by the schedule.

**Irregular transportation** is carried out by transport agents in compliance with current regulations under contracts (orders) with individuals or legal entities who are customers of transport services.

### **Results obtained and discussion**

*Forwarding services* are production activities consisting of organizing the transportation of cargo, ensuring its dispatch and receipt, performing or organizing the performance of other operations related to all stages of transportation [2].

*Freight forwarding services* as a type of services provided relate to both the types of transportation and the specifics of the activity.

Thus, *transport forwarding is an activity related* to the provision of services to shippers and consignees (clients) and the organization of cargo delivery by any type of transport. The provision of transport expedition services (forwarding services) is carried out by special forwarding organizations - freight forwarders.

In our opinion, freight forwarding services are a list of organizational services for carrying out transportation, ensuring shipment, receiving cargo, signing transportation contracts and other services.

The transport services market consists of several elements. Among them is the category of forwarding services. It has a certain commercial significance.

**Conventionally, we believe that types of freight forwarding services should be divided into three levels:**

**The first consists of buyers (customers) of transport services** - shippers, consignees and cargo owners.

**The second is represented by forwarders**, who are intermediaries in the sale of transport services, but at the same time organize and control, in whole or in part, the logistics chain for the delivery of goods.

**The third is carriers** (with roads, shipping companies, airlines, trucking companies, etc.) with transport infrastructure enterprises. They are responsible for loading, unloading, storing, transferring to other types of transport, repairing rolling stock, etc.

It is possible to identify a certain qualification of transport and forwarding services. Classification for transportation by different modes of transport is based on three criteria: place, time of execution and type of work performed.

Based on the place of performance, types of freight forwarding services and work carried out on the territory of the shipper's (forwarder's) warehouse, departure station (port, point), directly along the route, as well as at the destination station are distinguished. Then the cargo ends up in the warehouse of the consignee (forwarder).

Lead times also vary. Services can be provided before the cargo is accepted for transportation, after which, stage of transportation, before delivery, during delivery and after it.

Forwarders have the opportunity to purchase cargo from suppliers, which frees them from work on distribution cargo, giving them the status of a kind of distribution centers. This type of maintenance technology is a way to establish a uniform rhythm of work for the chain links. This, in turn, helps prevent disruptions in the production process that are caused by delays in cargo delivery.

What are transport and forwarding operations called?

**Transport and forwarding service** is a separate operation or group of operations directly aimed at satisfying a specific client need for a transport expedition and characterized by the presence of the necessary technological, economic, information and legal support.

When providing forwarding services in full, transport expedition involves organizing the transportation of goods from the door of the shipper's warehouse to the door of the consignee's warehouse (the term “door-to-door” is used). In this case, **the full range of cargo delivery services includes:**

- delivery from the shipper's warehouse to the freight railway station, to the port, to the airport;
- loading into a vehicle (car, wagon, ship, plane);
- payment of tariffs for cargo transportation;
- unloading from a vehicle, for example, a wagon at the destination station;
- delivery of cargo by road to the consignee's warehouse.

**As research has shown, the list of freight forwarding services includes:**

- 1) Development, on behalf of the client, of a cargo transportation route for transportation by several modes of transport (mixed or so-called multimodal and intermodal transportation);
- 2) Concluding agreements with other forwarders and participants in the transportation process for chartering cars;
- 3) Registration of transport documents: waybills, bills of lading and other documents necessary for the delivery of goods to their destination;
- 4) Payment of transportation tariffs and other payments and fees;
- 5) Cargo insurance, participation in the preparation of documents in case of damage, damage or shortage of cargo (so-called unsafe transportation);
- 6) Performing the duties of a customs broker during the transportation of export-import cargo;
- 7) Informing shippers about the progress of goods, searching for goods in case of their loss;
- 8) Organization, if necessary, of redirection of cargo along the route;
- 9) Obtaining permits and processing documents for the transportation of dangerous, large and heavy cargo;

10) Other services on behalf of clients.

### **Accounting**

In the accounting policy, in addition to determining what accounting standards the freight forwarding organization will operate by and applying the legislation on accounting and financial reporting, it is necessary to provide for what situations may arise within the framework of the expedition agreement regarding the accounting of funds; income and expenses; accounts receivable and payable in relations with clients and organizations carrying out cargo transportation; arising exchange rate differences, etc.

The client transfers funds to the forwarder's account, which include amounts intended to pay partners involved in the transportation of goods and the amount of the forwarder's remuneration. The funds received can be in tenge or in any foreign currency. Whether the funds received are prepaid, postpaid or paid on other grounds (for example, 20% prepaid, 80% postpaid) depends on the terms of the contract.

According to paragraph 23 of IAS 21 “The Effects of Changes in Foreign Exchange Rates” at the end of each reporting period:

- a) monetary items in foreign currencies are translated at the exchange rate at the reporting date;
- b) non-monetary items that are measured at historical cost in a foreign currency are translated at the exchange rate at the date of the transaction;
- c) non-monetary items that are measured at fair value in a foreign currency are translated using the exchange rate at the date of fair value measurement [5].

Monetary items are units of currency available, as well as assets and liabilities receivable or payable, expressed in a fixed or determinable number of currency units.

Monetary items are units of currency available, as well as assets and liabilities receivable or payable, expressed in a fixed or determinable number of currency units. According to paragraph 16 of IAS 21, an inherent characteristic of a monetary item is the right to receive (or the obligation to provide) a fixed or determinable number of currency units. At the same time, an integral characteristic of a non-monetary item is the absence of the right to receive (or the obligation to provide) a fixed or measurable number of currency units [5].

Based on the requirements of the National Accounting Standards (NAS) [3] and the Law on Accounting and Financial Reporting [6,7,8], we consider it necessary to propose opening the following for account 611 “Sales Income” and subaccount 6113 “Revenue from the provision of services” [4]. third-order accounts: 61131 “Income from the provision of freight forwarding services”:

611311 “Development, on behalf of the client, of a cargo transportation route for transportation by several modes of transport (mixed or so-called multimodal and intermodal transportation)”

611312 “Conclusion of agreements with other forwarders and participants in the transportation process for chartering cars”

611313 “Registration of transport documents: waybills, bills of lading and other documents necessary for the delivery of goods to their destination”

611314 “Payment of transportation tariffs and other payments and fees”

611315 “Cargo insurance, participation in the preparation of documents in case of damage, spoilage or shortage of cargo (so-called unsafe transportation)”

611316 “Fulfilling the duties of a customs broker during the transportation of export-import cargo”

611317 “Informing shippers about the progress of cargo, searching for cargo in case of loss”

611318 “Organization, if necessary, of redirecting cargo along the route”

611319 “Obtaining permits and processing documents for the transportation of dangerous, large and heavy cargo”

6113110 “Other services on behalf of clients.”

In accordance with the proposed nomenclature of income accounts received from the provision of freight forwarding services, expense accounts can also be proposed.

Accordingly, to account 711 “Cost of sales”, to subaccount 7113 “Cost of services provided” [3] open the corresponding accounts: 711311, 711312, 711313, 711313, 711314, 711315, 711316, 711317, 711318, 711319, 7113 10.

Information with the proposed nomenclature of subaccounts will be useful for both users and management personnel of motor transport enterprises and will meet the requirements of NAS “Revenues”, “Expenses” [3].

## **Conclusion**

In the Republic of Moldova there are no clear methodological legislative acts on the definition and accounting of income and expenses associated with freight forwarding services in motor transport enterprises.

We consider it necessary to offer a range of analytical accounts for accounting for income and expenses associated with this type of service. The proposed nomenclature of accounts will allow managers and management personnel of motor transport enterprises to receive detailed information both for analysis and for making management decisions.

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## **SPECIAL ASPECTS OF ACCOUNTING AND REPORTING EXPENSES IN NON-COMMERCIAL ORGANIZATIONS**

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**Abstract.** Expenses in non-commercial organizations represent important accounting elements involved in the entities' activities. In the accounting practice of these organizations, there are multiple issues regarding the accounting of expenses. Within the accounting of these elements, problems related to the recognition and use of accounting accounts for expense tracking must be resolved. To address the mentioned issues, it is recommended to specify the recognition and evaluation of expenses in accordance with the specific activities of non-commercial organizations. Additionally, it is crucial to reflect the accounting recording schemes for expense tracking based on the peculiarities of non-commercial entities' activities.

**Keywords:** non-commercial organization, earmarked funds, expenses, income and expense statement.

JEL Classification: M41

### **Introduction**

In the economic activities of entities, profit generation predominates; however, non-commercial organizations represent a special category of enterprises that have a different purpose and do not pursue profit like traditional commercial entities. In the Republic of Moldova, non-commercial organizations play a significant role in the development of civil society and the promotion of social welfare, as they focus on public utility purposes. Non-commercial organizations are established to serve the public interest and often address social, educational, community, or philanthropic issues. They can cover a wide range of fields, such as social assistance, education, culture, healthcare, environmental protection, and many others. Fundamentally, non-commercial entities do not aim to make a profit as their primary goal. Instead, they concentrate on providing services or public benefits in line with their statutory mission. Revenues obtained by non-commercial organizations are directed towards achieving their statutory objectives and activities. These can be funded from various sources, such as donations, grants, sponsorships, membership fees, or service contracts with public or private

institutions. Non-commercial organizations are subject to strict transparency and governance rules to ensure that funds are utilized in accordance with their statutory purpose. Non-commercial entities represent a valuable component of modern society, emphasizing the balance between commercial and social goals. These organizations play a significant role in the development and improvement of communities, providing essential services, and promoting social values. They contribute to diversifying the economic sector and enhancing the quality of life for citizens by focusing on welfare and addressing social issues.

In the Republic of Moldova, these organizations have a significant impact on communities and society as a whole, as they address a variety of social issues and provide solutions for them. Non-commercial organizations can contribute to alleviating poverty, improving access to healthcare and education services, protecting the environment, and supporting vulnerable or marginalized groups. These entities encourage active citizen involvement in community issues and provide a platform for people to express their opinions, make contributions, and fulfill their aspirations regarding social welfare. Non-commercial organizations play an important role in raising public awareness about social and environmental issues, as well as increasing awareness. They can contribute to educating people and promoting values and behaviors beneficial to society. Although these entities do not pursue profit, they must manage resources efficiently to achieve their goals, which involves obtaining and responsibly managing funding to maximize social impact. Thus, non-commercial organizations have the potential to change the world for the better and contribute to the development of a more equitable, inclusive, and sustainable society, focusing on public utility purposes.

An important and specific issue for non-commercial organizations is the accounting of expenses, as it involves many intricacies within them, which are not studied in specialized literature. The accounting of these entities can have significant peculiarities, given that their primary purpose is not profit-making but serving the public interest and addressing social issues. Non-commercial organizations are often exempt from certain accounting rules that traditionally apply to commercial enterprises. This fact can complicate the accurate recording and reporting of expenses since there are no specific guidelines regarding accounting entries. Considerations regarding the situation created include the fact that current accounting regulations do not explicitly establish accounting recording schemes related to expenses. Non-commercial organizations can have diverse missions and activities, which means their expenses can vary significantly in nature and complexity. This aspect complicates the way expenses are recorded in non-commercial entities and does not fully ensure the accuracy, transparency, and comparability of accounting information.

### **Problems and Solutions**

Expenses represent an indispensable component of non-commercial organizations' activities, focused on public utility purposes and concentrated on solving social issues or serving the public interest. These enterprises generate and manage various types of expenses in an attempt to achieve their missions and objectives. Expenses are essential for providing services or implementing projects that support the community and fulfill the entity's mission. Therefore, non-commercial organizations must plan and budget their expenses to ensure the necessary resources for conducting their activities. This involves assessing the expenses associated with their projects and programs and ensuring they are covered from budgetary sources. Non-commercial organizations have the responsibility to spend resources transparently and efficiently from donations and grants, and accurate expense reporting is crucial to gaining the trust of donors and the general public. Efficient expense management is crucial to maximizing social impact. Non-commercial organizations must prioritize expenses based on their

impact and ensure that resources are used rationally and responsibly. Similarly, expense management is essential for ensuring the organization's sustainability, as uncontrolled or unplanned expenses can jeopardize the organization's ability to continue its activities in the long term.

Given the specific nature of non-commercial organizations' activities, multiple problematic aspects related to the accounting of expenses need to be addressed. These issues concern the recognition and recording of expenses in accounting accounts. Currently, accounting approaches regarding their recording do not meet the modern needs of non-commercial entities. Accountants face difficulties in accounting for expenses, making it challenging for financial management to efficiently manage these elements.

The non-commercial organization maintains its accounting in accordance with the basic principles and rules established in the Law on Accounting and Financial Reporting [3], the National Accounting Standards (SNC) [4], the General Chart of Accounts [5], the Fiscal Code of the Republic of Moldova [1], and other regulatory acts. Under the Law on Accounting and Financial Reporting and for the improvement of specific accounting regulations related to accounting in these entities, Methodological Instructions on the peculiarities of accounting in non-commercial organizations have been approved [6]. At the same time, amendments to the General Chart of Accounts have been approved [5].

Despite being non-commercial, these organizations are obligated, in accordance with the Law on Accounting and Financial Reporting [3], to apply the double-entry accounting system with the presentation of specific financial statements, according to the forms in the annexes to the Methodological Instructions [6]. These forms differ in content and structure from those established in the SNC "Presentation of Financial Statements" for commercial entities.

Expenses must be recorded based on primary documents in non-commercial entities, as provided by the current legislation. The mandatory procedures for accounting expenses are outlined in the organization's own accounting policies, following the requirements of the Methodological Instructions [6]. Accounting must ensure the differentiation and separate registration of expenses by types of activities and operations.

Non-commercial organizations use funding as the main source of financing for their statutory activities. However, funders impose restrictions on the use of earmarked funds granted, accepting that entities must operate in accordance with their budgets, meaning they must fulfill the objectives proposed and stipulated in the budget. If the funding provided is not sufficient for carrying out their statutory activities, non-commercial organizations advocate for their statutory economic activities. Thus, in addition to specific earmarked missions, the non-commercial entity can engage in economic activities, including production, service provision, investments, and other activities, directly derived from its statutory purposes.

The expenses necessary for the non-commercial organization's activities are recorded following accrual-based accounting, based on the general rules established by the National Accounting Standards (SNC). Expenses can be derived from the use of earmarked funds, statutory activities, and economic activities reflected in accordance with the Methodological Instructions on the peculiarities of accounting in non-commercial organizations [6]. In this way, expenses in non-commercial organizations are grouped into:

- Expenses related to earmarked funds,
- Other expenses (excluding expenses from economic activities),
- Expenses from economic activities.

***Expenses related to earmarked funds*** include expenses incurred from earmarked funds, which encompass: the book value of purchased or manufactured and consumed stocks, the book value of stocks transferred free of charge, current program or administrative expenses, personnel expenses (salaries, mandatory state social insurance contributions), expenses related to the fulfillment of contractual obligations, and other expenses from earmarked funds.

***Other expenses (excluding expenses from economic activity)*** include expenses that arise during the statutory activities, excluding economic activities, but cannot be attributed to expenses related to earmarked funds. These include expenses from:

- a) losses and damages from the deterioration of fixed and current assets,
- b) settlements for compromised receivables,
- c) other operations unrelated to specific special missions or statutory economic activities.

***Expenses from economic activity*** pertain to economic activities conducted in accordance with the organization's statutes. These include expenses related to:

- a) the book value of goods sold,
- b) the cost of services rendered and work performed,
- c) unfavorable differences in exchange rates and amounts,
- d) exceptional losses,
- e) other transactions from economic activity.

For recording expenses in accordance with the General Chart of Accounts [3], the following accounts are designated: asset accounts **716 "Expenses related to earmarked funds," 717 "Other expenses (excluding expenses from economic activity)," and 718 "Expenses from economic activity."**

In the debit of these accounts throughout the fiscal year, the cumulative total of recognized expenses is recorded. In the credit, the settlement of accumulated expenses is recorded at the end of the fiscal year against the total financial result.

Expenses related to services provided by suppliers, covered from earmarked funds, are reflected as follows:

*Debit account 716 "Expenses related to earmarked funds"*

*Credit account 521 "Current trade payables"*

Expenses related to labor compensation covered from earmarked funds are recorded as follows:

*Debit account 716 "Expenses related to earmarked funds"*

*Credit account 531 "Liabilities to employees for labor compensation"*

*Credit account 533 "Liabilities for social and medical insurance"*

Expenses related to services provided by financial institutions from earmarked funds are accounted for as follows:

*Debit account 716 "Expenses related to earmarked funds"*

*Credit account 242 "Current accounts in national currency"*

*Credit account 243 "Current accounts in foreign currency"*

*Credit account 244 "Other bank accounts"*

Expenses related to assets purchased and expenses incurred by advance holders, supported from their own account, are recorded as follows:

*Debit account 716 "Expenses related to earmarked funds"*

*Credit account 532 "Liabilities to employees for other transactions"*

*Credit account 226 "Personnel receivables"*

Expenses related to maintaining the technical characteristics of fixed assets and those related to retired fixed assets are accounted for as follows:

*Debit account 716 "Expenses related to earmarked funds"*

*Credit account 211 "Materials"*

*Credit account 521 "Current trade payables"*

*Credit account 531 "Liabilities to employees for labor compensation"*

*Credit account 533 "Liabilities for social and medical insurance"*

Materials used for special missions are recorded as follows:

*Debit account 716 "Expenses related to earmarked funds"*

*Credit account 211 "Materials"*

Objects of low value and short duration with unit value not exceeding 1/6 of the limit set by legislation used for project implementation are reflected as:

*Debit account 716 "Expenses related to earmarked funds"*

*Credit account 213 "Low-value and short-duration items," subaccount 2131 "Low-value and short-duration items in stock"*

Calculating the wear and tear of low-value and short-duration items provided for special missions or projects is recorded as:

*Debit account 716 "Expenses related to earmarked funds"*

*Credit account 214 "Wear and tear of low-value and short-duration items"*

The value of transferable assets used or donated is recorded by the following accounting entry:

*Debit account 716 "Expenses related to earmarked funds"*

*Credit account 262 "Other current assets"*

The record of other expenses, except those related to economic activities, is done through the following accounting entries:

*Debit account 717 "Other expenses (except those from economic activities)"*

*Credit account 211 "Materials"*

*Credit account 213 "Low-value and short-duration items"*

*Credit account 241 "Cash"*

*Credit account 246 "Cash documents"*

Expenses covered later from non-designated funds for maintaining the technical characteristics of fixed assets are recorded as follows:

*Debit account 717 "Other expenses (except those from economic activities)"*

*Credit account 211 "Materials"*

*Credit account 521 "Current trade payables"*

*Credit account 531 "Liabilities to employees for labor compensation"*

*Credit account 533 "Liabilities for social and medical insurance"*

Expenses necessary for the disposal of fixed assets are accounted for as:

*Debit account 717 "Other expenses (except those from economic activities)"*

*Credit account 211 "Materials"*

*Credit account 521 "Current trade payables"*

*Credit account 531 "Liabilities to employees for labor compensation"*

*Credit account 533 "Liabilities for social and medical insurance"*

If the pre-determined remaining value of low-value and short-duration items is higher than the value of the materials obtained when these items are withdrawn from use, the difference is recorded as other expenses using the following formula:

*Debit account 717 "Other expenses (except those from economic activities)"*

*Credit account 213 "Low-value and short-duration items"*

Settlements related to the expiration of prescription terms for receivables are reflected as:

*Debit account 717 "Other expenses (except those from economic activities)"*

*Credit account 221 "Trade receivables"*

*Credit account 224 "Current advances granted"*

*Credit account 226 "Personnel receivables"*

*Credit account 234 "Other current receivables"*

Expenses related to economic activities are generated by various activities of non-commercial organizations allowed by current legislation in accordance with the entity's statutory objectives outlined in the founding documents, such as:

- a) organizing lessons, exhibitions, auctions, fundraising events;
- b) production of goods and sale of merchandise, provision of services;
- c) providing social services in fields such as education, science, culture, health, human rights defense, social assistance, disaster relief, environmental protection, and other socially important activities.

Expenses related to statutory economic activities during the management year are recorded through the following accounting entries:

*Debit account 718 "Expenses from economic activities"*

*Credit account 211 "Materials"*

Low-value and short-term items used for special missions or projects with a unit value not exceeding 1/6 of the limit set by the legislation are recorded as follows:

*Debit account 718 "Expenses from economic activities"*

*Credit account 213 "Low-value and short-term items," sub-account 2131 "Low-value and short-term items in stock"*

The calculation of wear and tear on low-value and short-term items used in economic activities is reflected through the following accounting formula:

*Debit account 718 "Expenses from economic activities"*

*Credit account 214 "Wear and tear of low-value and short-term items"*

Stocks used for production purposes from the organization's own resources are recorded as follows:

*Debit account 811 "Core activities"*

*Credit account 211 "Materials"*

*Credit account 213 "Low-value and short-term items"*

The costs of services provided by third parties are recorded through the following entry:

*Debit account 718 "Expenses from economic activities"*

*Credit account 521 "Current trade payables"*

The calculation of salaries and social and medical contributions is accounted for as follows:

*Debit account 718 "Expenses from economic activities"*

*Credit account 531 "Liabilities to employees for labor compensation"*

*Credit account 533 "Liabilities for social and medical insurance"*

If the economic activity conducted by the entity involves work in progress, their value at the beginning of the month is accounted for as follows:

*Debit account 811 "Core activities"*

*Credit account 215 "Work in Progress".*

The value of work in progress at the end of the month is reflected through the following accounting formula:

*Debit account 215 "Work in Progress"*

*Credit account 811 "Core activities".*

The actual cost of products obtained in the statutory economic activity is accounted for as follows:

*Debit account 216 "Products"*

*Credit account 811 "Core activities".*

Recognition of the cost of goods sold is recorded as:

*Debit account 718 "Expenses from economic activities"*

*Credit account 216 "Products".*

Stock shortages identified during the economic activity inventory are accounted for as follows:

*Debit account 718 "Expenses from economic activities"*

*Credit account 211 "Materials"*

*Credit account 213 "Low-value and short-term items".*

The result from the statutory activities of the non-commercial organization at the end of the management period is reflected by settling the expenses to the financial result using the following accounting entries:

Settling expenses to the financial result:

*Debit account 351 "Total financial result"*

*Credit account 716 "Expenses related to designated funds"*

*Credit account 717 "Other expenses (except expenses from economic activities)"*

*Credit account 718 "Expenses from economic activities".*

Calculation of the income tax from the activities carried out is accounted for as:

*Debit account 731 "Expenses related to income tax"*

*Credit account 534 "Liabilities to the budget".*

Settling expenses related to income tax to the financial result is recorded as:

*Debit account 351 "Total financial result"*

*Credit account 731 "Expenses related to income tax".*

Recording the surplus (profit) from statutory activities:

*Debit account 351 "Total financial result"*

*Credit account 336 "Net surplus (net deficit) of the management period".*

Recording the deficit (loss) from statutory activities:

*Debit account 336 "Net surplus (net deficit) of the management period"*

*Credit account 351 "Total financial result".*

Settling the net result of the current management period to the self-financing fund is reflected through the following accounting formulas:

1) For the net surplus:

*Debit account 336 "Net surplus (net deficit) of the management period"*

*Credit account 3413 "Self-financing fund".*

2) For the net deficit:

*Debit account 3413 "Self-financing fund"*

*Credit account 336 "Net surplus (net deficit) of the management period".*

The turnover of the accounting accounts of non-profit organizations' expenses is reflected in the standardized form attached to the Methodological Instructions on the Specifics of Accounting in Non-Profit Organizations [5] called ***the Income and Expenditure Statement***. This report includes information about the revenues, expenses, and results from the statutory and economic activities of non-profit organizations. When calculating the indicators in the Income and Expenditure Statement, the indicators are determined based on the turnovers of the organization's revenue and expense accounts, cumulatively from the beginning of the management period. Revenues and expenses related to the same transactions are reflected in the Income and Expenditure Statement within the same management period. This standardized form represents an important tool in the accounting of these entities and is specific for tracking their revenues and expenses. It is used to monitor and report financial activities to various stakeholders, such as funders, donors, tax authorities, and the general public.

The Income and Expenditure Statement can help the organization track its expenses to ensure that the budget is respected and that resources are used efficiently. The given form can be used to create periodic financial reports, providing an overview of the organization's financial situation. This report is used to report to funders and donors, as well as to meet the financial reporting requirements imposed by applicable legislation. Analyzing the data from the Income and Expenditure Statement can help the organization plan its budget and financial strategy for the future. This standardized form is essential for maintaining transparency and financial accountability in non-profit organizations and ensuring that they can continue their activities for the purpose of serving the public interest.

## **Conclusion**

In conclusion, non-commercial organizations play a crucial role in building a better world where profit is not the sole objective. They are an essential element of civil society, with a mission to address social issues and improve the well-being of local communities and society as a whole. Expenses constitute a vital part of non-commercial organizations' activities, significantly impacting how these organizations fulfill their missions and contribute to social welfare. Managerial accounting of expenses is essential to ensure that resources are used efficiently and that the organization achieves its public utility objectives.

In the context of the aforementioned points, we observe that the success of non-commercial organizations depends on the accuracy of reflecting operations in accounting. Expense accounting is specific and involves many intricacies. Summing up the discussed approaches, we deduce that information regarding the existence and movement of expenses is useful, both for internal users and external stakeholders, serving as fundamental elements to ensure the uninterrupted functioning of the organization. The primary task of expense accounting lies in managing and accurately documenting these expenses.

To enhance expense accounting in non-commercial organizations, it is recommended to specify the recognition and accounting of expenses in accordance with the specific activities of non-commercial entities. Particularly, accounting recording schemes related to expenses should be tailored to the specificities of non-commercial organizations' activities. Establishing the methodology for expense accounting in non-commercial organizations based on national accounting regulations holds theoretical and practical significance, enabling the achievement of the entity's performance indicators.

In their activities, non-commercial organizations focus on achieving public utility objectives, making monitoring and reporting expenses essential to assess their effectiveness and social impact. These entities are funded through donations, grants, or public sources, which necessitates enhanced transparency and responsibility in the correct use of funds and truthful reporting of expenses.

Solutions to improve expense accounting in non-commercial organizations can include developing specific accounting guidelines or regulations tailored to these organizations. These guidelines should outline the recording of expenses adapted to the organization's specific nature, highlighting expenses based on public utility objectives. Transparency and timely reporting of expenses are crucial to ensure accountability to donors, funders, and the general public. This objective can be achieved through providing appropriate training and accounting resources to employees responsible for the organization's financial records. Consequently, it is important to recognize the complexity of expense accounting in non-commercial organizations and adopt approaches suitable for their specific nature and objectives to ensure the accuracy and transparency of financial information.

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**ANNUAL INTERNATIONAL SCIENTIFIC CONFERENCE “COMPETITIVENESS AND  
INNOVATION IN THE KNOWLEDGE ECONOMY”**

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## PECULIARITIES OF APPLICATION OF ISA 540 IN AUDITING ACCOUNTING ESTIMATES

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**Abstract:** The audit of the evaluation of elements of financial statements in the modern market economy, is of particular importance, while various methods can be used: statistical, mathematical, costly, profitable, etc. At the same time, the auditor often faces uncertainty when evaluating a number of elements of financial statements. When conducting audit procedures, the auditor must take into account and assess the inherent risk, as well as the degree to which the accounting estimation is subject to uncertainty, the choice and application of the method, assumptions and data in calculating the accounting assessment, as well as the point assessment of the management of the audited entity and relevant information for inclusion in the financial statements. Having analyzed the provisions of ISA 540, taking into account the practical material, the author, using the data of a conditional example, concludes that when auditing accounting estimates, it is necessary to use the value of audit risk. The author has also developed a table that establishes the relationship between the results of deviations in accounting and audit estimates and the magnitude of audit risk and, accordingly, considers the response measures.

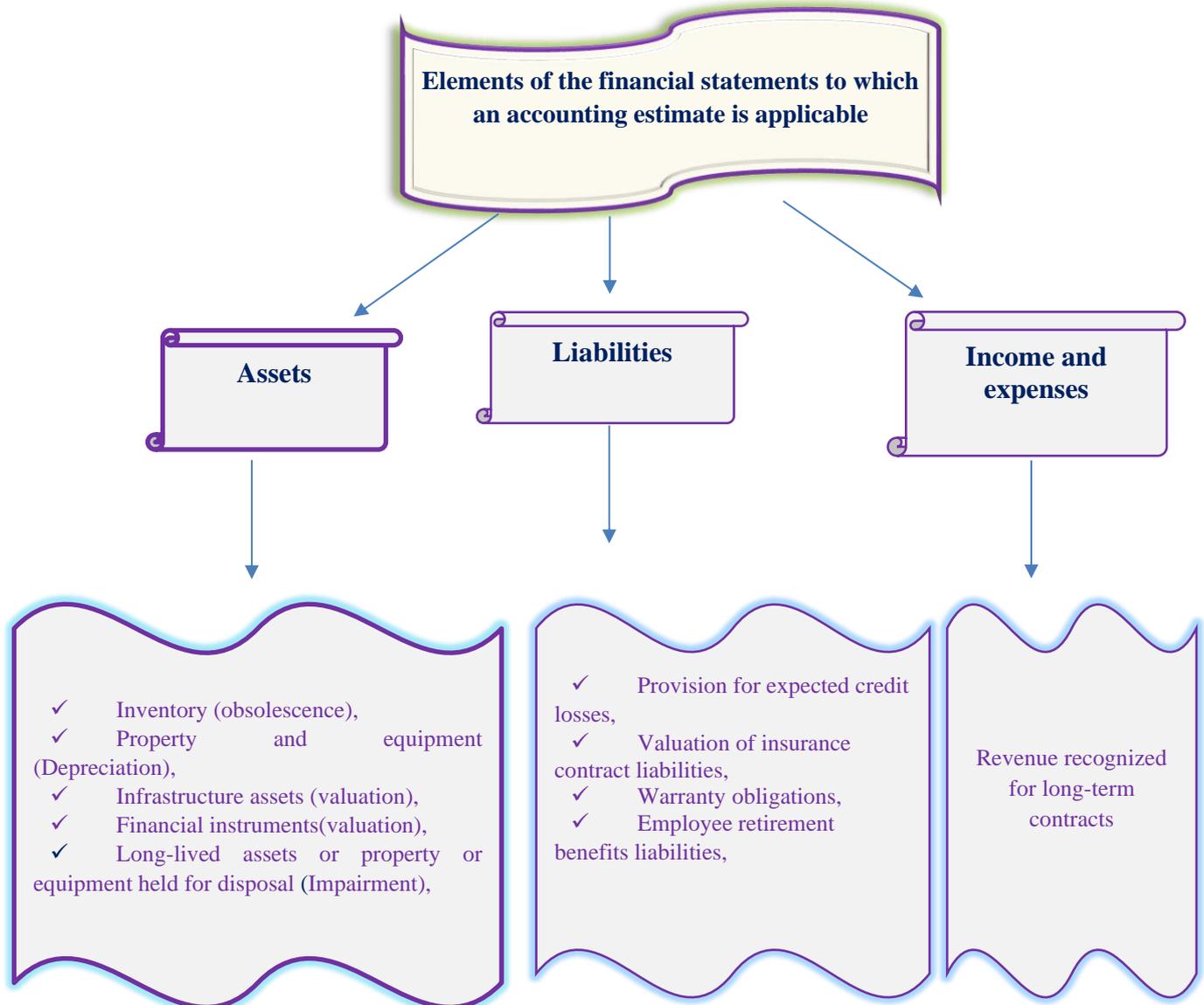
**Key words:** audit, accounting estimate, audit risk, management’s point estimate, auditor’s range.

JEL Classification: M42

### Introduction

The modern world economy in its development acquires various features associated with digitalization, the creation of new technologies, and the improvement of working capital. These changes at the macroeconomic level directly affect the microeconomic level, that is, the level of the enterprise. At the microeconomic level, enterprises have many assets that must be reported in the financial statements at fair value or liabilities, for example: the creation of provisions, and this may also apply to the recognition of income, for example: under long-term contracts.

ISA 540 “Auditing Accounting Estimates and Related Disclosures” provides examples of the elements of financial statements to which an accounting estimate is applicable, as shown in Figure 1.



**Figure 1. Elements of financial statements to which an accounting estimate applies**

Source: developed by the author based on ISA 540

Thus, these items of financial statements may not be amenable to an accurate assessment, only their approximate estimation is possible, such items of financial statements are referred to as "estimated values". The nature and reliability of the information that the company's management can use to justify the estimated value vary significantly, which affects the degree of uncertainty associated with the estimated values. The degree of uncertainty of the assessment, in turn, affects the risks of material misstatement of the estimated values, including their sensitivity to unintentional or intentional bias of the management of the audited entity.

ISA 540 "Auditing Accounting Estimates and Related Disclosures" defines "accounting estimate – a monetary amount for which the measurement, in accordance with the requirements of the applicable financial reporting framework, is subject to estimation uncertainty". (ISA540, 2021). While "auditor's point estimate or auditor's range is an amount, or range of amounts, respectively, developed by the auditor in evaluating management's point estimate". (ISA540, 2021). The purposes of calculating the estimated values may vary depending on the specifics of the applied concept of

preparing financial statements and the specific item of financial statements. Some estimated values are calculated in order to predict the result (outcome) of one or more operations, events or conditions that make it necessary to calculate the estimated value. The purpose of calculating other estimates, including many estimates of fair value, is different, namely, determining the value of the current transaction or financial statement item, taking into

account the conditions that existed at the measurement date, such as the estimated market value of a particular type of assets or liabilities

### **Analysis of the provisions of the ISA 540 “Auditing Accounting Estimates and Related Disclosures”**

The purpose of the audit of financial statements in terms of compliance with the provisions of ISA 540 “Auditing Accounting Estimates and Related Disclosures” is to obtain sufficient appropriate audit evidence that:

- ✓ *the estimated values (accounting estimate), including fair value estimates, recognized or disclosed in the financial statements are justified;*
- ✓ *appropriate disclosures in the financial statements are sufficient in the context of the applicable financial reporting framework.*

The difference between the actual result of the estimated value and the amount that was initially recognized or disclosed in the financial statements does not necessarily constitute a misstatement of the financial statements.

The auditor is required to receive written statements from management and, if appropriate, from persons responsible for corporate governance, in which they would express their opinion on the validity of significant assumptions used in the calculation of estimates.

The standard requires the auditor to conduct procedures to confirm accounting estimates.

To perform the procedures, the auditor must establish:

- what are the requirements of the applicable financial reporting framework that are important for the estimated values, including the appropriate disclosure of information;
- how does management identify transactions, events and conditions that may lead to the need to recognize estimates in the financial statements or disclose information about them in the financial statements;
- how does management calculate the estimated values, as well as what data information they are based on, including:
  - *what is the method, including, if applicable, the model used in calculating the estimated value,*
  - *what are the significant controls;*
  - *did the management involve an expert;*
  - *what are the assumptions on the basis of which the estimated values were calculated;*
  - *whether there has been or should have been a change compared to the previous period in the methods used to calculate the estimated values; if so, for what reason;*
  - *has management assessed the impact of valuation uncertainty; if so, how it was done.*

Testing of management's calculation of the accounting estimate may, for example, include:

- testing the accuracy, completeness and significance of the data from which the estimates are derived and the correctness of the estimates derived using such data and management's assumptions;
- an examination of the source, significance and reliability of external data or information, including data or information obtained from external experts whom management has engaged to assist in the calculation of estimates;
- recalculation of the estimated value and study of information about it in order to verify its internal consistency;
- examining processes for reviewing and approving estimates by management.

When performing procedures, the auditor produces an audit point estimate or range of estimates, which is the amount or range of values that are calculated on the basis of audit evidence for use in the analysis of management's point estimate.

*Conditional example. The auditor conducts an audit of the financial statements of the company "Alfa" for the reporting year, the main activity of the company is operating leasing, the company's balance sheet asset reflects investment property, which, according to the accounting policies, is reflected at fair market value as of the reporting date at cost of 10,000,000 lei.*

According to the Law on Evaluation Activities of the Republic of Moldova No. 989 Article 6. "Evaluation methods": (LawEvaluation, 2002) when determining the value of valuation objects, the following methods are used:

- a) a method of comparative analysis of sales based on a comparison of the valuation object with objects sold or offered for sale having similar characteristics;
- b) a revenue method based on the determination of future income and expenses associated with the use of the valuation object;
- c) a cost-based method based on determining the cost of creating an object similar to the object of evaluation, or the cost of replacing the object being evaluated.

The auditor estimated by the method of comparative analysis of sales that such a building was sold for 9,200,000 lei,

The revenue method for example: the annual accrued rent (hire) is 950,000 lei, the rate on bank loans is 10%, respectively, the market value of the building is  $950,000/0.1 = 9\ 500,000$  lei.

The cost method (in this case, it is necessary to make estimates, which are made by construction economists) is, say, 8,500,000 lei.

Data on the valuation of the property by various methods are presented in the table below.

**Table 1 Data on the evaluation of the object by various methods**

indicators	method of comparative analysis of sales			cost-based method			revenue method		
	Accounting estimate, lei	Auditor's estimate, lei	Absolute deviation, lei	Accounting estimate, lei	Auditor's estimate, lei	Absolute deviation, lei	Accounting estimate, lei	Auditor's estimate, lei	Absolute deviation, lei
Real estate valuation	9 000 000	9200000	200 000	10 000 000	9500 000	500 000	8 200 000	8 500 000	300 000

Source: compiled by the author based on data from a conditional example

Thus, analyzing the data obtained, we can state the following:

- 1) according to the method of comparative sales analysis, the auditor's estimate in relative terms differs from the accounting estimate by 102.22%,
- 2) according to the cost method, the auditor's assessment in relative terms differs from the accounting assessment by 95%,
- 3) according to the revenue method, the auditor's estimate in relative terms differs from the accounting estimate by 103.7%.

Therefore, analyzing this assessment by various methods, we can state that the deviations between the estimation of the auditor and the accountant did not exceed 5%. In accounting, the fair value of the object amounted to 10,000,000 lei, while the auditor estimated this object at 9,500,000 lei, thus, at the level of information disclosure in the financial statements, the deviations amounted to 5%.

When deciding on the confirmation of an accounting estimate, according to the author, it is necessary to take into account the level of audit risk that the auditor has established for the audit of the relevant financial statements. Suppose, taking into account the data of the conditional example, the auditor has set the audit risk at the level:

- a) 10%,
- b) 2%.

In case a), when the relative deviation of the audit estimate (5%) is less than the established audit risk, according to the author, the auditor has every reason to confirm the accounting estimate. In case b) the audit risk (2%) is less than the relative deviation (5%) in this case, according to the author, the auditor should conduct additional procedures to confirm the accounting assessment.

It should be noted that ISA 315 "Identifying and Assessing the Risks of Material Misstatement" (ISA315, 2021) also requires estimation of the risk of control when assessing the risks of material misstatement at the level of statements. When estimating the risk of control, the auditor takes into account whether further audit procedures involve testing the effectiveness of controls. If the auditor does not plan to verify the operational effectiveness of controls or does not intend to rely on their effectiveness, then the audit assessment of control risk is such that the estimation of the risk of material misstatement coincides with the assessment of inherent risk.

The auditor, based on the audit procedures performed and the audit evidence obtained, should evaluate whether the accounting estimates and related disclosures are fair in the context of the applicable financial reporting principles or are misrepresented. At the same time, reasonable assurance in the context of the applicable financial reporting system means that the relevant financial reporting requirements have been properly applied, including the following : (AtaGlanceISA540, 2018)

- *an accounting estimate, including the choice of method, assumptions, and the facts and circumstances of the entity;*
- *management evaluations; and*
- *disclosure of information about an accounting estimate, including disclosure of information about how the accounting estimate was developed, as well as the extent and sources of uncertainty in the estimates.*

In estimating inherent risk, in identifying the risks of material misstatement associated with an accounting estimate and related assertion-level disclosures, including separately evaluating inherent risk and assertion-level control risk, the auditor should consider the following:

- ❖ the extent to which an accounting estimate is subject to estimation uncertainty;
- ❖ complexity, subjectivity or other inherent risk factors that affect:
- ✓ *the methods, assumptions, given in the preparation of an accounting estimate, taking into account their choice and particular application,*
- ✓ *a point estimate of management and related information for inclusion in the financial statements.*

It should be noted that often when auditing accounting estimates, uncertainty arises. Estimation uncertainty is the impact on an estimate and related disclosures of insufficient calculation accuracy. The auditor is required to determine whether, in his professional judgment, any of the estimates with a high degree of uncertainty would give rise to significant risks. In this case, it is necessary to analyze the need to involve an expert.

One of the methods that management can use is sensitivity analysis. This method may involve determining how the monetary value of the estimated value changes when using different assumptions. Due to the fact that different market participants apply different assumptions, changes are possible even for the estimated values determined at fair value. Based on the results of the sensitivity analysis, it is possible to prepare a number of scenarios of results – "pessimistic" and "optimistic", sometimes referred to as "the range of results calculated by management".

The auditor should determine whether there is a possible management bias in the calculation of estimates, indicators that indicate a possible management bias in the calculation of accounting estimates are:

- *changes in the accounting estimate or the method of its calculation based on management's subjective opinion of a change in circumstances;*
- *the entity's use of its own assumptions in measuring fair value, even though those assumptions are inconsistent with observable assumptions by market participants;*
- *selecting or making significant assumptions that result in a point estimate that is beneficial to management.*

Due to the many difficulties in auditing accounting estimates, the International Auditing and Assurance Standards Board (IAASB) has introduced At a Glance ISA 540 and Related Conforming and Consequential Amendments.

At the same time, ISA 540 "Audit of Estimated Values, including fair value measurement, and related disclosures" establishes: (AtaGlanceISA540, 2018)

- *the necessity to study the factors of inherent risk,*
- *improved risk assessment procedures related to understanding the company and its internal control system,*
- *assessment of the inherent risk and control risk for accounting estimates*
- *requirements based on the purpose of the work, through methods (especially when complex modeling is used), data and assumptions, to conduct audit procedures to eliminate the risk of material errors*
- *introduction of "deferred requirements" upon receipt of confirmatory and contradictory evidence during the audit of accounting estimates,*
- *the need to obtain audit evidence, if additional disclosures are required,*
- *the inclusion of issues related to accounting estimates with persons responsible for corporate governance.*

Considering the inherent risk factors associated with the risk of control, it can be stated that the following indicators should be taken into account:

- ✓ *estimated uncertainty (lack of clarity in measuring accounting estimates),*
- ✓ *complexity (the inherent complexity of accounting estimates, in cases where a lot of data and assumptions are required),*
- ✓ *subjectivity of the management of the audited enterprise.*

An important point in the audit of accounting estimates is the improved risk assessment procedures associated with understanding the enterprise and its internal control system:

- 1) the auditor should familiarize himself with those operations, including economic ones, that the company carries out for the occurrence or change of accounting estimates,*
- 2) what are the requirements for the presentation and disclosure of accounting estimates in financial statements,*
- 3) provisions of normative and legislative acts in terms of accounting estimates,*
- 4) a list of accounting estimates that, according to the auditor's assumption, should be reflected in the financial statements.*

To understand the internal control system, it is necessary to identify: what procedures are established by the management of the enterprise for the application of accounting estimates, the need to involve experts, how the internal control system identifies and prevents the risks of incorrect accounting estimates, the information system of the enterprise, the methods used in accounting estimates, management control methods, whether special knowledge and requirements for personnel are needed when applying accounting estimates.

Examining the requirements based on the purpose of auditing, through methods (especially when complex modeling is used), data and assumptions, to conduct audit procedures in order to eliminate the risk of material errors, the auditor should conduct audit procedures if the substantive tests individually did not provide sufficient evidence for management's assumptions. At the same time, the auditor checks the established accounting valuation methods, the validity of their changes, how management takes into account the uncertainty in the accounting valuation, checking mathematical calculations, especially if they are made with errors, in the case of complex modeling.

The introduction of "deferred requirements" upon receipt of confirmatory and contradictory evidence during the audit of accounting estimates is necessary if the auditor cannot obtain sufficient evidence on the accounting assessment or receives at the same time different evidence: confirmatory and contradictory, then in this case, the provisions of ISA 705

"Modifications to the Opinion in the Independent Auditor's Report" should be applied when drawing up an audit opinion. If the auditor finds that the accounting assumptions are erroneous, then he must act in accordance with the provisions of ISA 450 "Evaluation of misstatements identified during the audit".

The need to obtain audit evidence, if additional disclosures are required, obliges the auditor to conduct audit procedures (including an audit sample concerning elements and disclosures in the financial statements, for elements requiring accounting estimates).

Mandatory inclusion of issues related to accounting estimates with persons responsible for corporate governance it is necessary to include questions on accounting estimates in terms of uncertainty with the management of the audited entity or the owners (Board of Directors, etc.), the standard also provides that certain jurisdictions require the auditor to inform state regulators about uncertainties in accounting estimates.

It should be noted that when verifying the correctness of an accounting assessment, the auditor requests written submissions from the head of the audited entity or from persons with managerial authority on whether the data used in accounting estimates and disclosures are appropriate to ensure the correct assessment or disclosure of information in accordance with applicable financial reporting principles. In case of great uncertainty, the auditor should obtain information about specific accounting estimates, including in relation to the methods used, assumptions or data.

It should be emphasized that ISA 260” Communication with Those Charged with Governance” and ISA 265” Communicating Deficiencies in Internal Control to Those Charged with Governance and Management” provide that the auditor should discuss issues with management, including significant qualitative aspects of the entity's accounting practices and significant deficiencies in the internal control system.

Thus, the auditor is obliged to inform the management of the audited entity of the complex issues of accounting estimates, and the risks of material misstatements that lead to uncertainty of estimates or subjectivity and other risk factors inherent in accounting estimates and disclosures in financial statements.

In the Republic of Moldova, regulations do not oblige to disclose information about the uncertainty of the audited entity's estimates to public authorities, but this practice exists in a number of countries and, accordingly, the auditor is obliged to report such data to regulatory authorities or prudential supervision authorities.

When conducting an audit of accounting estimates, the auditor is required to document the calculations and conclusions in such estimates. In addition, the auditor is obliged to include in the audit documentation:

- ✓ in terms of accounting estimates, how the internal control system of the audited enterprise works,
- ✓ audit procedures and their correlation with the assessed risks of material misstatements at the level of statements of the management of the audited entity;
- ✓ calculations and estimates of the auditor in cases where the management of the audited entity has not taken steps to eliminate uncertainty in accounting estimates;
- ✓ the possibility of management bias related to accounting estimates.

## **Conclusion**

As a result of uncertainty, which is primarily characteristic of entrepreneurial activity, some items of financial statements cannot be accurately calculated, but can only be estimated. Consideration should be given to the fact that the valuation process involves judgments based on current information at the time of reporting.

At the same time, the essence of devaluing assets is that some assets, after the expiration of time, move from assets that bring an influx of economic benefits to the category of inefficient assets. This happens when the costs of maintaining such assets are higher than the income from their use.

When checking the estimated values, the main mission of the auditor is to express an opinion on the reliability of the information, the reasonable application and adequacy of the reflection of information about the estimated values.

Qualified application of estimated values in financial statements will allow, reduce the risk of losses on the part of the organization and significantly reduce the risk of material misstatements in the audit.

Analyzing the provisions of ISA 540 "Auditing Accounting Estimates and Related Disclosures", the author offers the following table of compliance with audit risk, audit of estimated values, and also suggests appropriate measures and audit procedures.

**Table 2 The relationship between the level of audit risk, the process of auditing accounting estimates and the range of audit procedures**

Level of audit risk	Audit of accounting estimates	Audit procedures
Low to 40%	If the level of audit risk is within the calculated deviations between the audit and accounting estimates, the auditor confirms the accounting assessment	Standard audit procedures according to ISA 540
Medium 40% to 60%	If the level of audit risk is less than the detected deviations, then additional confirmations are require	Additional audit procedures, the need to involve an expert
High above 60%	If the level of audit risk is high and deviations are significant, then it is necessary to carry out additional procedures and consider the situation with the expression of a modified audit opinion	Additional audit procedures, the need to involve an expert, apply the provisions of ISA 705

Source: compiled by the author

Analyzing the data reflected in Table 2, the author comes to the conclusion that the audit of accounting estimates should take into account the level of audit risk in the complex: the inherent risk, the risk of control and the risk of non-detection.

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**SESSION VI: INFORMATIONAL  
TECHNOLOGIES AND ECONOMIC  
CYBERNETICS**

## SET OF EQUILIBRIA IN MIXED-STRATEGY FOR HIERARCHICAL STRUCTURES

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**Abstract:** In most socio-economic entities a hierarchical structure can be distinguished. In the process of solving a task, the final result depends on the decisions made at each level. The choice made by a certain actor involved in solving the problem influences the choices of others and, not least, final profit. The paper aims to research mixed-strategy hierarchical games in three-level. That is, the game consists of three players, each of them has two strategies and a gain function. Players make moves in hierarchical mode: first player makes the choice and communicates the result to second player; second player knowing first player's choice, as well as third player's set of strategies and payoff function, makes his move and communicates the outcome to third player; finally, third player knowing the predecessors' choices, makes his choice. Thus, a situation is created and each player calculates his payoff. It is considered that all players maximize their payoff. The given model includes a wide range of problems that can appear in the socio-economic domain. To computing the Stackelberg equilibria set (SES), reverse induction and the graph reduction of best response mapping of the third player are used. A particular case of the results presented by Lozan and Ungureanu (2010, 2013, 2016, 2018) is studied and concretized. All possible cases for the graph of third player ( $\mathbf{Gr}_3$ ) are investigated, the construction method is described by Ungureanu and Botnari (2005). Then, for player two, the possibilities that may arise for constructing his graph of best response mapping ( $\mathbf{Gr}_2$ ) are analyzed. Finally, the first player determines his best moves on  $\mathbf{Gr}_2$ , thus determining the SES in mixed strategies.

**Keywords:** mixed-strategy, hierarchical game, graph of best response mapping, Stackelberg equilibrium.

**JEL Classification:** C02, C61, C62, C65, C72, C79.

### Introduction

The Stackelberg equilibria set (SES) may be identified by simplifying the graph of the best moves of the third player's via a set of optimization problems to the SES. The method of SES computing in mixed-strategy three-player hierarchical games is constructed. To build the graph of best response mapping the ideas of Ungureanu and Botnari (2005) are used. The paper investigates the notion of Stackelberg equilibrium by detailing/particularizing the theoretical theses presented by Ungureanu and Lozan (2008, 2010, 2013, 2016, 2018), in the case of games with three players. In works cited, you can see a more detailed list of references.

Consider a three-player hierarchical strategic game:

$$\Gamma = \langle \mathbf{N}, \{\mathbf{S}_p\}_{p \in \mathbf{N}}, \{\mathbf{g}_p(\mathbf{s})\}_{p \in \mathbf{N}} \rangle,$$

where:

- $\mathbf{N} = \{1, 2, 3\}$  is a set of players;
- $\mathbf{S}_1 = \{1,2\}$ ,  $\mathbf{S}_2 = \{1,2\}$  and  $\mathbf{S}_3 = \{1,2\}$  are the sets of the strategies of the players;
- $g_p(\mathbf{s})$  is a utility function of player  $p \in \mathbf{N}$  defined on the Cartesian product  $\mathbf{S} = \mathbf{S}_1 \times \mathbf{S}_2 \times \mathbf{S}_3$ ;
- $\mathbf{s} = (s_1, s_2, s_3) \in \mathbf{S} = \mathbf{S}_1 \times \mathbf{S}_2 \times \mathbf{S}_3$ , where  $\mathbf{S}$  is the set of profiles.

Let's establish the matrix representation of the utility function  $g_p(\mathbf{s})$ ,  $p \in \mathbf{N}$

$$g_p(\mathbf{s}) = \mathbf{A}_s = [a_{s_1 s_2 s_3}^p]_{\mathbf{s} \in \mathbf{S}} \in \mathbf{R}^{2 \times 2 \times 2}.$$

The mixed-strategy game corresponding to pure-strategy game is the following:

$$\Gamma' = \langle \{1, 2, 3\}, \{\mathbf{X}, \mathbf{Y}, \mathbf{Z}\}, \{f_1(\mathbf{x}, \mathbf{y}, \mathbf{z}), f_2(\mathbf{x}, \mathbf{y}, \mathbf{z}), f_3(\mathbf{x}, \mathbf{y}, \mathbf{z})\} \rangle,$$

where

- $\mathbf{X} = \{(x_1, x_2): x_1 + x_2 = 1, x_1 \geq 0, x_2 \geq 0\}$ ,  
 $\mathbf{Y} = \{(y_1, y_2): y_1 + y_2 = 1, y_1 \geq 0, y_2 \geq 0\}$  and  
 $\mathbf{Z} = \{(z_1, z_2): z_1 + z_2 = 1, z_1 \geq 0, z_2 \geq 0\}$  are the sets of mixed strategies of the players;
- $f_1(\mathbf{x}, \mathbf{y}, \mathbf{z})$ ,  $f_2(\mathbf{x}, \mathbf{y}, \mathbf{z})$  and  $f_3(\mathbf{x}, \mathbf{y}, \mathbf{z})$  are the utility functions of the players defined on the Cartesian product  $\mathbf{X} \times \mathbf{Y} \times \mathbf{Z}$  and

$$f_1(\mathbf{x}, \mathbf{y}, \mathbf{z}) = \sum_{i=1}^2 \sum_{j=1}^2 \sum_{k=1}^2 a_{ijk} x_i y_j z_k,$$

$$f_2(\mathbf{x}, \mathbf{y}, \mathbf{z}) = \sum_{i=1}^2 \sum_{j=1}^2 \sum_{k=1}^2 b_{ijk} x_i y_j z_k,$$

$$f_3(\mathbf{x}, \mathbf{y}, \mathbf{z}) = \sum_{i=1}^2 \sum_{j=1}^2 \sum_{k=1}^2 c_{ijk} x_i y_j z_k.$$

Assume that the players make their actions in a hierarchical manner:

- player 1 selects a strategy  $\mathbf{x} \in \mathbf{X}$  and conveys it to player 2;
- player 2 chooses a strategy  $\mathbf{y} \in \mathbf{Y}$  after observing the move  $\mathbf{x}$  made by the player 1 and being aware of the set of strategies and the payoff function of the player 3. Subsequently, player 2 communicates both  $\mathbf{x}$  and  $\mathbf{y}$  to the player;
- player 3 selects a strategy  $\mathbf{z} \in \mathbf{Z}$  after observing the moves  $\mathbf{x}$  and  $\mathbf{y}$  made by the preceding players.

Upon the formation of the profile  $(\mathbf{x}, \mathbf{y}, \mathbf{z})$ , each player calculates the value of their respective cost function.

The player 1 has the leadership role for the players 2 and 3. The player 2 is positioned as the successor to the player 1 and the predecessor to the player 3. Player 3 is the successor for the players 1 and 2. When player  $p$ ,  $p = \overline{1, 3}$  makes a move, he possesses complete information about the leader choices, strategy sets and cost functions. However, he has no information about the choices made by the successor players. On the other hand, he has full information about the strategy sets and cost functions

of the successor players. For simplicity, let's assume that all players maximize the values of their respective cost functions.

By reverse induction, player 3 establishes his optimal move mapping. Subsequently, the player 2 identifies his best move set on the third player's graph, and the player 1 computes his set of optimal moves on the set of player 2 (Ungureanu, 2008):

$$\mathbf{Br}_3(\mathbf{x}, \mathbf{y}) = \operatorname{Argmax}_{\mathbf{z} \in \mathbf{Z}} f_3(\mathbf{x}, \mathbf{y}, \mathbf{z}),$$

$$\mathbf{Br}_2(\mathbf{x}) = \operatorname{Arg}_{\mathbf{y}, \mathbf{z}: (\mathbf{x}, \mathbf{y}, \mathbf{z}) \in \mathbf{Gr}_3} \max f_2(\mathbf{x}, \mathbf{y}, \mathbf{z}),$$

$$\hat{\mathbf{S}} = \operatorname{Arg}_{(\mathbf{x}, \mathbf{y}, \mathbf{z}) \in \mathbf{Gr}_2} \max f_1(\mathbf{x}, \mathbf{y}, \mathbf{z}),$$

where

$$\mathbf{Gr}_3 = \left\{ (\mathbf{x}, \mathbf{y}, \mathbf{z}) \in \mathbf{X} \times \mathbf{Y} \times \mathbf{Z}: \begin{array}{l} \mathbf{x} \in \mathbf{X}, \mathbf{y} \in \mathbf{Y}, \\ \mathbf{z} \in \mathbf{Br}_3(\mathbf{x}, \mathbf{y}) \end{array} \right\}, \mathbf{Gr}_2 = \left\{ (\mathbf{x}, \mathbf{y}, \mathbf{z}) \in \mathbf{Gr}_3: \begin{array}{l} \mathbf{x} \in \mathbf{X}, \\ (\mathbf{y}, \mathbf{z}) \in \mathbf{Br}_2(\mathbf{x}) \end{array} \right\}.$$

Evidently,  $\mathbf{Gr}_2 \subseteq \mathbf{Gr}_3$ .

**Definition 1.** Any profile  $(\hat{\mathbf{x}}, \hat{\mathbf{y}}, \hat{\mathbf{z}}) \in \hat{\mathbf{S}}$  of the game is called Stackelberg equilibrium.

From the construction of the set  $\hat{\mathbf{S}}$ , the affirmation follows.

**Theorem 1.** The set  $\hat{\mathbf{S}}$  of the Stackelberg equilibrium is non empty.

**Theorem 2.** If every strategy set  $\mathbf{X} \subset \mathbf{R}^2$ ,  $\mathbf{Y} \subset \mathbf{R}^2$ ,  $\mathbf{Z} \subset \mathbf{R}^2$  is compact and every cost function  $f_p(\mathbf{x}, \mathbf{y}, \mathbf{z})$ ,  $p = \overline{1, 3}$  is continuous on its set of strategies and its successors, when the strategies of the predecessors are fixed and the corresponding best response set is compact, then the Stackelberg equilibria set  $\hat{\mathbf{S}}$  is non empty.

*Proof.* The proof follows from the statement of the theorem and the Weierstrass theorem.  $\square$

## Main Results

Consider a 3-player mixed-strategy game  $\Gamma'$  formulated in section 1 whit the matrix:

$$A = (a_{ijk}), B = (b_{ijk}), C = (c_{ijk}), i = \overline{1, 2}, j = \overline{1, 2}, k = \overline{1, 2}.$$

By substitutions:

$$x_1 = x, x_2 = 1 - x, x \in [0; 1];$$

$$y_1 = y, y_2 = 1 - y, y \in [0; 1];$$

$$z_1 = z, z_2 = 1 - z, z \in [0; 1];$$

the equivalent normal form of the game  $\Gamma'$  was obtained:

$$\Gamma'' = \langle \{1, 2, 3\}; \{[0; 1], [0; 1], [0; 1]\}; \{u_1(x, y, z), u_2(x, y, z), u_3(x, y, z)\} \rangle,$$

where

$$u_1(x, y, z) = \left( ((a_{111} - a_{211} - a_{112} + a_{212} - a_{121} + a_{221} + a_{122} - a_{222})z + (a_{112} - a_{212} - a_{122} + a_{222}))y + (a_{121} - a_{221} - a_{122} + a_{222})z + (a_{122} - a_{222}) \right)x + \left( (a_{211} - a_{212} - a_{221} + a_{222})z + (a_{212} - a_{222}) \right)y + (a_{221} - a_{222})z + a_{222};$$

$$u_2(x, y, z) = \left( ((b_{111} - b_{121} - b_{112} + b_{122} - b_{211} + b_{221} + b_{212} - b_{222})z + (b_{112} - b_{122} - b_{212} + b_{222}))x + (b_{211} - b_{221} - b_{212} + b_{222})z + (b_{212} - b_{222}) \right)y + \left( (b_{121} - b_{122} - b_{221} + b_{222})z + (b_{122} - b_{222}) \right)x + (b_{221} - b_{222})z + b_{222};$$

$$u_3(x, y, z) = \left( ((c_{111} - c_{112} - c_{121} + c_{122} - c_{211} + c_{212} + c_{221} - c_{222})x + (c_{211} - c_{212} - c_{221} + c_{222}))y + (c_{121} - c_{122} - c_{221} + c_{222})x + (c_{221} - c_{222}) \right)z + \left( (c_{112} - c_{122} - c_{212} + c_{222})y + (c_{122} - c_{222}) \right)x + (c_{212} - c_{222})y + c_{222}.$$

Thus,  $\Gamma'$  is reduced to the game  $\Gamma''$  on the unit cube.

**Stage 1.** If the strategies of the first and second players is considered as parameters, then the third player has to solve a linear programming parametric problem:

$$u_3(x, y, z) \rightarrow \max, z \in [0; 1] \tag{1}$$

According to Ungureanu and Botnari (2005), the solution (1) is

$$\mathbf{Gr}_3 = [0; 1]^3 \cap \{X_{<} \times Y_{<} \times 0 \cup X_{=} \times Y_{=} \times [0; 1] \cup X_{>} \times Y_{>} \times 1\},$$

where

$$X_{<} \times Y_{<} = \{(x, y): x \in [0; 1], y \in [0; 1], (\alpha_1 x + \alpha_3)y + \alpha_2 x + \alpha_4 < 0\},$$

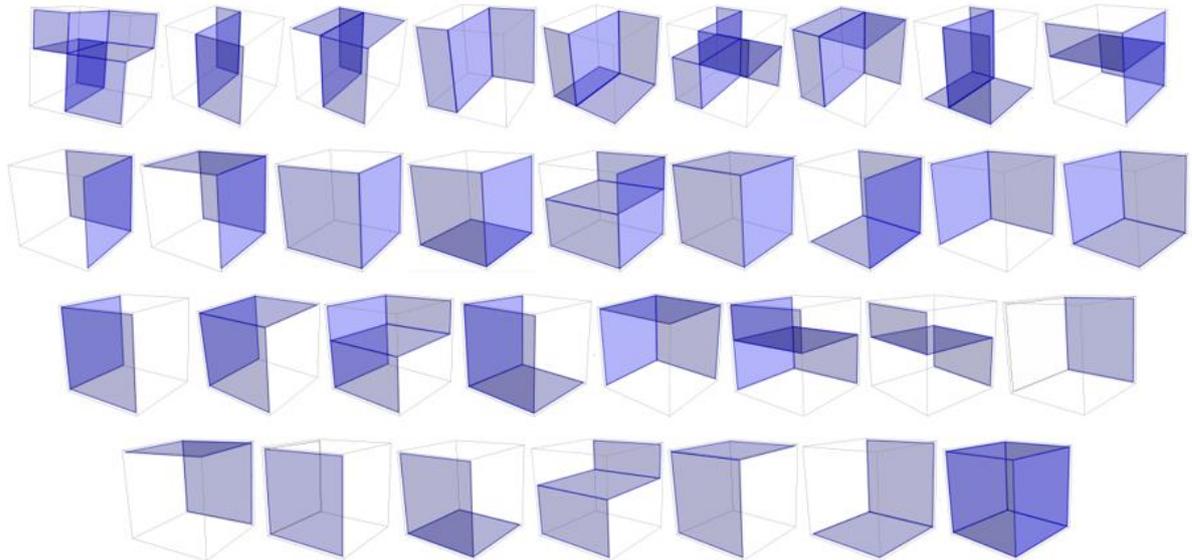
$$X_{=} \times Y_{=} = \{(x, y): x \in [0; 1], y \in [0; 1], (\alpha_1 x + \alpha_3)y + \alpha_2 x + \alpha_4 = 0\},$$

$$X_{>} \times Y_{>} = \{(x, y): x \in [0; 1], y \in [0; 1], (\alpha_1 x + \alpha_3)y + \alpha_2 x + \alpha_4 > 0\},$$

$$\alpha_1 = c_{111} - c_{112} - c_{121} + c_{122} - c_{211} + c_{212} + c_{221} - c_{222},$$

$$\alpha_2 = c_{121} - c_{122} - c_{221} + c_{222}, \alpha_3 = c_{211} - c_{212} - c_{221} + c_{222}, \alpha_4 = c_{221} - c_{222}.$$

Depending on the values of  $\alpha_1, \alpha_2, \alpha_3$  and  $\alpha_4$ , 59 cases are examined. As a result, 33 representations of the  $\mathbf{Gr}_3$  graph are possible (see Figure 1).



**Figure 1.** The possible representations of  $\mathbf{Gr}_3$

Source: Realized by the author in Wolfram Mathematica

**Stage 2.** The second player solves a parametric optimization problem on  $\mathbf{Gr}_3$ :

$$u_2(x, y, z) \rightarrow \max, (x, y, z) \in \mathbf{Gr}_3 \quad (2)$$

The problem (2) is equivalent with three optimization problems of the form:

$$u_2(x, y, z) = (\beta_2 x + \beta_4) y + \beta_6 x + \beta_8 \rightarrow \max, (y, z) \in [0; 1]^3 \cap X_{<} \times Y_{<} \times 0, x \in [0; 1];$$

$$u_2(x, y, z) = ((\beta_1 z + \beta_2) x + \beta_3 z + \beta_4) y + (\beta_5 z + \beta_6) x + \beta_7 z + \beta_8 \rightarrow \max, \\ (y, z) \in [0; 1]^3 \cap X_{=} \times Y_{=} \times [0; 1], x \in [0; 1];$$

$$u_2(x, y, z) = (\beta_9 x + \beta_{10}) y + \beta_{11} x + \beta_{12} \rightarrow \max, (y, z) \in [0; 1]^3 \cap X_{>} \times Y_{>} \times 1, x \in [0; 1],$$

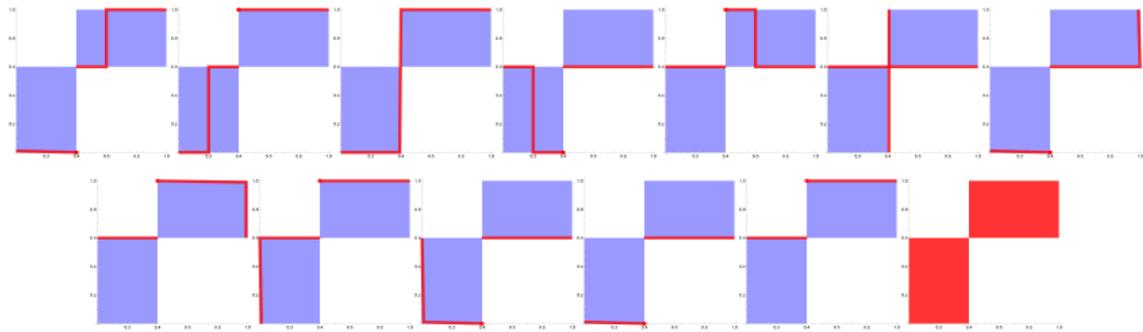
$$\beta_1 = b_{111} - b_{121} - b_{112} + b_{122} - b_{211} + b_{221} + b_{212} - b_{222}, \beta_2 = b_{112} - b_{122} - b_{212} + b_{222},$$

$$\beta_3 = b_{211} - b_{221} - b_{212} + b_{222}, \beta_4 = b_{212} - b_{222}, \beta_5 = b_{121} - b_{122} - b_{221} + b_{222},$$

$$\beta_6 = b_{122} - b_{222}, \beta_7 = b_{221} - b_{222}, \beta_8 = b_{222}, \beta_9 = b_{111} - b_{121} - b_{211} + b_{221},$$

$$\beta_{10} = b_{211} - b_{221}, \beta_{11} = b_{121} - b_{221}, \beta_{12} = b_{221}.$$

When the second player maximizes his gain function on each non-empty component of  $\mathbf{Gr}_3$ , the components can be divided into at most 5 parts. The values of the utility function  $u_2(x, y, z)$  is evaluated across all component parts, and the highest value is recorded. The set  $\mathbf{Gr}_2$  comprises all the components where the optimal values of the function  $u_2(x, y, z)$  are achieved, along with the best strategies of the players 2 and 3:  $y$  and  $z$ , corresponding to the saved parts. In the process of building  $\mathbf{Gr}_2$  on each component of  $\mathbf{Gr}_3$ , 9/13/15 cases are possible depending on the  $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9, \beta_{10}, \beta_{11}$  and  $\beta_{12}$  values. On  $z=0$  component, when  $\mathbf{Gr}_3$  is the first representation in Figure 1, one of the cases illustrated in Figure 2 is possible.



**Figure 2. The possible representations on the  $z = 0$  component, case 1 in Figure 1.**

Source: Realized by the author in Wolfram Mathematica.

**Stage 3.** The first player calculate his best moves on each components of the  $\mathbf{Gr}_2$ :

$$\mathbf{SES}(\Gamma'') = \text{Arg} \max_{(x,y,z) \in \mathbf{Gr}_2} u_1(x, y, z).$$

The following notations are considered:

$$\hat{S}_k = \max_{(x,y,z) \in \mathbf{Gr}_2(k)} u_1(x, y, z), \mathbf{Gr}_2(k) \text{ is the } k \text{ part of } \mathbf{Gr}_2;$$

$$\hat{\mathbf{S}} = \max_k \hat{S}_k.$$

He determines the corresponding values simultaneously comparing them with preceding value and the best is saved in the result, the Stackelberg equilibria set is established.

### 1. Example

In this paragraph an example will be solved to better understand the method of determining the set of Stackelberg equilibria.

Matrices of the three person game are:

$$a_{1**} = \begin{bmatrix} 2 & 5 \\ 5 & 1 \end{bmatrix}, a_{2**} = \begin{bmatrix} 1 & 5 \\ 5 & 2 \end{bmatrix};$$

$$b_{*1*} = \begin{bmatrix} 3 & 2 \\ 1 & 5 \end{bmatrix}, b_{*2*} = \begin{bmatrix} 3 & 4 \\ 2 & 1 \end{bmatrix};$$

$$c_{**1} = \begin{bmatrix} 12 & 0 \\ 0 & 2 \end{bmatrix}, c_{**2} = \begin{bmatrix} 0 & 6 \\ 4 & 0 \end{bmatrix}.$$

Let's identify the set of Stackelberg equilibria. The mixed strategy normal form game on the unit cube has the cost functions:

$$u_1(x, y, z) = (y + z - 1)x - 7yz + 3y + 2z + 2;$$

$$u_2(x, y, z) = (7xz - 6x - 5z + 4)y - 2xz + 3x + z + 1;$$

$$u_3(x, y, z) = (24xy - 6y - 8x + 2)z - 10xy + 6x + 4y.$$

The sketched method applies.

**Stage 1.**  $\text{Gr}_3$  is determined.

We have the case  $\alpha_1 > 0, \alpha_3 < 0, \alpha_1 > -\alpha_3, \alpha_4 > 0, \alpha_4 < -\alpha_3$ , result:

$$X_{<} \times Y_{<} \times 0 = \begin{cases} x \in \left[0, \frac{1}{4}\right), y \in \left[0, \frac{1}{3}\right], z = 0, \\ x = \frac{1}{4}, y \in [0, 1], z = 0, \\ x \in \left(\frac{1}{4}, 1\right], y \in \left[\frac{1}{3}, 1\right], z = 0. \end{cases}$$

$$X_{=} \times Y_{=} \times [0, 1] = \begin{cases} x \in \left[0, \frac{1}{4}\right), y = \frac{1}{3}, z \in [0, 1], \\ x = \frac{1}{4}, y \in [0, 1], z \in [0, 1], \\ x \in \left(\frac{1}{4}, 1\right], y = \frac{1}{3}, z \in [0, 1]. \end{cases}$$

$$X_{>} \times Y_{>} \times 1 = \begin{cases} x \in \left[0, \frac{1}{4}\right), y \in \left[\frac{1}{3}, 1\right], z = 1, \\ x = \frac{1}{4}, y \in [0, 1], z = 1, \\ x \in \left(\frac{1}{4}, 1\right], y \in \left[0, \frac{1}{3}\right], z = 1. \end{cases}$$

So,  $\text{Gr}_3 = [0; 1]^3 \cap \{X_{<} \times Y_{<} \times 0 \cup X_{=} \times Y_{=} \times [0; 1] \cup X_{>} \times Y_{>} \times 1\}$ . Figure 3 shows with blue the graph of best response mapping of third player.

**Stage 2.**  $\text{Gr}_2$  is determined, maximize  $u_2(x, y, z)$  on  $\text{Gr}_3$ .

We have the cases  $\beta_2 < 0$ ,  $\beta_4 > 0$ ,  $-\beta_2 > \beta_4$  and  $\beta_9 > 0$ ,  $\beta_{10} < 0$ ,  $\beta_9 = -\beta_{10}$ . In  $y = \frac{1}{3}$  is the case  $x \in [0; 1]$  and  $z = 0$ .

On the component  $X_{<} \times Y_{<} \times 0$  is obtained:

$$\begin{cases} x + \frac{7}{3}, & x \in \left[0, \frac{1}{4}\right), y = \frac{1}{3}, z = 0, \\ -3x + 5, & x \in \left[\frac{1}{4}, \frac{2}{3}\right), y = 1, z = 0, \\ 3, & x = \frac{2}{3}, y \in \left[\frac{1}{3}, 1\right], z = 0, \\ x + \frac{7}{3}, & x \in \left(\frac{2}{3}, 1\right], y = \frac{1}{3}, z = 0. \end{cases}$$

On the component  $X_{<} \times Y_{<} \times [0, 1]$  is obtained:

$$\begin{cases} x + \frac{7}{3}, & x \in \left[0, \frac{1}{4}\right), y = \frac{1}{3}, z = 0, \\ \frac{17}{4}, & x = \frac{1}{4}, y = 1, z = 0, \\ x + \frac{7}{3}, & x \in \left(\frac{1}{4}, 1\right], y = \frac{1}{3}, z = 0. \end{cases}$$

On the component  $X_{<} \times Y_{<} \times 1$  is obtained:

$$\begin{cases} \frac{4}{3}x + \frac{5}{3}, & x \in \left[0, \frac{1}{4}\right), y = \frac{1}{3}, z = 1, \\ x + 2, & x \in \left[\frac{1}{4}, 1\right), y = 0, z = 1, \\ 3, & x = 1, y \in \left[0, \frac{1}{3}\right], z = 1. \end{cases}$$

After comparing the  $u_2(x, y, z)$  values on all parts of the components and saving the best one,  $\mathbf{Gr}_2$  may be represented as:

$$\mathbf{Gr}_2 = \begin{cases} x \in \left[0, \frac{1}{4}\right), y = \frac{1}{3}, z = 0, \\ x \in \left[\frac{1}{4}, \frac{2}{3}\right), y = 1, z = 0, \\ x = \frac{2}{3}, y \in \left[\frac{1}{3}, 1\right], z = 0, \\ x \in \left(\frac{2}{3}, 1\right], y = \frac{1}{3}, z = 0. \end{cases}$$

Figure 3 shows with green the graph of best response mapping of second player.

**Stage 3.** The **SES** is determined. So, the components of  $\mathbf{Gr}_2$  may be used to determine the equilibria sets.

For,  $\mathbf{Gr}_2(1)$ :  $x \in [0, \frac{1}{4}]$ ,  $y = \frac{1}{3}$ ,  $z = 0$ ,

$\hat{S} = \hat{S}_1 = \max_{(x,y,z) \in \mathbf{Gr}_2(1)} u_1(x,y,z) = \max_{(x,y,z) \in \mathbf{Gr}_2(1)} (\frac{2}{3}x + 3) = \frac{7}{6}$ , in  $(\frac{1}{4}, \frac{1}{3}, 0)$ , but  $\frac{1}{4} \notin [0, \frac{1}{4}]$ , result **SES** =  $\emptyset$ .

For,  $\mathbf{Gr}_2(2)$ :  $x \in [\frac{1}{4}, \frac{2}{3}]$ ,  $y = 1$ ,  $z = 0$ ,

$\hat{S} = \hat{S}_2 = \max_{(x,y,z) \in \mathbf{Gr}_2(2)} u_1(x,y,z) = \max_{(x,y,z) \in \mathbf{Gr}_2(2)} (5) = 5$ , **SES** =  $\{(\frac{1}{4} \leq x < \frac{2}{3}, 1, 0)\}$ .

For,  $\mathbf{Gr}_2(3)$ :  $x = \frac{2}{3}$ ,  $y \in [\frac{1}{3}, 1]$ ,  $z = 0$ ,

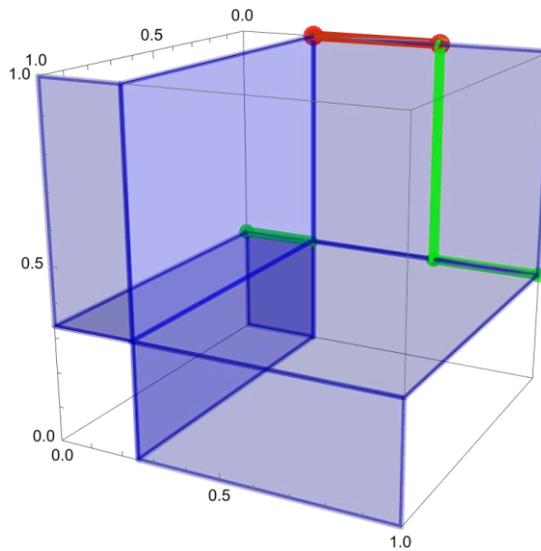
$\hat{S}_3 = \max_{(x,y,z) \in \mathbf{Gr}_2(3)} u_1(x,y,z) = \max_{(x,y,z) \in \mathbf{Gr}_2(3)} (\frac{11}{3}y + \frac{4}{3}) = 5$  in  $(\frac{2}{3}, 1, 0)$ , result  $\hat{S}_3 = \hat{S}$  and **SES** =  $\{(\frac{1}{4} \leq x \leq \frac{2}{3}, 1, 0)\}$ .

For,  $\mathbf{Gr}_2(4)$ :  $x \in (\frac{2}{3}, 1]$ ,  $y = \frac{1}{3}$ ,  $z = 0$ ,

$\hat{S}_4 = \max_{(x,y,z) \in \mathbf{Gr}_2(4)} u_1(x,y,z) = \max_{(x,y,z) \in \mathbf{Gr}_2(4)} (\frac{2}{3}x + 3) = \frac{11}{3}$ ,  $\hat{S} > \frac{11}{3}$  and the **SES** remains unchanged.

Solution of the game is **SES** =  $\{(\frac{1}{4} \leq x \leq \frac{2}{3}, 1-x) \times (\frac{1}{0}) \times (\frac{0}{1})\}$  whit the gain  $(5, [3, \frac{17}{4}], [\frac{4}{3}, 3])$ .

In figure 3, the set of Stackelberg equilibria in mixed strategies of the game is represented in red.



**Figure 3. The  $\mathbf{Gr}_3$ ,  $\mathbf{Gr}_2$  and **SES****

Source: Realized by the author in Wolfram Mathematica

## Conclusions

The hierarchical mixed-strategy game of three-player is analyzed. In the most difficult case, the **SES** may be partitioned into a maximum of six parts; on each of them the Stackelberg equilibrium are calculated by comparing the optimal values of the cost function of first player on the convex parts of

the graph of optimal moves mapping of the player 2. The **SES** consists of the component points on which the best values were achieved. To build  $\mathbf{Gr}_3$ , 59 cases are investigated as a result 33 representations are obtained. The possible results for determining  $\mathbf{Gr}_2$  on each component of  $\mathbf{Gr}_3$  are analyzed. Of course, to simplify the pure and mixed strategy game and improve the method, the equivalent dominant and dominated strategies in the pure game can be identified.

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## **ELECTRONIC COMMERCE**

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**Abstract:** In the modern society, electronic commerce (e-commerce) has become a primary factor of the global economy, opening up new possibilities for businesses, consumers and society. This is due to the widespread use of computing, which in turn has changed technologies and user behavior. Online trading platforms have become increasingly accessible and user-friendly. The use of IT (Information Technology) in commerce has enabled consumers to procure products and services conveniently and quickly.

Depending on the type of interacting entities, we can have the following categories: Business-to-business, Business-to-consumer, Consumer-to-business, Consumer-to-consumer, Business-to-government, Government-to-business, Government-to-consumer.

The use of computing in commerce has the following advantages: it leads to an increase in income, it is more convenient for the user and the seller, it is cheaper for the user, it saves time, it allows to improve the ecology, etc. For example, in online sales it allows to increase sales, which leads to an increase in income. When the user is looking for a product, he can see what parameters it has, what price it has in different stores, so he can find the right product much faster. In addition to saving time, it saves money because it finds the store with the lowest price, it does not spend on shipping. Because it uses less transport, so it pollutes the environment less. It is also more profitable for the seller, he has no expenses for the rent of the store, communal services, it needs a minimum number of staff, etc. More than that, not using e-commerce (compared to other companies) could lead to loss of income, or even bankruptcy of the business.

Other of the important factors in the growth of e-commerce is the use of mobile devices (m-commerce), such as smartphones and tablets. Companies quickly moved to develop mobile apps and websites adapted for mobile devices, making them easy to use and hassle-free.

**Keywords:** Electronic commerce, Business-to-business, Business-to-consumer, Consumer-to-business, Consumer-to-consumer.

JEL Classification: L81

### **Introduction**

In modern society, electronic commerce (e-commerce) has become a primary factor in the global economy, opening up new possibilities for businesses, consumers and society. This is due to the widespread use of IT (Information Technology), which in turn has changed technologies and user

behavior. Online trading platforms have become increasingly accessible and user-friendly. The use of IT in commerce has enabled consumers to procure products and services conveniently and quickly.

Today, the computing technique is used in all fields of human activity. This is due to the fact that the use of IT allows us to increase production, reduce expenses, get a better quality product or get the result much faster. This fact has led to the modification of activities where computers are used. For example: in communication, studies, work, trade, etc. As can be seen from table 1, in 2021 about 5.4 billion people were connected to the Internet, or about 68% of the population [8]. But, taking into account the fact that every year new users log in, we can say that today the percentage is higher, which leads to the fact that e-commerce will be used more and more.

Table 1. World Internet usage and population statistics (estimates are for June 30, 2022.)

<b>World Regions</b>	<b>Population ( 2022 Est.)</b>	<b>Population % of World</b>	<b>Internet Users 31 Dec 2021</b>	<b>Penetration Rate (% Pop.)</b>
<b><u>Africa</u></b>	<b>1,394,588,547</b>	17.6 %	<b>601,940,784</b>	43.2 %
<b><u>Asia</u></b>	<b>4,352,169,960</b>	54.9 %	<b>2,916,890,209</b>	67.0 %
<b><u>Europe</u></b>	<b>837,472,045</b>	10.6 %	<b>747,214,734</b>	89.2 %
<b><u>Latin America / Carib.</u></b>	<b>664,099,841</b>	8.4 %	<b>534,526,057</b>	80.5 %
<b><u>North America</u></b>	<b>372,555,585</b>	4.7 %	<b>347,916,694</b>	93.4 %
<b><u>Middle East</u></b>	<b>268,302,801</b>	3.4 %	<b>206,760,743</b>	77.1 %
<b><u>Oceania / Australia</u></b>	<b>43,602,955</b>	0.5 %	<b>30,549,185</b>	70.1 %
<b><u>WORLD TOTAL</u></b>	<b>7,932,791,734</b>	<b>100.0 %</b>	<b>5,385,798,406</b>	<b>67.9 %</b>

Source: <https://www.internetworldstats.com/stats.htm>

If a while ago an accountant or architect did his work in a few weeks, now using IT tools the same thing can be done in a few days. If before a student had to come to the university to learn immediately, now he can take classes online. In addition, if before it was limited to bibliographic sources in the local library, now it has access to electronic libraries all over the world.

The use of IT in commerce has the following advantages: it leads to increased income, it is more convenient for the client and the seller, it is cheaper for the client, it allows to save time, to improve the ecology, etc. For example: in online sales, it allows sales to increase, which leads to an increase in the seller's income. When the client is looking for a product, he can see what parameters it has, what price it has in different stores much faster, so he can find the right product much faster. Apart from saving time it saves money because it finds the shop with the lowest price, it doesn't spend money on shipping, it also doesn't spend time on shipping. Because it uses less transport, i.e. it pollutes the environment less. It is also more profitable for the seller, he has no expenses for the rent of the store, communal services, he needs a minimum number of staff, etc. More than that, not using

e-commerce (compared to other companies) leads to loss of income, or even bankruptcy of the business.

One of the important factors in the growth of e-commerce is the use of mobile devices (m-commerce), such as smartphones and tablets [6]. Companies quickly or oriented developing applications and websites adapted for mobile devices. The ones that allowed their comfortable and trouble-free use. Among the most popular e-commerce platforms are: Shopify, Wix, BigCommerce, Squarespace, Square Online, Weebly, Ecwid, Sellfy, Magento, WooCommerce, Approval, nopCommerce, GoDaddy, Volusion, VetrinaLive, Big Cartel, Shift4Shop, EKM, X-Cart. Competition between e-commerce platforms is also favorable for users, as it imposes the need to offer quality services at a convenient price.

Another trend in e-commerce is the use of social media platforms. This approach allowed client to shop directly from social platforms, because users often and regularly visit social platforms, which is convenient for sellers and allows them to increase sales. Among the social platforms where e-commerce is used, we can mention: Facebook, Odnoklasniki, Twitter, Pinterest.

The importance of e-commerce also results from the fact that among the largest companies and richest people in the world are those who operate in the field of e-commerce. For example, in 1994 the Amazon project was started by Jeff Bizos, who came up with his general concept while traveling to Seattle by train. He invested only \$300,000 in his enterprise. The site was launched on July 16, 1995. Then a large number of things began to be sold over the Internet, which previously could only be purchased in a regular store. It later positioned itself as both an online bedding store and an online clothing and home appliance store. This store has received universal recognition, as evidenced by the fact that its creator received the title "Person of the Year" in 1999, which was awarded to him by Time magazine. Today, Jeff Bizos' fortune is estimated at around 155 billion dollars.

As e-commerce grows more and more, there are increasing demands on data security. Companies are required to use appropriate measures to ensure the security of personal data. Collaboration between information technology companies, companies selling products and services, and government organizations lead to the creation of a secure environment for e-commerce and protection of buyer's personal data.

### **Categories of electronic commerce**

Depending on the type of interacting entities, we can have the following categories [1]:

- Business-to-business (B2B)
- Business-to-consumer (B2C)
- Consumer-to-business (C2B)
- Consumer-to-consumer (C2C)

For the Business-to-business category, both entities (the seller and the buyer) are companies, legal entities. For example, the car manufacturer orders tires from the supplier. In the Business-to-consumer category an individual orders a product online, for example a TV. Consumer-to-business is a model where the consumer creates value for the business. The pawn shop is an example of a C2B model. In this case, the business is based on the products that people bring as collateral. In the Consumer-to-consumer model both parties are individuals. For example, online auction of second-hand products, here comes an intermediary who organizes a trading platform, for example, a web page for buying/selling, etc.

If one of the parties cooperates with government agencies, new categories appear:

- Business-to-government (B2G)
- Government-to-business (G2B)
- Government-to-consumer (G2C)

Let's see a more detailed description of the listed categories [2]. Often, the term Business-to-government is understood as the activity of some companies providing companies, services intended for the production of other goods (raw materials, energy, research and development, means of production). Here companies act as sellers and buyers of services or goods. B2B e-commerce is possible thanks to e-commerce, part of the software solution is installed inside a server or an electronic database for accounting, warehouse, production accounting. The one that means the connection between the business logic and the database of the back-end system is configured automatically.

B2C companies use marketing technologies focused on the mass buyer, which are called retail technologies. The B2C model is characterized by:

- Company producing goods and services interacts with the final consumer.
- The consumer buys a product that satisfies individual needs, makes an individual decision.
- The buyer is not a product expert.
- Apart from the rational, the emotional component of the purchase is also important.
- The cycle of the sales process is very short.
- The savings have a big effect, thanks to mass sales.
- The need to use mass communications.
- Sellers in the sales process use the same type of marketing solutions and methods.

Among the models listed, C2B is the most difficult to understand [3]. As mentioned, it is a model where the consumer creates value for the business. An important role in this type of marketing is customer reviews. Positive reviews allow to increase the number of sales, and negative reviews lead to the need to improve the product, without spending money from the manufacturer. Positive reviews typically lead to a 16% increase in sales. Customer-generated advertising is more effective than other types because it has more credibility with customers. The disadvantage, in this case, is the reduced possibility of control.

The C2C model includes lower prices for goods, lower transaction costs, etc. A negative factor is the possibility of transaction fraud. Therefore, web pages use the reputation system. Here each party can be both a seller and a buyer. For example, a buyer can purchase a newer phone, then sell the old one. A popular platform of this type is Ebay.com, in the Republic of Moldova 999.md, etc. In addition to placing ads, web resources also allow additional services such as product search by category, privacy of personal data, payment guarantees, some statistics, etc. Apart from trading in goods, C2C can also offer trading in services. In this case, services can be offered for small repairs of the building, where large companies refuse, or tutors can be used to prepare a child for an exam or for an item where he has arrears, etc. Another advantage is price negotiation, where you can find services and products for different pockets.

B2G (business-to-government) is a business model in which private companies cooperate with government agencies [4]. The B2G model is bureaucratically difficult for businesses, but in return provides access to administrative resources. The model assumes a multi-level decision-making

system, an auction structure for complex purchases, but ensures the attraction of administrative resources, large-scale and regular transactions between companies and the state. The B2G business model has the following advantages: long-term orders, advantages for young companies, large orders.

In B2G, a private company can get contracts for several months or even years, which is beneficial for the company. For young companies without many years of experience, participation in tenders and public procurement is an opportunity to gain market share. B2G experience will have a positive impact on the future, including private orders. The state is the largest organization, so it may need large orders. For example, printing textbooks for schools, repairing and paving roads, ordering computer technology for state organizations.

But, like any model, it has the following disadvantages: complex tenders, corruption, guarantee of the quality of goods and services, bureaucracy.

In state tenders the supplier and executor of the state order is selected in a transparent tender system. Auction participants go through a multi-stage check, it is necessary to know the law, correctly fill out the documentation, etc. The corruption component is in setting the requirements for the auction. Statesmen may, in particular, set conditions in such a way that only one company meets the requirements. For example, only a company that has experience in paving roads can receive an order. If no other firm has such experience, then there will be only one bidder in the auction, who will set his price and receive the order without competition.

The guarantee of the quality of goods and services means that if the work is performed poorly, then the contractor is obliged to correct it or redo it, in addition to his own money, and given the value of the order, this can become a problem. Bureaucracy is another reason, at every stage of cooperation with the state, even on simple issues, bureaucracy can appear, they can take a long time. But the most serious, in this situation, are the delays in settlement.

### **Security of e-commerce**

Today, cybercriminal activity is one of the biggest challenges facing modern society. With the increasing use of computers this problem will become even more acute. Cyber-attacks are the fastest growing globally and are increasing in size, complexity and cost. Cybersecurity Ventures says that in 2023 the damages caused by cybercrime will reach 8 trillion US dollars and 10.5 trillion US dollars by 2025 [10]. The one that makes cybercrime one of the top 10 biggest global risks in the next decade, according to the World Economic Forum. Cybercrime now joins such threats as climate change and involuntary migration in 8th place.

Losses from ransomware alone in 2021 reached \$20 billion, but ransomware damages are expected to exceed \$265 billion annually by 2031. The largest ransomware payment on record was made by CNA Financial. The Chicago-based company paid \$40 million to the Phoenix cybercriminal group, believed to be from Russia.

Attackers often target the largest companies. For example, the largest personal data breach was suffered by Yahoo. Due to a security incident in 2013, the company's three billion user accounts were affected. Another example is the loss of personal data recorded was at the T-Mobile company in 2023. The company disclosed the theft of personal information belonging to about 37 million customer accounts. Another type of attack hit Cloudflare in February 2023. The company detected and mitigated the largest distributed denial of service (DDoS) attack of 71 million requests per

second (rps), called "hyper-volumetric". This DDoS attack was the largest ever recorded, which is 54% higher than the previous attack of 46 million rps in June 2022.

To ensure the growth of e-commerce and ensure the security of data and savings of economic agents, appropriate security measures are necessary. According to statista.com, annual losses in electronic commerce amount to several tens of billions of US dollars. In 2022 these losses were around 41 billion, but already in 2023 they could reach 48 billion dollars.

Huge sums of money are spent on cyber security. According to Cybersecurity Ventures, in 2023 this spending will reach approximately \$5.6 billion. But by 2027 this spending is expected to exceed \$10 billion. Likewise, enormous sums are being spent on the cyber insurance market to protect companies. The company Cybersecurity Ventures estimates that in 2025 the cyber insurance market will be around USD 14.8 billion, but already in 2031 it will exceed USD 34 billion.

#### **- Types of threats**

As you can see there are quite a few threats that e-commerce needs to be protected against: website hacking, misuse of personal data, money theft, phishing attacks, insecure service delivery and card fraud, etc. Let's examine some of them.

Financial fraud has been in online business since its inception. Hackers make unauthorized transactions and erase traces, causing significant losses to businesses. Some scammers send claims for fake refunds or returns. Refund scams are a common financial scam where stores return money for supposedly purchased or damaged items.

It is not uncommon for internet spammers to leave blog comments or fill out contact forms leaving infected links to harm a business. They can also send infected links in private messages to company social media communities [7].

Reconnaissance attack. Here the attacker can use nslookup and whois instructions to determine the IP address space assigned by the operator. After that, it determines the active addresses. To automate the process, you can use the fping or gping instructions [5].

Phishing is another security threat where hackers disguised as company representatives send messages to customers to trick them into revealing confidential information or lure customers to a fake version of the website.

DDoS and DOS attacks aim to disrupt the website. In such attacks, numerous requests are sent to your servers. The goal is to make the site crash. This type of attack is simple to carry out, but restoring the system is difficult. Because, they are simple, they are very widespread. There are several types of DoS attacks, their goal is to consume as many network and computer resources as possible, to make it difficult or impossible to use services. Some of the types of DoS attacks are: Ping of Death, SYN Flood, DDoS, Smurf Attack.

Finding the password. The goal is to find the website password and gain access to the admin panel of the online store. Special programs are used to select passwords. One way to carry out this type of attack is to use packet sniffer applications, with their help the bad guy reads openly transmitted data, transmitted without data encryption. Another method is to select the login and password from a dictionary or generate them automatically. With the help of this method, the attacker can find the password of the server, the router by making several thousand, hundreds of thousands of attempts. These types of attacks are called dictionary attacks or brute-force attacks [7].

Viruses, Worms and Trojans. They are one of the most serious threats to network security, when attackers can infect a site and gain access to confidential information of store customers. A virus is a software that attaches itself to another software to perform some unauthorized function on the workstation. For example, it can attach itself to the command.com file, which is the main compiler of the Windows OS, delete certain files, and infect other versions of the command.com file that it can detect.

Trojan Horses are written to appear to be another type of software, but are actually an attack tool. As an example, an application that launches a game can serve. While the user is playing, the application e-mails the Trojan Horses game using the user's address book. Other users receiving and accessing the game also infect their computer and spread the infected game.

The virus needs a transfer mechanism to spread, for example a ZIP file or an executable file attached to an email message. Viruses differ from worms in that they need user interaction to spread.

Worms are independent applications that try to exploit some security vulnerabilities (holes). After finding the weak spot, it infects the system, in order to continue infecting other computers. Worms have the following structure:

- Vulnerability detection – infects the computer using system vulnerabilities, for example using the naivety of the user launching executable files from unsafe sources.
- Spreading mechanism – after receiving access it infects the computer and chooses another target.
- Payload – after infection, the attacker increases his rights, most often obtaining administrator rights to have as much access to the system and data as possible.

- **Protection methods**

Having seen what the purpose is and what is the type of attack, we can see what methods of protection we can use. In addition, after researching what the attacker can do, depending on the type of attack we can choose the most optimal methods to protect e-commerce against computer attacks. In general, protection methods can be grouped into: management methods, software protection methods, physical protection methods [10].

By management methods we mean using the security policy at the enterprise, explaining to simple users how to work in the network, how to use the computing technique, etc. Since people are the weakest part of security, this fact is called social engineering attacks. By software protection methods we understand the use of specialized applications in the field of IT security [11]. By hardware protection methods we mean the protection of network equipment, computers, servers, etc.

Switching to HTTPS, using outdated HTTP protocols makes the site vulnerable to attacks. You need to switch to HTTPS, a protocol that protects user data and confidential information. To migrate to HTTPS, you must purchase an SSL certificate from your hosting company. Having an up-to-date SSL certificate and HTTPS protocol has become a standard, so it's very important to get them if you don't want to lose traffic.

Protect your servers and admin panels, remember to use strong passwords and change them regularly to prevent your site from being hacked. In addition, you can set up notifications in your admin panel to be alerted when someone tries to connect from an unknown IP address.

Payment gateway security, pay special attention to payment data security. Never store debit and credit card information on your servers, ensure the security of your payment gateways is not compromised. You may use third party payment processors.

Use antivirus software, hackers can use stolen card information to place orders. Antivirus or anti-fraud software can help with this problem. Software of this type uses algorithms that are able to recognize malicious transactions and assess fraud risks.

Use firewalls, another effective method is to use firewall software and plugins that monitor untrusted networks and regulate incoming and outgoing traffic to protect against cyber threats.

Use SSL Certificates, Secure Sockets Layer (SSL) certificates are files that associate a key with transactions on various network paths. SSL certificates encrypt data to protect payment information from interception. Plus, SSL gives you proof of ownership so hackers can't spoof a phishing site.

Use multi-level security, you can improve your security using different levels: content delivery network, two-factor authentication, etc.

Use Plugins, plugins are an easy way to keep your site secure. They provide protection against malicious bots, injection of infected code and hundreds of other serious attacks.

Back up your data, data loss due to hardware failures or cyber attacks is not uncommon. Back up your data regularly, you can either use an automatic backup service or choose a managed e-commerce web host to back up your data automatically.

Updating security tools. Security tools and plugins should be updated regularly. Install updates and patches as soon as they are released, as hackers can use bots that determine which resources have outdated software.

Choose a reliable e-commerce platform. It is important to choose a secure e-commerce platform that is updated regularly. Popular platforms protect you from common threats.

Staff training, employees must be aware of user information protection laws and policies. Personnel with access to customer data must not provide login credentials to third parties.

Customer training, security issues don't always happen on your end, customers can make mistakes – use soft passwords, provide confidential information on phishing sites, etc. It is easier to educate customers about the risks and phishing than to eliminate the problems that arise.

## **Conclusions**

In the Republic of Moldova, more and more users shop online. The significant increase is mainly due to trading platforms. In the first quarter of 2023, bank card payments reached 53 billion lei (2.65 billion euros), 16.7 billion lei more than the same period last year. As the experts say, "Until 2016, card payments in the Republic of Moldova were lower than card payments abroad. Currently, 3 out of 4 lei that Moldovans pay with their card are spent in the Republic of Moldova and 25% abroad. In the Republic of Moldova, currently, cash payments dominate when an online order is made. In the Republic of Moldova, the largest payments that are made, currently, are made to pay bills and taxes". In 2020, e-commerce reached 17 billion lei, and is currently estimated at 38.8 billion lei, compared to 34.8 billion lei in the fourth quarter of 2022 [9].

Worldwide, the importance of e-commerce is even greater. According to the source [12], "In 2022, retail e-commerce sales were estimated to exceed 5.7 trillion U.S. dollars worldwide, and is expected to reach new heights in the coming years.". The revenue ranking in the E-commerce market is led by Asia with 1.7 trillion U.S. dollars, while the USA is following with 984.39 billion dollars. In contrast, Africa is at the bottom of the ranking with 32.49 billion dollars, showing a difference of 1.7 trillion dollars to Asia, see figure 1.

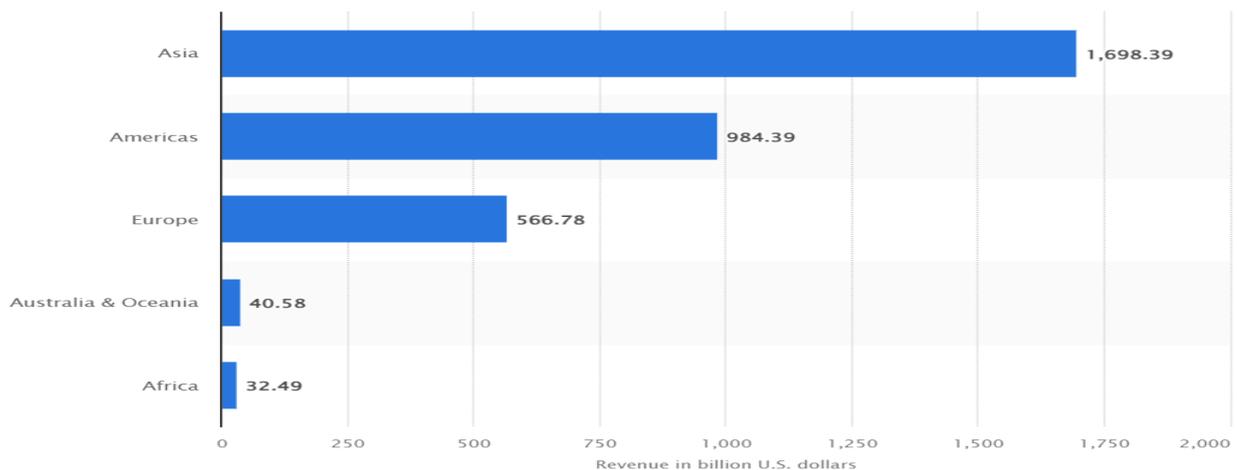


Figure 1. Total retail e-commerce revenue worldwide in 2022, by region (in billion U.S. dollars)

Source: <https://www.statista.com/forecasts/1117851/worldwide-e-commerce-revenue-by-region>

Apart from the importance of e-commerce, the article drew special attention to ensuring the security of e-commerce. Because it can only be used when both the buyer and seller are confident in the safety of the tools used, without losing money and personal data.

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## DIGITALIZATION OF UKRAINE'S ECONOMY: TRANSFORMATIONAL PROCESSES AND PATHS TO INTEGRATION

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**Abstract.** Digitalization, or digital transformation, is considered by leading economists as a key factor for the sustainable development of the global economy as a whole, as well as for each nation as a part of modern society. Ukraine, a country striving for integration into the European Union, is actively enhancing its approaches to the implementation of digital technologies in its economy and society. This article examines the impact of the digitalization process on Ukraine's economy and its consequences for development, integration, and utilization of digital technologies in sectors such as public services, business, and access to information technologies.

Special attention is given to evaluating Ukraine's progress in the development and implementation of information products, as well as improving the accessibility of digital resources for citizens, particularly in conditions of armed conflict. Key criteria have been identified for the development and implementation of the Digital Economy and Society Index (DESI) in Ukraine. An analysis of legislative and institutional aspects related to the adoption of DESI as a tool for monitoring the level of digital transformation in the economy is conducted, including alignment with European Union norms and compliance with national development programs in line with core digitalization strategies.

The necessity of fully establishing the DESI ecosystem in Ukraine is emphasized as a crucial condition for the successful integration of the country into the European Union. For successful integration into the European community, Ukraine needs to enhance its digital infrastructure, make amendments to its legislative framework, ratify European quality standards, and adjust statistical reporting. Implementing recommendations for data collection and calculations based on the DESI index will contribute to the transformation and expansion of societal digitalization processes, facilitate adaptation to EU standards, and enhance the competitiveness of Ukrainian enterprises in European markets.

**Keywords:** *digitalization, digital economy, DESI index, integration*

JEL classification: A10, F15, H41, O19

### Introduction

Modern economics is undergoing complex changes due to the influence of digital transformation. Digitization of public relations leads to the restructuring of the economy, reduction of production costs, optimization of business processes, emergence of new professions and competencies, and the

creation of new jobs. The adoption of information technology enhances production efficiency, quality, and the prompt execution of orders. These factors can be viewed as part of the sustainable development program of a country's economy and the global economy as a whole. Opportunities for accessing various services, gaining new knowledge, competencies, and leisure activities are expanding for the population.

In general, digitization is considered by modern researchers as a key factor in the development of the modern world. Every developed country develops and implements its digitization programs. The universally recognized indicator of a country's digitization level is the Digital Economy and Society Index (DESI).

Ukraine, on its path to integration into the European community, actively develops and improves its approaches to implementing digital technologies in the economy and society. The implementation of the DESI index in Ukraine is accompanied by changes in data collection and processing, the development and adoption of new quality standards, and technological innovations in the provision of internet services.

### **Analysis of Recent Research and Publications.**

Digitization is one of the key resources of the "Industry 4.0" paradigm and the main growth factor for the global economy in the coming decades. This phenomenon of rapid development and broad influence has become the subject of research for scholars and practitioners, as reflected in the works of Ukrainian and international researchers. Leading experts such as P. Verhof, T. Brockguitzen, J. Bart, A.-M. Stepitz, L. Ivancic, D.-S. Vugec, M.V. Kryachko, E.V. Chernyaev, S.S. Shtepa, I.S. Vasyliiev, S.M. Larin, and V.A. Podgornaya have studied digitization.

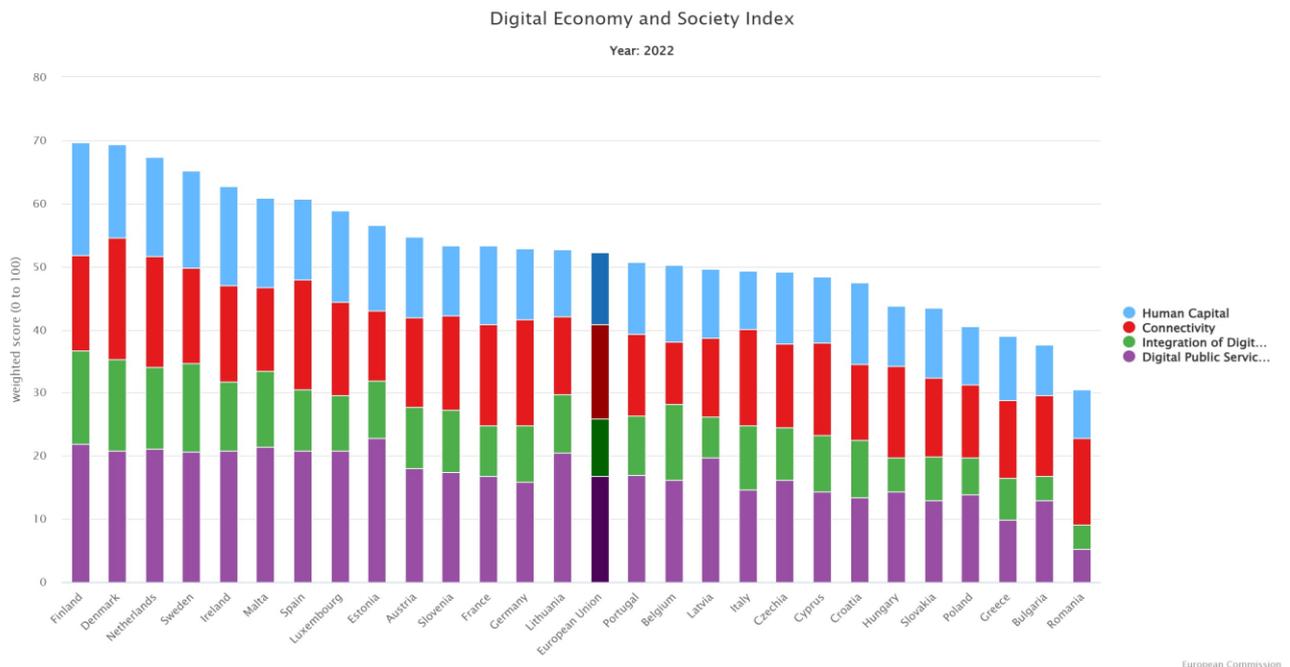
The goal of this article is to analyze the impact of transformational processes and digital technologies on Ukraine's economy on its path to European integration through the use of the DESI index.

### **Main Content**

Every year, starting in 2014, the European Commission (EC) publishes the Digital Economy and Society Index report. The report includes not only Eurostat survey results but also justifications for the priority directions of digital economy development in EU member states, recommendations for their development, investment, and the adoption of specific measures.

When creating the DESI index report, 34 indicators from four different categories are analyzed: digital competencies and skills of the population, the extent of internet use by citizens (in various areas of activity), digital technologies in business (integration, online activities), and the availability and use of public services (e-government services). From 2022, the category of communication (communication infrastructure and its quality, broadband internet) has been separated into a separate index.

Figure 1 shows a histogram of the structure of the composite index based on the weighted sum of its components.



**Figure 1:** DESI Index in the 2022 Report for European Union Countries

Source: [https://digital-decade-desi.digital-strategy.ec.europa.eu/datasets/desi-2022/charts/desi-composite?indicator=desi\\_sliders&breakdownGroup=desi&period=2022&unit=pc\\_desi\\_sliders](https://digital-decade-desi.digital-strategy.ec.europa.eu/datasets/desi-2022/charts/desi-composite?indicator=desi_sliders&breakdownGroup=desi&period=2022&unit=pc_desi_sliders)

The European Commission compares the performance of EU member states with the indicators of 17 other countries, whose level of digital economy and statistical information from open sources allows for such analysis. For this purpose, the International Digital Economy and Society Index (I-DESI) has been developed. Both indices (DESI and I-DESI) share a common formula:

$$\text{DESI} = 0.25 \text{ Digital Skills} + 0.25 \text{ Internet Usage} + 0.25 \text{ Integration of Digital Technologies in Business} + 0.25 \text{ Public Services}$$

This formula clearly shows that it's not sufficient to focus on just one category; each category has almost equal weight. A preference for investing in, for example, telecommunications and broadband internet, won't significantly improve the overall ranking. Efforts need to be made, and government programs for the development and support of all sectors are essential.

The annual report is based on data from the previous year and reflects the progress of different countries in digitization. It allows for conclusions to be drawn about the soundness and quality of decisions made, investment programs, and the utilization of resources by both individual countries and the EU.

It's worth noting that the EU annually allocates significant funds for digital transformation, national reform programs, and recovery plans to enhance the digital economies of its member states. In 2021, 127 billion euros were invested in digital technology reforms, which will help accelerate the overall digital resilience of the European Union and reduce dependence on external sources [1].

Ukraine has confidently embarked on the path of integration with the European community. In 2014, an Association Agreement was signed between Ukraine and the EU, one of its provisions being the adoption of state programs for standardizing legal, political, institutional, and methodological legislation. The result of this was the development of the Concept and Action Plan for the Development of Ukraine's Digital Economy and Society. These documents laid the foundation for a data-driven digital transformation policy. In November 2022, with the support of EU4DigitalUA experts, work began on assessing the current state of DESI implementation in Ukraine and identifying the necessary measures for Ukraine to be included in the DESI [2].

Digitization has a profound impact on various aspects of Ukraine's economy, which is especially important during times of full-scale war. On one hand, digitization promotes increased productivity and efficiency in production, accelerates automation processes, and creates and promotes innovative products and services. On the other hand, it requires new skills and competencies from workers, affects job distribution, leads to unemployment, and necessitates stronger cybersecurity measures.

The extended period of the pandemic and war has significantly affected traditional sectors of Ukraine's economy, such as manufacturing and agriculture. Prolonged lockdowns, the transition to remote work and learning, and power outages have led to instability in many industries, reduced GDP, and decreased tax revenue. However, according to surveys, digital skills have improved for a majority of the population. For example, among young people (up to 35 years old), around 85% use the internet daily in 2022, compared to 76% in 2020. However, the situation has remained nearly unchanged among the older generation (over 60 years old) at 30% in 2021 and 32% in 2022 [3].

In contrast, the IT industry in Ukraine has been in a much more favorable position. By the end of 2022, it had become the most stable sector of the economy, showing consistent growth. In 2021, the industry's revenue amounted to \$6.943 billion, while in 2022, it reached \$7.35 billion, constituting 4.5% of the GDP [3].

The prolonged winter blackout highlighted the vulnerability of internet networks and providers. To avoid such a situation in the near future, many providers invested in new technologies and actively offered customers internet services based on GPON technology. According to estimates by Vodafone experts, as of the beginning of autumn 2023, approximately 130,000 households-subscribers are connected to high-speed broadband internet using GPON technology. There are more than 6,000 providers in Ukraine, and over half of them are actively developing GPON technology, which also enhances Ukraine's DESI index.

Another crucial indicator is public services. For many countries, the Ukrainian application "Diya" serves as an example. The application was launched at the end of 2019 with only 2 documents available. Over the past nearly four years, more than 17 million Ukrainians have used the application and portal, which now offer 72 government services, with 9 services and 15 digital documents available in the mobile version. The Ministry of Digital Transformation of Ukraine plans to transfer 100% of government services to the "Diya" portal by 2024 [4].

In conclusion, Ukraine is making significant progress in implementing digitization across various sectors of its economy and society. Businesses are actively adopting electronic management systems, online commerce, and digital marketing, thus creating and expanding digital ecosystems. The use of digital currency and payment systems is also increasing, making financial transactions more straightforward, supporting flexibility, reducing risks, and lowering corruption levels.

The digital economy sector can provide stable and growing financial investments and become the engine for Ukraine's economic recovery in the post-war period. Digital solutions being implemented have the potential to enhance the efficiency of various sectors of the economy, particularly in the public and military sectors. This not only serves financial interests but also changes the strategies for future development.

The foundation of digitization lies in information technology, education in all its forms, science, and innovation. To achieve balanced development in these areas, it's essential to make informed decisions while simultaneously working to improve each component included in the DESI index.

In September 2023, the Cabinet of Ministers of Ukraine issued an order approving the list of indicators for the Digital Economy and Society Index and the procedure for data collection and exchange based on the EU methodology. This order will provide the prerequisites for tracking the progress of the digital economy and comparing Ukraine's path with those of digital economies in the EU [5].

**Conclusions.** For successful integration into the European community, Ukraine must enhance its digital infrastructure and policies. Implementing the recommendations of the DESI index can contribute to the development of a digital society, adaptation to EU standards, and increased competitiveness.

In conclusion, digitization is an integral part of Ukraine's economic development. Strengthening digital technologies opens up new opportunities for growth and innovation. The DESI index, in turn, offers valuable recommendations for achieving a high level of digital transformation and successful integration with European partners.

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## IT PROJECT TEAM MANAGEMENT FOR WEB COMMUNICATION SERVICE

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**Abstract:** The research on IT project team management for web communication service aims to develop and implement an information and communication platform that will facilitate efficient information exchange between the department and stakeholders. The main objectives of the project include creating a website that will serve as a central hub for information exchange among students, faculty, administration, prospective students, and employers. Additionally, the project envisions providing access to up-to-date news, announcements, admission information, opportunities, and achievements of the institute, as well as enhancing the institute's visibility in society.

The project establishes clear achievement criteria centered on developing functional web pages that cater to the needs of different user groups. The project does face constraints, particularly financial limitations that affect available resources and implementation possibilities. The project also operates within a specific time frame, which imposes limitations on the development, implementation, and testing of all functional elements. For instance, the timing of enrollment campaigns, exam sessions, and modular assessments imposes time-sensitive constraints on delivering current news and announcements. Additionally, resource constraints, such as the availability of a developer and designer team and access to specialized software due to budgetary limitations, pose challenges. Both resource limitations and legislative restrictions impact project realization.

Despite these constraints, the project is built on several assumptions. Specifically, it assumes the availability of necessary infrastructure and internal resources within the educational institution for implementing and maintaining the website. Furthermore, it anticipates a positive user response to the introduction of the platform and its functionality. Moreover, the project expects the availability of relevant information and compliance with information security and legislative requirements.

The research can serve as a foundation for the creation and development of a web communication service for an educational institution or organization. Its recommendations and conclusions will help take into account key aspects and requirements to ensure effective information exchange among different user groups.

**Keywords:** IT project, team management, communication, web service.

JEL Classification: M15

In the modern world, there is an increasing immersion in social media. However, in the context of remote education and limited physical interactions, they take on a different significance. These platforms serve as means of communication, information search, and feedback.

The use of online social media by higher education institutions and their departments aims to enhance the quality of communication, simplify the dissemination of departmental news, achievements of students and faculty, interesting events, training offers, internships, participation in competitions, and more. It also serves as a contemporary tool for shaping the department's and educational program's image.

The main goal of such a project is to create and implement an information and communication platform that will function as a hub for exchanging information among students, faculty, administration, prospective students, and employers. Engaging in real projects and collaborative educational initiatives during the learning process contributes to the education and professional development of each learner in the team. It also fosters the formation and enhancement of communication skills in learners, which are highly demanded in today's remote learning and professional work environments [1].

When working with learners who are beginning their professional careers, acquiring new skills and applying theoretical knowledge in practice, it is crucial to choose the right communication approach [2].

Active presence of an educational department on the internet through the creation and maintenance of an official website, the presence on social media platforms (Facebook, Instagram, Twitter, and others) with official pages, not only allows for informing all interested parties but also facilitates receiving feedback and the opportunity to improve its activities.

The success of any project depends on setting the right goal and defining criteria for its success. For the project of developing an information and communication platform for a department within a higher education institution, the authors have formulated the following success criteria, which are oriented towards the development of functional web pages that meet the needs of various user groups (table.1) [proprietary development].

**Table 1. Criteria for Achieving Project Goals**

<b>№</b>	<b>Goal</b>	<b>Criterion</b>
1	Creating the institute's website	The website is created and functions according to requirements
2	Creating the "News" page	Up-to-date news and announcements are regularly updated
3	Creating the "For Students" page	Materials for students (educational materials, opportunities, competitions) are available on the website
4	Creating the "For Faculty" page	Materials for faculty (webinars, projects, educational materials, opportunities) are available on the website
5	Creating the "Schedule" page	The schedule page is present on the website and is regularly updated

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6	"Achievements" page	Information about students' and faculty's participation in various events is accessible on the website and is updated
7	"Admissions" page	A page for prospective students with admission news and other necessary information is present and is updated as needed
8	"Employers" page	The job vacancies page from employers is regularly updated
9	"Contact" page	A contact page is created and contains up-to-date contact information for the institute and departments
10	Increasing the institute's visibility in society	Increase in the institute's mentions on social media, along with an increase in the number of partnerships and collaborations with other institutions

When developing projects, we encounter various constraints and assumptions. Project constraints are essential for determining the boundaries within which a project must be implemented and its goals achieved. Justifying these constraints during the project planning stage helps understand why they exist and how they impact the project.

Constraints of the project for developing an information and communication platform for a department within a higher education institution:

1. **Budget Constraint.** The project has financial limitations that affect the available resources and possibilities for project implementation. This is often a constraint for organizations with limited budgets.
2. **Time Constraint and Website Updates.** The project has a specific deadline, which limits the time for development, implementation, and testing of all functional elements. For example, the timing of admission campaigns, exam sessions, and modular exams imposes time constraints for keeping news and announcements up to date.
3. **Resource Constraints.** The project may have limited human resources, such as a development and design team, as well as access to specialized software due to a restricted budget. Typically, such projects are undertaken by enthusiasts and students from the educational institution who possess motivation, perseverance, and ideas but may lack experience and qualifications.
4. **Legal Constraints.** The project must comply with all legal requirements and constraints outlined by legislation and the Ministry of Education, including data protection, copyright, language policies, and other relevant rules and regulations.

Despite these constraints, the project is based on several assumptions. Assumptions are conditions that are considered true but lack sufficient evidence or certainty for their actual confirmation. Defining project assumptions allows for transparency and the timely identification of risks associated with them, as well as the development of strategies to manage these risks.

Project Assumptions:

1. **Availability of Necessary Infrastructure Access.** It is assumed that the institute has the necessary access to the internet and other technical resources for hosting and supporting the website.
2. **Availability of Internal Resources.** It is assumed that the institute has human resources, including subject matter experts, who can provide internal support and collaborate with the project developers.

3. Favorable User Response. It is assumed that the target audience, including students, faculty, and prospective students, will be interested in and positively receptive to the implementation of the website and its functionality.
4. Accessibility of Relevant Information. It is assumed that the required information about the institute, departments, events, and other project elements will be available and provided by relevant internal information sources.
5. Compliance with Security Requirements. It is assumed that the project will be developed and implemented in compliance with security requirements, ensuring protection against unauthorized access and the leakage of confidential information.

One of the main components of project success is the team and communication. In the project under consideration, the team is cross-functional and consists of students and the project manager. This team composition is driven by the project's specificity and resource constraints. However, one of the challenges in forming such a team is how to find motivated, creative, and independent individuals ready to work on the project. Our educational institution is seeking project contributors among active participants in conferences, hackathons, and various competitions.

The second component of project success is communication, both external with stakeholders and internal within the team. The characteristics of communication in the development of the information and communication platform for a higher educational institution's department are as follows:

1. Each team member should have clearly defined roles, responsibilities, and deadlines. Learners often require project management intervention from the project manager regarding task assignment and deadlines.
2. The selection and optimization of website development tools that are suitable for learners. Ensuring access to essential resources and tools for learners. In an educational institution, such access for the project team is facilitated by administrative support from the leadership.
3. To facilitate collaboration and communication within the team and address ongoing issues when working remotely, it is essential to choose a convenient communication tool. This can be a chat or a channel on platforms like Telegram or Slack, which are popular messaging tools among developers.
4. Motivating and encouraging the team for the project at hand is accomplished through recognizing achievements, fostering a supportive work environment and team spirit, and providing incentives supported by stakeholders.
5. Involving the team in the decision-making process and gathering feedback for continuous improvement of the project and collaboration.

It should be noted that managing a team of learner-developers working on the development of an information and communication platform for a higher educational institution's department requires taking into account the peculiarities of the educational environment and the development of participants' skills and competencies.

Our experience in working on the development of information and communication platforms has shown that the most effective means of communication is through mentorship. A mentor is more than just a teacher. A mentor shares skills and knowledge, teaches how to apply them in real situations, asks guiding questions, and sets the direction for growth. A mentor imparts not only skills but also their own experience and collaborates with the learner to find answers to questions.

In mentorship, several key factors can be identified. There should be a high level of trust in the mentor-mentee relationship. Communication with the mentor should not be marred by fear of judgment or ridicule. Mentorship should be an effective and comfortable process for both parties, fostering a strong emotional and intellectual connection. The mentee should have a genuine interest in and respect for the mentor, their experience, and their history.

The conclusion regarding the project for the development of an information and communication platform for a higher educational institution's department is that successful project implementation requires consideration of all the constraints and assumptions of the state educational institution. It involves forming a cross-functional and motivated team, effective communication, and mentorship to develop the skills and knowledge of participants. The peculiarities of a higher educational institution must be taken into account when creating the information and communication platform, ensuring accessibility and usefulness of information for students and faculty, as well as its information security. Ultimately, the successful completion of this project will contribute to the improvement of communication quality and information exchange within the educational institution.

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## **THE IMPACT OF DATA PRE-PROCESSING ON THE ASSESSMENT OF THE SIMILARITY OF TREND FUNCTIONS**

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**Abstract.** An approach to the way, the technologies of cleaning, completing, smoothing of large volumes of data to be subjected to analysis is proposed. As a rule, depending on the field and the method of data collection / recording on various supports, they could be classified at least in two categories: precise data (recorded by automated techniques, without any influence of the human factor) and data, with a level of approximation (when collecting / recording, to some extent, at a certain stage of the activity, the "man" (human) participates). If, in the case of the same activity, relatively, many people participate, then, and the quality level of the records will be at a different level of precision than the records performed in an automated way. This work aims to highlight the importance / impact of the influence of the quality of the preliminary processing (smoothing, cleaning, etc.) of the primary data used in the analysis process. In case studies, the object of the research is considered to be a set of time series corresponding to data collected regarding the phenomenon of the spread of an epidemic. The data recording of such a phenomenon fits perfectly in the studied case when the data collection is carried out with the intense participation of the "human", who is characterized by frequent deviations from the regulations prescribed by the situation. Consequently, some data could be fixed with a delay or / and people affected by the disease signal the doctor in a different period of time. Such phenomena can create anomalies in the data structure. In order to highlight the impact of the application of different smoothing methods, the completion of the primary data, the approximating functions for each time series were obtained, having previously been "corrected" by: a) averaging the neighboring data; b) "suspicious" data were excluded. As a result, two sets of approximating functions are obtained (approximating functions can be obtained by involving non-linear regressions). By applying the technologies for evaluating the similarity of the functions, the distance (similarity level) between the functions of each set of approximating functions is calculated. Next, the hierarchical clusters of the sets of approximating functions (two sets of approximating functions) can be obtained. By comparing the hierarchical clusters, the level of impact of the "correction" methodology approach a) and b) can be evaluated.

Keywords: cleaning, smoothing, impact, similarity, functions, regression

JEL CLASSIFICATION: C63, I21, I23, I25, I29

### **Introduction**

There are many phenomena in society and nature on the basis of which data can be collected, forming data series, including time series (chronological, temporal). Such data can be used in various ways and purposes (medicine, economics, technical technologies, automated processes, etc.). In particular, an interest could be: predicting the near future, or following some phenomena over time; the evolution of the values of the parameters kept in the research; the classification elements by comparing them according to defined metrics. Thus, time series data is becoming more ubiquitous and important as the data ecosystem expands. Sensors and tracking mechanisms are everywhere, and as a result, unprecedented amounts of data of various quality levels in time series format are available for

research for various purposes. Time series are particularly interesting because they can address questions of causality, trends, and the likelihood of future outcomes. Time series data and its analysis are increasingly important due to the massive production of such data through, for example, information on the Internet, the digitization of healthcare and the growth of smart cities. In the immediate future, we can expect a rapid increase in the level of data quality, quantity, and importance of time series data. As continuous monitoring activities and data collection become more common, it is only natural that there will also be an increase in the need for competent time series analysis, both with statistical and machine learning techniques. We will therefore use various time series processing techniques useful for analyzing and predicting human behavior, scientific phenomena and private sector information, as all these fields provide a rich set of time series data. Time series analysis is the effort to extract meaningful summary and statistical information from points arranged in chronological order. This is done in order to research past behavior as well as to predict future behavior. Thus a variety of approaches are used, ranging from hundred-year-old statistical models to newly developed neural network architectures. Innovations in time series analysis result from new ways of collecting, recording and visualizing data.

### **Data quality in time series**

Above, the issue of data quality was tangentially touched upon, a very important property in the process of exploration, research, extracting information as truthful as possible, to involve in decision-making processes. Whatever the activities that produce the time series, the procedures, the techniques, the ways of data collection, it is logical to assume inaccuracies, deviations from the prescribed standards. Therefore, the use of these data requires a preliminary analysis, in order to prepare them, to the extent necessary, to be involved in decision-making. As with any data analysis task, proper data cleaning and processing is often the most important step of a time stamping process. Fancy techniques can't fix messy data. Most data analysts will need to find techniques for aligning, cleaning and/or smoothing the data involved in the study. As the data is being prepared, a variety of tasks will need to be applied in order to pre-process the information.

Among the most obvious common problems in chronological data sets can be mentioned: missing data; Changing the frequency of a time series (i.e. oversampling and downsampling; smoothing data; dealing with seasonality in data). In the following, only ways of handling missing data and smoothing data will be addressed.

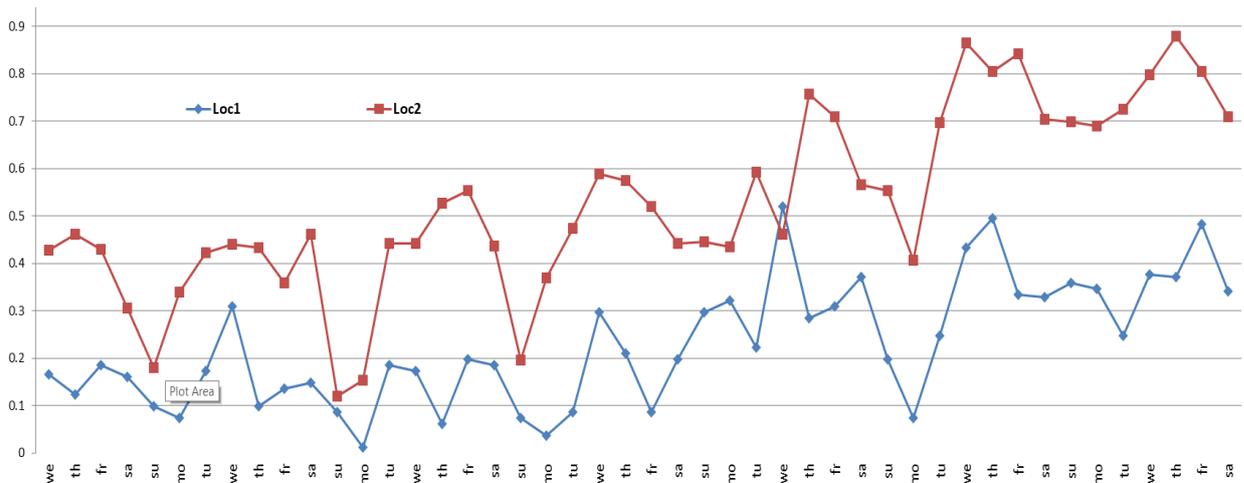
Missing data is surprisingly common. For example, in healthcare, missing data from medical time series can have different causes: the patient did not comply with a desired measurement; The patient's health statistics were in good condition, so there was no need to take a specific measurement; the patient was forgotten or undertreated; a technical component had an unforeseen failure; there were errors in data recording. In order to complete, eliminate this deficiency, various interpolation techniques or the exclusion of these periods from the time series may be involved.

Data smoothing can be done for a number of reasons, and given that real-world time series data is typically smoothed before analysis, especially for visualizations that aim to understand something about the data under investigation. It is necessary to argue why smoothing is necessary, and what would be the most appropriate method of smoothing time series, smoothing can serve several purposes. While outlier detection is a topic in itself, if there are compelling reasons that the data should be smoothed, a so-called "moving average" can be used to remove measurement peaks. Even if the peaks are accurate, they may not reflect the underlying process and may be more of a data

collection-recording problem;

### Time series pre-processing model

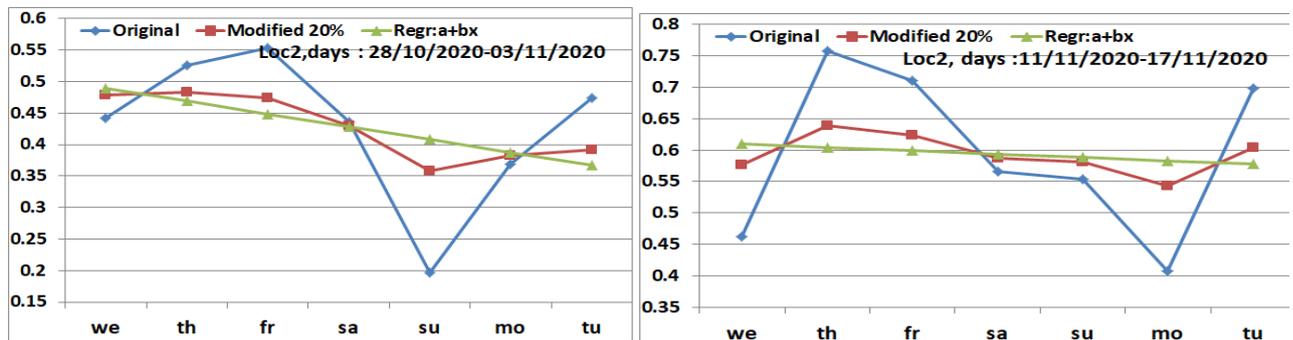
Figure.1 shows the time series (without any changes) over a period of several days. The data were extracted by the author from the Internet (open sources at that time), (from day to day) during the spread of the pandemic in the fall of 2020 year (data relating to two concrete territorial administrative units: Loc1, Loc2). An analysis, even a superficial one, convinces us of the existence of a periodic law (one week long).



**Figure 1 A real example of primary data Source:**

author's own study

Figure 2 shows the data extracted from the data set shown in Figure 1, for two different periods of 7 (seven) days each (Loc2). A simple visual analysis of the values can easily guide us to the periods (values) of the corresponding days.



**Figure 2 Data extracted from the Time Series (showed in Fig.1 in two periods of days)**

Source: author's own study

In both images in Figure 2, the "Original" line represents the time series before the modification, "Modified 20%" - after the modification, and "Regr:a+bx" - the linear regression. The number 20% represents the level of deviation from the regression-line values.

The essence of the model: given the fact that the spread of the pandemic is a continuous process, it means that the intensity of the diseases does not depend on the days of the week in the assumption that on all days of the week the communication between people was about the same intensity. Therefore, values those are out of the ordinary, or too close, or too high, are reasonable to be considered as a defect of the data recording process, or of late detections of the disease, or other causes. In this context, it is proposed to add up all the values that exceed the regression-line by more than (in the given case) 20%. The summary value obtained corresponds to the "number" of erroneously registered "diseases". The "number" of "diseases" obtained **is to be distributed direct proportionally ("moving distributed direct proportionally")** in all the days of the short period (for example, a week)(values further from the average will undergo more substantial changes).

Figure 3 shows the approximating functions for the primary time series corresponding to the localities and Loc1(Anen) Loc2(Chiş) as well as the respective functions for the modified series Loc1(AnenM) Loc2(ChişM) according to the approaches described above. In the image on the left (fig.3) the non-linear regression is calculated and built over an interval of 21 days (3 weeks), and in the one on the right the non-linear regression is built only for the values of the first week. The length of the interval was chosen from the concrete considerations for the phenomenon of infection, that an infected person could not be registered with a delay of more than 5 (five) – 7 (seven) days.

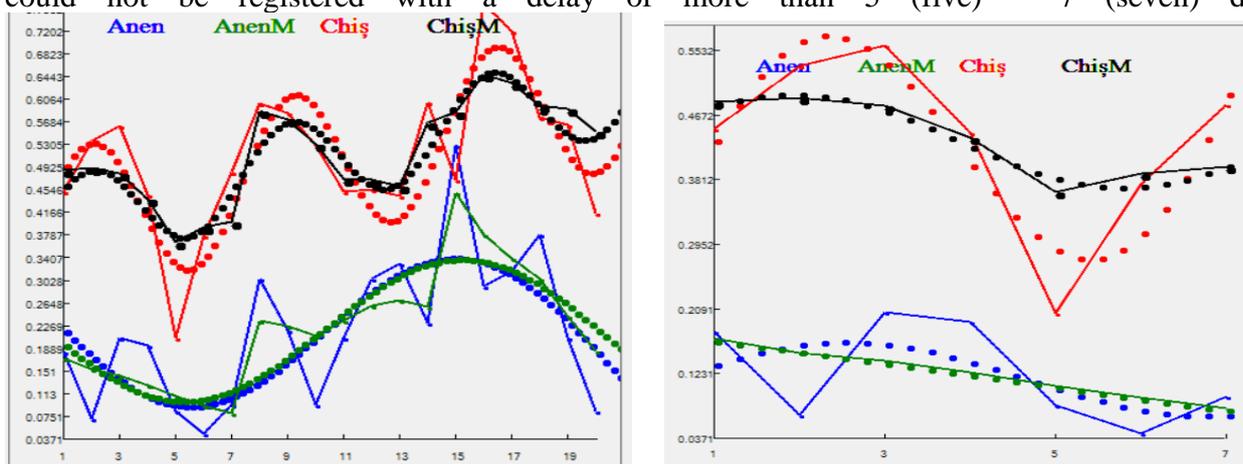


Figure 3 Approximation functions (showed in Fig.1 in two periods of days)

Source: author's own study

An analysis of the behavior of the approximating functions for AnenM and ChişM demonstrates the existence of the impact of neglecting the need for a preliminary analysis of the time series in order to annihilate the significant influence of some foreign values to the context of the studied phenomenon, without applying an adequate process, taking into account the specifics of the phenomenon, of removing non-compliant data values. In (COANDĂ, Ilie, 2022) the essence of the notion of "approximating functions" was discussed, as well as the definition of a technique / tools / model for evaluating the level of similarity between two functions. According to these techniques, the distances between the approximating functions for "Anen", "AnenM", "Chiş", "ChişM" corresponds (see the image on the left of Figure 3) to:  $d_{12}=0.04$ ;  $d_{13}=0.95$ ;  $d_{14}=0.98$ ;  $d_{23}=0.96$ ;  $d_{24}=0.94$ ;  $d_{34}=0.02$ . ( $d_{34}=0.02$  represents the "distance" between "Chiş" and "ChişM", and  $d_{13}=0.95$  - between "Anen" and "ChişM"). The values of the level of similarity between the approximating functions open up many possibilities for applying algorithms in the field ML, AI.

## **Conclusions**

The proportional distribution methodology (“**moving distributed direct proportionally**”) presented in this paper represents an essential argument in favor of a differentiated approach in the preliminary data processing process. In the case of the presented example, a simple cutting of the vertices, or an averaging of neighboring data, can substantially amplify the veracity of the data. Cutting the peaks would mean decreasing or increasing the values in the numerical time series, which will certainly lead us to erroneous predictive conclusions.

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**SESSION VII: FINANCIAL DIMENSIONS  
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## THE IMPACT OF THE ECONOMIC CRISIS ON SMES

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**Abstract.** The economic crises from the last years has made the Moldovan economy oscillate at extreme values. After the effects of the Covid-19 pandemic and severe drought from 2020, the year 2022 brought a mix of energy crisis, trade disruptions and persistent inflation. These crises have put pressure on the costs and competitiveness of SMEs and revealed that support resources and intervention tools from the Government are limited.

On the other hand, the last two years have also brought a positive change in the trend with a positive increase between the number of new businesses registered and the number of businesses closed. In this regard, this work analyzes the effects of the most recent economic crises on SMEs within the Republic of Moldova.

Methodologically, this study uses secondary data analysis provided by: the National Bureau of Statistics, national and international reports, as well as the most recent references in this field of research. In addition to the approach based on statistical data, this research also includes the latest data from business surveys to assess the impact of crises through the perception of entrepreneurs.

**Keywords:** SMEs; economic crisis; small business development.

JEL Classification: G01; M10.

### Introduction

As in many countries, SMEs represent the majority of businesses in Moldova. In 2022, Moldovan SMEs represented 99,2% of the total number of enterprises, generated 44,9% of sales revenue and employed 65,6% of private sector employees. Still, SMEs from Moldova face a large number of challenges, both on a global and local level in the past years. Domestic and international health measures introduced in 2020 meant to reduce the Covid-19 pandemic, have disrupted the functioning of key sectors of the economy such as wholesale and retail trade, construction and the agricultural sector.

Moldovan SMEs, poorly prepared for such a crisis (little digitized and diversified in terms of suppliers) have been hit hard. This led to the fact that in the period 2019–2020, the rate of small and medium business in the country decreased with 3.4%. The Covid-19 pandemic has led to a slowdown of Moldova’s economy and a decrease in GDP. According to the National Bureau of Statistics, the share of SMEs to GDP formation decreased from 50.9% in 2019 to 48% in 2020. The negative effects of Covid-19 pandemic also led to a significant decrease of people employed in SMEs of 316.8 thousand in 2020, which is 19 thousand employees or 5.7% less than in 2019.

After a slow recovery in 2021, Moldovan SMEs were threatened again by the increase in inflation and energy costs as a consequence of Russia’s war in Ukraine. The Russian aggression against Ukraine presented a new set of challenges for Moldovan SMEs. Moldova’s economy is particularly vulnerable to the war’s economic impact due to relatively small size of the country and dependence on imports. All these factors put additional pressure on the SMEs growth.

### **Research results**

Methodologically, this study uses secondary data analysis provided by: the National Bureau of Statistics, national and international reports, as well as the most recent references in this field of research. In addition to the approach based on statistical data, this research also includes the latest data from business surveys to assess the impact of crises through the perception of entrepreneurs.

The most recent survey carried by the authors of this paper, within the bilateral project “Measuring the performance of SMEs active in the agricultural sector and/or the food industry during the health crisis Covid-19: a study in the Gaziantep and Chisinau region”, shows that one of the most affected activity is agriculture, because of two overlapping crises: Covid-19 pandemic and drought. From the total number of 120 SMEs included in the survey, 64% of managers said that the Covid-19 was the main cause of the drop in their activity. Production costs, payroll and prevention costs are the main factors responsible for the decline in economic performance during the Covid-19. The pandemic has reduced the turnover of all SMEs, regardless of size. Every enterprise from the SMEs group has been affected, but deeper effects are observed in micro enterprises. The situation was more severe for micro enterprises, as they traditionally have limited financial resources to withstand a long-lasting crisis. SMEs from Moldova also had a lower capacity to shift to digital work processes. This crisis underlined the need to accelerate the digital transformation of local SMEs.

During 2020, SMEs from public alimentation recorded the highest losses, 278.1 million lei. In addition, SMEs in the agriculture, hunting and forestry sector recorded a considerable loss of 271.9 million lei. Although the SMEs from some economic sectors had a profitable activity during 2020, the size of the profit before taxation registered by the SMEs decreased by 3335.1 million lei or 26.93% compared with the year 2019. The results show that in 2020 SMEs from Chişinău were strongly affected by Covid-19 pandemic, operating with reduced turnover, jobs lost and reduce financial resources.

To support these businesses, the policymakers adopted a series of supporting measures. Still, the majority of respondents from Chisinau region, did not benefit from these supporting measures, or got the support for a very short period. This way with limited self-financing resources and difficulties in accessing traditional bank finance, SMEs were particularly hard hit by another crisis - the war's inflation shock. The war's economic impact on rising gas prices, increasing transportation costs and losing markets and suppliers poses a particular risk for SMEs from Moldova. Therefore, affordable access to finance and support is a crucial factor for SMEs development in the future.

## **Conclusion**

SMEs from Moldova face a large number of challenges, both on a global and local level. Still, in the context of health, economic, inflationary and energy crises from the last years, SMEs from Moldova remained resilient. Such a structural change means an improvement of the business environment and creates a solid basis for economic recovery.

This trend may also be the result of the new support programs financed or co-financed by the European Union. In this regard, a series of new projects for supporting SMEs were launched. At the moment, there are about 30 SMEs-focused programs financed or co-financed by the European Union, providing financial support (loans, grants and guarantee schemes) and business advice (training, coaching, and international partner-matching schemes) or a combination of both.

With the support of European Union partners, the business environment from Moldova remained resilient against the backdrop of the current crises. According to the State of the Country Report, in the period 2021–2022 the number of newly created enterprises exceeded the number of closed ones. A developed SMEs sector can reconfigure the economy of the Republic of Moldova, both through massive employment opportunities and through competitiveness and dynamism.

## **Acknowledgment**

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## THE INFLUENCE OF FOREIGN DIRECT INVESTMENTS ON ICT SECTOR DEVELOPMENT

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**Abstract:** The world is moving from resource-based economy to knowledge-based economy. Today, ICT is the key driver for economic growth in developed and developing countries. At the same time, the development of the ICT industry, the increase in the volume of products and services produced, it is impossible without attracting investments in the sector. The issues of attracting investment in innovative sectors of the economy are of particular importance in developing countries that are limited in their own resources. This paper deals with the main aspects of the evolution of FDI in the ICT sector at the global level and in European countries, including Republic of Moldova, and investigates the different effects of their involvement, such as: the dynamics of the volume of products and services produced in the industry, the dynamics of exports of innovative products and services etc. The obtained results suggest the perspectives of national ICT sector further development, based on increasing of FDI in it.

**Keywords:** ICT sector, foreign direct investment, knowledge-based economy

JEL Classification: F21, G15, O3

### 1. Introduction

The most important direction of the modern process of establishing a market economy is the transition to sustainable economic growth based on its innovative components. Therefore, the problem of developing the country's competitive technological and innovative potential is a key problem for each of the developing countries, including the Republic of Moldova. Digitalization has become an integral part of the development of the world economy and the economies of individual countries at the present stage. Being in essence a process of penetration of information and communication technologies into all areas of activity of economic entities, digitalization is directly related to the significant volumes of investment that are necessary for its implementation. As practice shows, such investments are made not only at the expense of the internal resources of states, but also by attracting foreign direct investment. The advantages of foreign direct investment are that they allow for sustainable economic growth, accompanied by the introduction

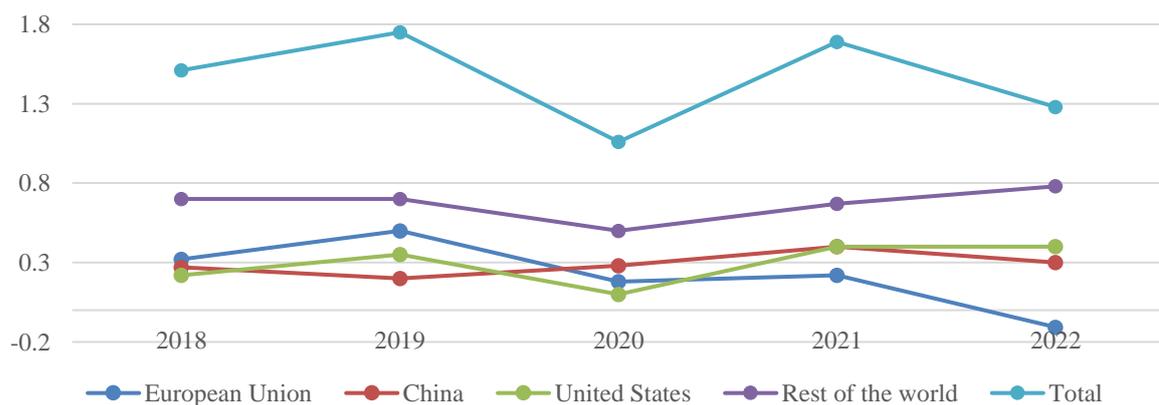
of not only technological innovations into the national economy, but also the development of human capital, access to management experience, skills and technologies, etc.

The *purpose of this article* is to analyze the evolution of FDI in the ICT sector at the global level and in European countries, including Republic of Moldova and to investigate their impact on the ICT sector output, dynamics of exports of ICT products and services etc.

## 2. Results and Discussions

### 2.1. FDI and ICT sector development at the international level

After falling in 2020 and recovering in 2021, global FDI fell 12% in 2022 to about \$1.3 trillion. The most significant decline was registered in developed countries, where it reached 37% and FDI volumes fell to \$378 billion. FDI to developing countries increased slightly by 4%, which was mainly due to several of the most rapidly developing countries in Latin America, the Caribbean and in the Asia-Pacific region, whilst FDI flows to less successful developing countries have declined (figure 1).



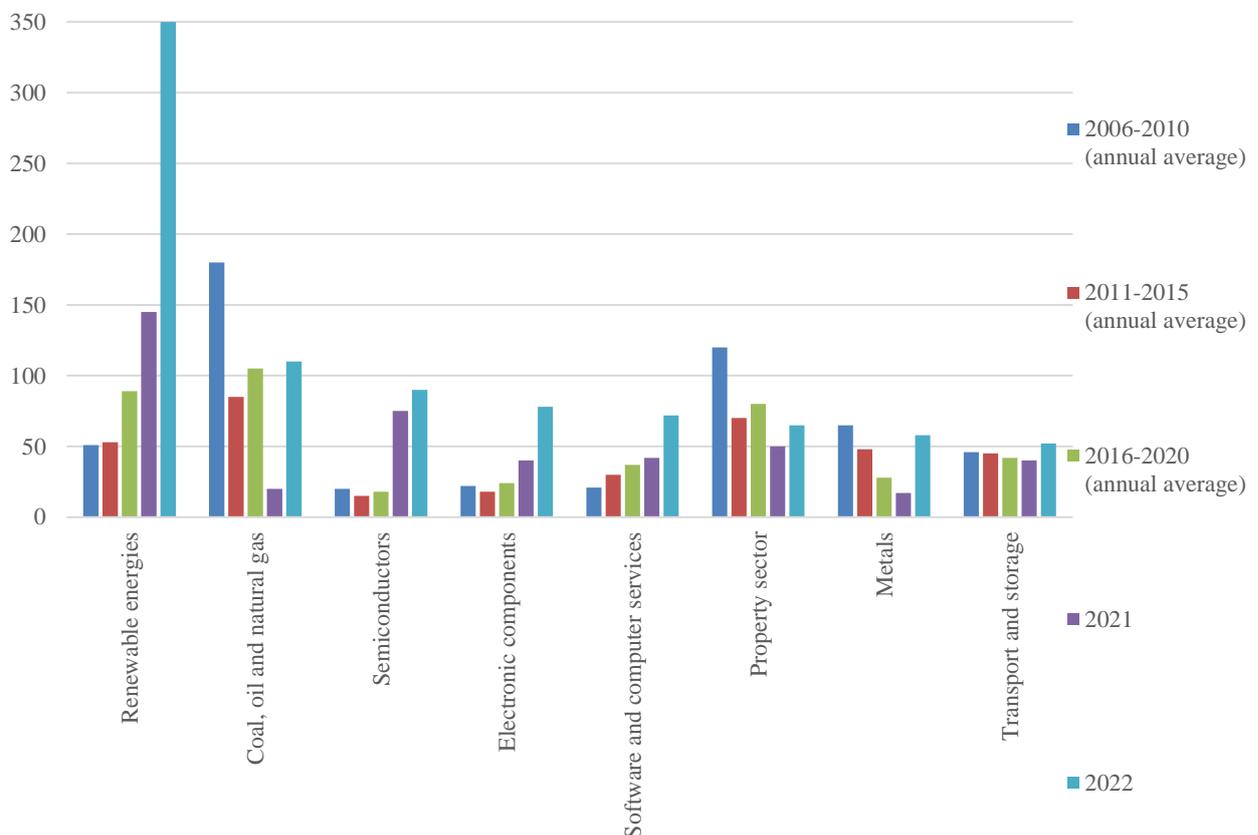
**Figure 1. Global FDI inflows (Trillions of dollars)**

**Source:** authors study based on UNCTAD. (2023)

The main reasons for the decline in FDI at the global level were the conflict in Ukraine, rising food and energy prices, problems in supply chains, and growing public debt in a number of countries. At the same time, in 2022 prospects for further FDI growth became real, since during this period the number of announcements for new investment projects increased by 15%, with growth registered in most regions and sectors (figure 2).

The analysis shows that at the global level, energy accounts for the largest share of future investment announcements among newly announced projects, with particularly strong growth recorded in 2022. The trend of increasing foreign direct investment in renewable energy sources in the world has been observed throughout the entire period under review, including the COVID-19 pandemic years. However, the highest annual growth (524%) was recorded in 2022 in the coal, oil and natural gas sector, whose growth prospects took second position. The semiconductor sector saw its second year of growth and increased by a further 9% in 2022, representing 8% of all future investment

announcements globally. The Electronic Components and Software industry and the Computer Services sector also recorded significant growth of 92% and 81%, respectively. The metals sector also saw sharp growth (218%), accounting for 5% of the value of FDI projects. A slight but stable increase was also recorded in announced projects in the Transport and storage sector.



**Figure 2. Global FDI project announcements, main sectors, 2006–2022 (Billions of dollars)**

**Source:** authors study based on ECLAC (2023)

In general, as noted by the International Monetary Fund (IMF, 2023), FDI flows are increasingly concentrated in geopolitically oriented countries, especially in strategic sectors such as semiconductors. It should also be emphasized that the second, third and fourth places in terms of volume and number of new announced projects at the global level were occupied by innovative industrial sectors, the products of which contribute to the further development of innovative sectors of the economy and the digitalization of the entire global industry. Combined, these three sectors place in leading position in terms of prospects for attracting foreign investment at the global level, second only to the Renewable Energy sector.

At the European level, the Software and IT services sector ranks first in terms of the number of new FDI investment projects announced and has shown steady growth in recent years (table 1).

**Table 1. Number of foreign investment projects by sector in Europe in 2020-2022**

Sectors	2020	2021	2022	2020/ 2021 Change	2021/ 2022 Change	Share of FDI, 2021	Share of FDI, 2022
Software and IT services	1046	1090	1182	4%	8%	19%	20%
Business services and professional services	691	557	765	-19%	27%	9%	13%
Transportation manufacturers and suppliers	305	503	470	65%	-7%	9%	8%
Transportation and logistics	217	425	418	96%	-2%	7%	7%
Machinery and equipment	425	384	368	-10%	-4%	7%	6%
Finance	285	277	292	-3%	5%	5%	5%
Agri-food	322	329	291	2%	-13%	6%	5%
Utility supply	145	203	277	40%	27%	3%	5%
Electronics	259	261	276	1%	5%	4%	5%
Chemicals, plastics and rubber	268	264	249	-1%	-6%	4%	4%
Other	1615	1584	1375	-12%	13%	13%	22%
<b>Total</b>	<b>5578</b>	<b>5877</b>	<b>5962</b>	<b>5%</b>	<b>1%</b>	<b>100%</b>	<b>100%</b>

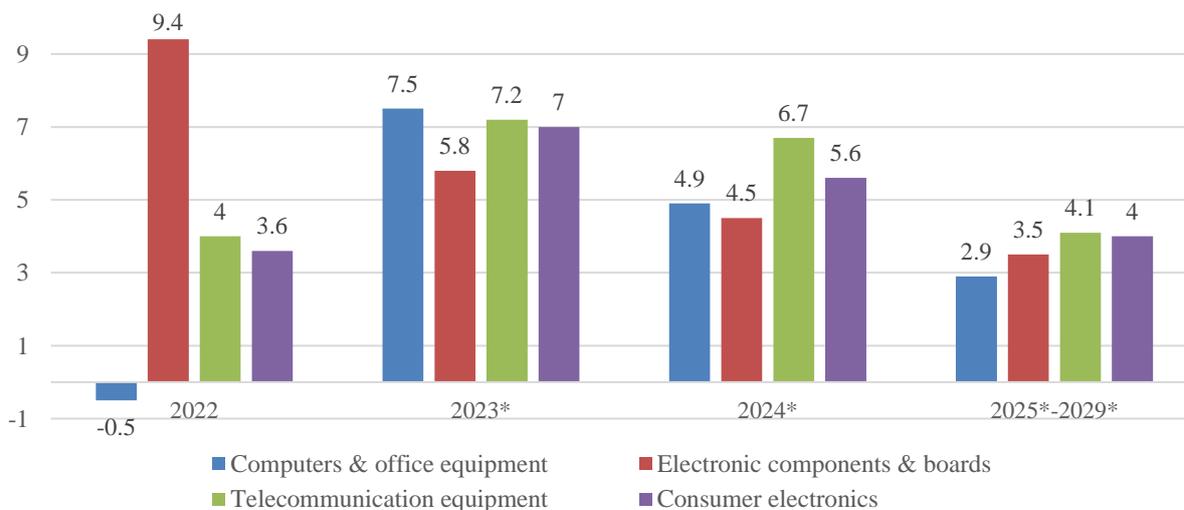
**Source:** authors study based on Ernst & Young (2022, 2023)

In 2022, its share in all announced international projects was 20%; the top ten fastest-growing industries attracting FDI for their development also includes Electronics, whose share in the total volume of announced projects with foreign financing was 5%.

Germany, Spain, Italy, France and the Netherlands were the EU countries that received the most inward FDI in 2022. The overall number of acquisitions in the ICT sector declined by 18.6% in 2022 compared to 2021. At the same time, the ICT sector is the leader in the implementation of acquisitions in the EU in 2021-2022 and the highest share of investment in acquisitions in 2022 (28%) belonged to the information and communication sector. Moreover, ICT grouped 19.4% of new greenfield investments in 2022, ranking second after Retail: ICT experienced a 17.6% growth in the number of greenfield investments in 2022 compared to 2021 (European Commission, 2023).

As a result of the mobilization of investment flows, including FDI, spending on hardware, software, services, and telecommunications in Europe increased from 923.5 bln USD in 2021 to 1.1 trillion USD in 2022, and is forecast to increase to 1.4 trillion USD by 2023. According to analysts, in 2022-2027 the growth of spending software and communication services in Europe will increase by 11.1% (International Data Corporation, 2023).

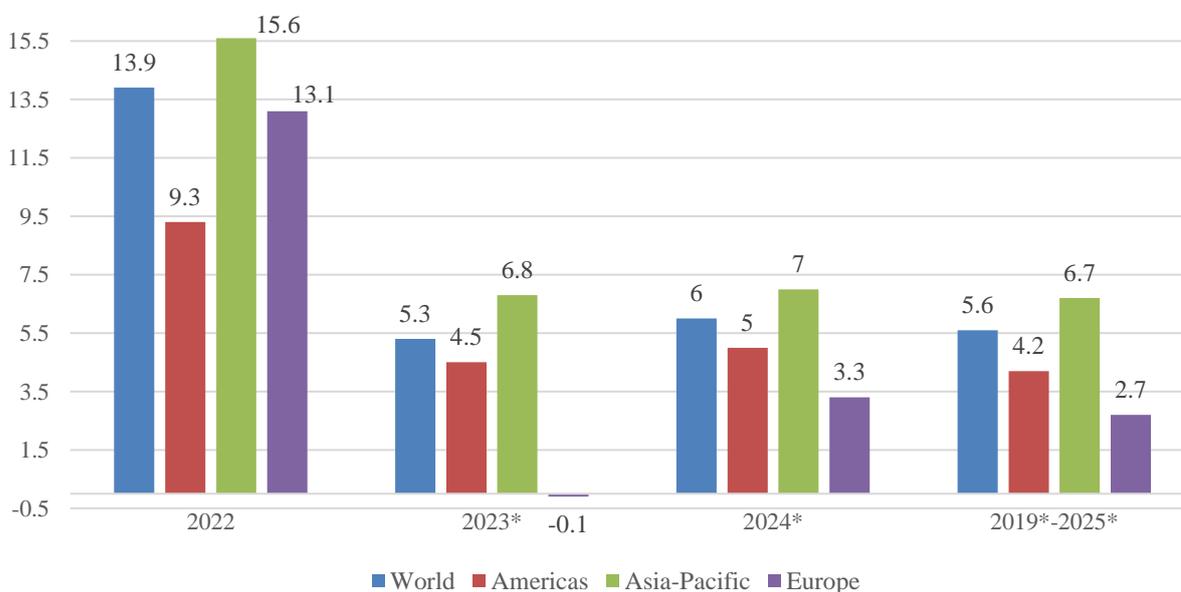
ICT businesses have significantly increased production and sales during the pandemic. Major ICT sub-sectors recorded significant output growth in 2021, with computer output up 14.2%, electronic components up 19.6% and telecommunications up 10.4%. ICT profitability has increased in many key markets. The chip shortage problem has largely ended as chip makers have increased supply. There is an increase in new investment projects and, accordingly, investments, including FDI, in further increasing chip production in 2024. Output growth in sectors with maximum chip consumption, such as computers, telecommunications equipment, consumer equipment and electronics, is accelerating in 2023 (figure 3).



**Figure 3. Global high-tech goods output and growth rates expected in the coming years, y-on-y, % change**

Source: authors study based on Atradius (2022)

On average, Electronics & computers output growth at the global level was 13.9%, the driver of this growth are Asian countries, where growth was 15.6%, the European region follows with 13.1% growth (figure 4). Even more significant growth rates in the EU are displayed by the Services ICT subsector, whose value added increased by 79% (European Commission, 2022).



**Figure 4. Electronics and computers output per region, y-on-y, % change**

Source: authors study based on Atradius (2022)

The growth in production of ICT sector, stimulated by an increase in FDI flows, in turn, initiated a significant increase in ICT service exports in many countries and regions. The most *remarkable* growth was recorded in developing countries (table 2).

**Table 2. ICT service export, bln USD, 2017-2022**

	2017	2018	2019	2020	2021	2022
<b>Austria</b>	6,53	7,76	8,51	8,96	9,7	10,04
<b>Belgium</b>	12,65	14,23	14,05	15,06	17,89	18,41
<b>Czech Republic</b>	3,84	4,26	4,6	5,24	6,3	6,88
<b>Estonia</b>	0,73	0,96	1,04	1,13	2,09	2,44
<b>France</b>	18,63	22,06	19,65	20,82	24,21	25,56
<b>Germany</b>	29,47	33,59	33,45	35,8	41,99	42,1
<b>Hungary</b>	2,44	2,81	2,82	2,88	3,1	3,12
<b>Italy</b>	9,13	9,41	8,97	8,84	9,31	9,59
<b>Poland</b>	6,39	8	8,61	9,43	11,58	13,4
<b>Republic of Moldova</b>	0,17	0,23	0,26	0,30	0,40	0,51
<b>Romania</b>	4,54	5,65	6,26	7,02	8,25	9,79
<b>Spain</b>	12,63	14,38	15,01	11,59	14,38	16,04
<b>United Kingdom</b>	30,91	34,11	32,9	37,15	42,65	42,55
<b>Euro Area</b>	205,36	253,86	277,69	310,39	381,01	381,69
<b>Central Europe and the Baltics</b>	23,0	28,7	30,31	33,44	40,74	46,43
<b>East Asia &amp; Pacific</b>	66,17	74,7	83,81	95,85	120,50	na
<b>Latin America &amp; Caribbean</b>	9,04	9,58	9,43	9,22	10,77	13,44

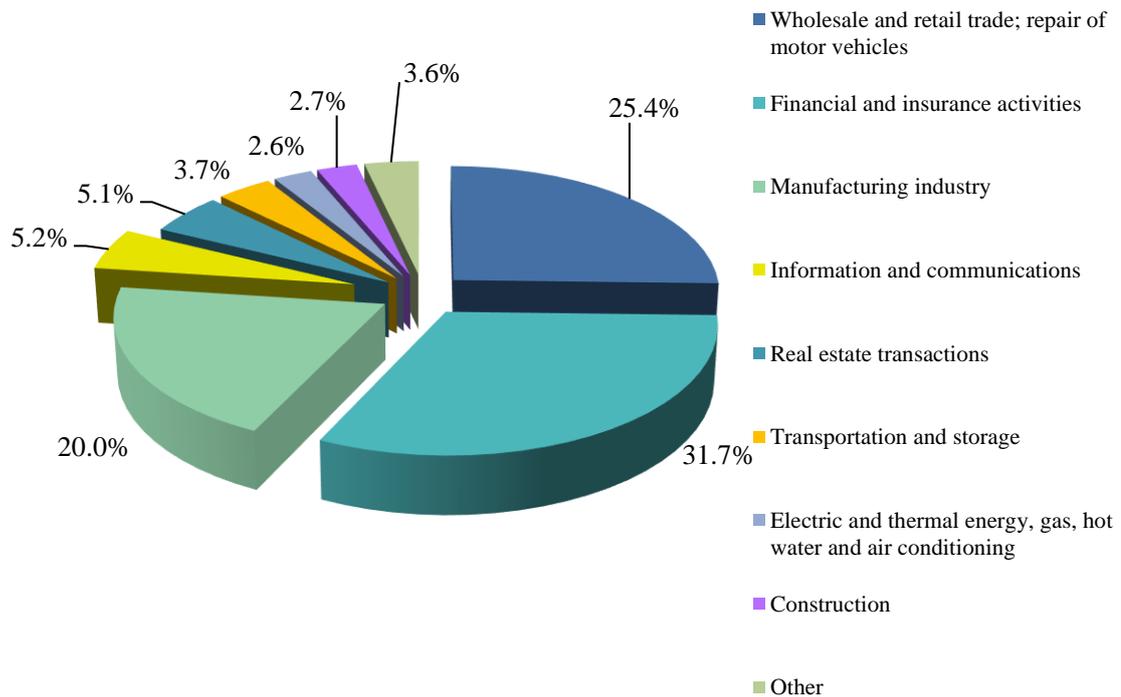
**Source:** authors study based on Worldbank (2023)

Among European countries, the best results in increasing ICT service exports were registered in Poland, Romania, Estonia and in the Republic of Moldova.

## **2.2. FDI influence on ICT sector development in the Republic of Moldova**

According to the UNCTAD, FDI inflows to Moldova amounted to USD 264 million in 2021, up from USD 150 million in the previous year. The total stock of FDI was estimated at USD 4.8 billion in the same year, around 35% of the country’s GDP. In 2022, FDI continued its growth and reached USD 590 million. The majority of FDI in Moldova inflows from European countries, particularly Romania, other FDI inflows come from Cyprus, Russia, Hungary etc. The study of consulting company Business Intelligent Services notes that foreign investors in Moldova reinvested their profits in the national economy (up 1.9 times). This resulted in foreign direct investment in 2022 growing by about 16% compared to 2019 (pre-crisis period). However, the volume of FDI in Moldova is still one of the lowest among the Eastern European countries – only \$1006 per capita for 2012-2022 (average in Eastern European countries – \$2455 per capita). At the same time, FDI has a significant positive impact on the economy of the Republic of Moldova, and while companies with FDI account for only about 15.4% of employees in all enterprises, they create 28.2% of sales revenue in the economy. They also make a significant contribution to Moldova’s budget – they account for 25.1% of income tax revenues. In addition, they own 24.2% of all fixed assets, both industrial and social (FIA, 2023).

The main sectors that attract FDI in Moldova are financial intermediation, manufacturing and trade. In recent years, there has also been a growing interest in the country's IT sector, which has the potential to become a key driver of economic growth and development. (figure 5).



**Figure 5. FDI in the Republic of Moldova, by industry, 2021, %**

Source: BNM (2022)

In the structure of FDI in the Republic of Moldova the share of investments attracted in financial activities is 31,7%, the shares of foreign investments allocated in wholesale and retail trade as well as in manufactory are 25,4% and 20,0%, correspondently. The share of ICT industry in FDI in the Republic of Moldova is estimated as 5,2% or \$160 million.

Foreign investments in Moldova’s IT sector doubled during the 2018-2022 period and the number of companies with foreign capital increased to 207 (EU4Digital, 2023). The IT industry’s contribution to Moldova’s GDP increased to 10%. IT companies export about 80 percent of their total production (ITA, 2022). Major Moldovan partners are the United States, the UK, France, Germany, the Netherlands, and Romania. The National Strategy for Investment Attraction and Export Promotion identified seven priority sectors for investment and export promotion and some from the most important are information and communication technologies and machinery (GRP, 2018). During 2017-2022, due the efforts made, Turnover and Production value of Information and communication in the Republic of Moldova increased by 40%, but Turnover and Production value of Manufacture of computer, electronic and optical products decreased. The most significant growth was demonstrated by such Information and communication components as Computer programming, consultancy etc. and Information service activities, Turnover and Production value of which have increased 3 times over the past 5 years (table 3).

**Table 3. Indicators of enterprises activity in ICT sector in the Republic of Moldova, 2018-2022**

Types of enterprises activity	2018		2019		2020		2021		2022	
	Turnover, mln. lei	Production value, mln. lei	Turnover, mln. lei	Production value, mln. lei	Turnover, mln. lei	Production value, mln. lei	Turnover, mln. lei	Production value, mln. lei	Turnover, mln. lei	Production value, mln. lei
Manufacture of computer, electronic and optical products	461	436	529	482	453	425	381	397	357	362
Information and communication, including:	11818	10964	13225	12364	13587	12812	16808	15866	21684	20801
Publishing activities	529	536	640	650	765	796	738	753	1024	1032
Motion picture, video and TV production	107	106	126	128	100	100	146	150	225	227
Programming and broadcasting activities	193	206	364	397	174	205	236	247	146	176
Telecommunications	6765	6220	6691	6045	6677	5950	7095	6379	7599	6758
Computer programming, consultancy etc.	3447	3123	4540	4276	4764	4649	6856	6627	8596	8469
Information service activities	774	772	861	865	1105	1109	1734	1709	4092	4137

**Source:** authors study based on statbank.statistica.md (2023)

The significant growth in Turnover and Production value of Information and communication in the Republic of Moldova, in turn, initiated a significant increase in ICT service exports, which increased 3 times over the period 2017-2022 (table 2), and 10 times in the last 15 years, which has become one of the most successful progresses registered among European countries. The results have exceeded the forecasted 2018-2023 Strategy for the development of the information technology industry and ecosystem for digital innovation (GRP, 2018). The results of the analysis indicate that the successes achieved in ICT sector development were largely initiated by the increase in FDI in the industry.

### 3. Conclusion

Free migration of capital is an important part of international economic relations. Attracting FDI has a positive impact on the economy of the recipient country through the receipt of capital, transfer of the latest technologies and empirical developments. FDI flows at the global level are influenced by numerous factors, the main of which in recent years have been COVID-19, armed conflicts, increasing complexity of supply chains, rising prices for raw materials and energy resources, which in 2020 curbed the positive dynamics of their volumes observed before 2019, and after growth in 2021, a decrease in foreign investment inflows was recorded again in 2022. In 2006–2022, the leading positions in Global FDI project announcements belonged to the Renewable Energy sector and the Coal, Oil and Natural Gas sector, but such sectors as Semiconductors, Electronic Components and Software, as well as the Computer Services sector, also showed stable growth and were second in terms of FDI volume. The result of the attracted FDI was an increase in Global high-tech goods output and growth rates in Telecommunication equipment, Electronic components and boards, Consumer electronic, which indicates the sustainable positive impact of FDI on the development of ICT. At the European level, the maximum number of announced projects with the involvement of FDI relates to Software and IT

services, it shows an annual increase, which has a positive effect on the growth in the volume of services provided and the increase in export volumes of the ICT sector, which doubled in 2017-2022 in many European countries. In the Republic of Moldova, the share of ICT industry in FDI is estimated at approximately 5%. Foreign investments in Moldova's IT sector doubled during the 2018-2022. FDI had a significant positive impact on the national ICT sector, turnover and production value of Information and communication in the Republic of Moldova increased by 40%, and its subsectors Computer programming, consultancy and Information service activities improved their performance over the past 5 years by 3 times and the ICT industry's contribution to Moldova's GDP increased to 10%.

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## ESTIMATION OF THE TURKISH STOCK INVESTOR NUMBERS BASED ON KERNEL METHOD

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**Abstract:** The investigation of investments in stock markets is an important and a challenging topic. Knowing the number of Turkish stock investor makes a benefit to conduct a smooth economical circulation. In this study, it is aimed that the Turkish stock investor numbers are estimated by using the kernel estimation method. The built functions in the Mathematica software are used. The built functions are responsible to model the data sets smoothly. After necessary components of the statistical results in the built function, the random number generation is performed for the estimated function,  $\hat{f}$ , which is the sampling form of the assumed function  $f$  for the population representing the investor numbers. The numbers are estimated to be around 5 million for the real data sets if the maximum order statistics are used. The confidence interval as a covering probability being %95 in the asymptotic theory shows that the estimated value can be around 7 million if the new population occurs.

**Key words:** Investor, Stock market, Estimation, Investment, Statistics.

JEL Clasification: Q1, R1, H254

### Introduction

The investigation of Turkish stock market investments is an important and a challenging topic in the Turkish economy. Nowadays, there are many factors affecting the behaviors of potential investors. Estimation of the stock market investor numbers help the economy in various aspects. The companies can use it as one of the decision tools. To get credit, borrowing, issue bonds or going public are some options for companies to get working capital or fixed asset capital. In general to get short term capital or bond issuing can be considered cheaper capital for the companies as long as business profit is higher than their cost. However, in other cases, providing cash by equity can be considered a more appropriate, reliable and stable source. Thus, it is important for companies to know how many investors will be in the capital markets and how much capital support they will provide to companies.

Since the economy is an accelerator at many directions in the working field of the business, etc, the estimation of the Turkish stock investor numbers will help to set the budget or many indicators in the working of government or many fields business. The balanced economical movement can trust the number of investors who play role and support the process of economical evaluation. In this principle,

the conditions set by investigation and circulation in the umbrella of economy will also affect and support the number of investors. For these reasons, the economy depends many factors which can already be populations. Since these factors play role, the estimated number can change and the different statistical methods should be performed as well.

Equipment based on mathematical and statistical perspectives are required for us to model actual life created randomly by people who try to live and conduct random occurrences that are not predicted in most circumstances. For these reasons, the probabilities appear in the findings of the experiment performed on the universe's life. Because the random events we encounter happen whenever users touch and play with the experiment, the observations should be described by some functions. According to the statistical perspective, several mathematical tools exist in the theoretical component of the discipline. We can select one of them to conduct the analysis. We can build a prediction and forecasting for the analyzing principle.

All investors are decentralized, which means that the market is influenced/determined as much by the government or bank groups in exchange and the currency can be inflated, and so the currency can be changed, rotated, and cycled in various ways. Economic marketplaces are defined by currency buyers and sellers; they allow for various payments that affect the economy. Because of the decentralized market structure, the currency market is extremely volatile; traders can either make a lot of money or face significant loses based on the assessed valuations of important items in the cyclic economy. Investors can be the most valuable indicators in the world. In addition to, there can be a merging among firms as well, which can lead to increase the numbers of investors (Komáromi, 2006; Lhabitant, & Gregoriou, 2008).

Since the mixing of many factors play role in creating the artificial data sets, many summarizing statistics should also be given to depict or try to discover the role of factors as many as possible to do so. In other words, the maximum value of a data set can be regarded as another population which is a moved one from a population. The same approach can be considered for the case in which the minimum value of a data set is chosen. Other summarizing statistics such as mean, median, etc. as a central tendency of population can also be used to summarize the whole data completely. Other statistics such as standard deviation, mean absolute deviation, etc. should be provided to see where and how the data sets behave or occur.

In this study, we estimate the number of Turkish stock investors. The true data set for Turkish investor numbers will be utilized to estimate how many Turkish investors are computed in order to give a suggestion for economic actors. The economy, in particular, is a critical role in establishing favorable economic conditions. Section 1 gives a quick summary of the preliminary information provided by the literature. Section 2's research technique provides an introduction to the kernel estimation method. Section 3 presents the key findings. The final section of the article is reserved for the paper's discussions and conclusions.

### **Literature review.**

Kernel density smoothing, like the histogram, is a technique for identifying structure in the data without the use of a parametric model. The formula for the kernel density estimator is

$$\hat{f}(x; h) = \frac{1}{nh} \sum_{i=1}^n \frac{K(x - X_i)}{h},$$

where  $K$  is called as the kernel function and guarantees

$$\int_{-\infty}^{\infty} K(x) dx = 1,$$

and  $h$  is called the smoothing parameter or bandwidth at histogram ( $h > 0$ ). By downscaling, the aforementioned equation can be expressed more concisely  $K_h(u) = \frac{1}{h} K\left(\frac{u}{h}\right)$  such that:

$$\hat{f}(x; h) = \frac{1}{n} \sum_{i=1}^n K_h(x - X_i).$$

By centering a scaled kernel at  $X$  and taking the average of the  $n$  kernel ordinates there, one can derive the kernel estimate. In comparison to regions with fewer observations, the estimate is larger the more samples that fall inside a bandwidth. This method is comparable to the histogram method in that we are now adding the kernel ordinates over the window width  $h$  rather than adding the number of observations in a bin.

The Gaussian distribution or standard normal is one frequent option for  $K$ :

$$\phi(x) = \frac{1}{\sqrt{2\pi\sigma^2}} \exp\left(-\frac{x^2}{2\sigma^2}\right).$$

The random variable  $X$  is assumed to be normal and  $X \sim N(0, \sigma^2)$ .

The mixture model, which can be thought of as a type of kernel approach, is a helpful tool for density estimation. The form of the Gaussian mixture model is

$$\hat{f}(x) = \sum_{m=1}^M \alpha_m \phi(x; \mu_m, \Sigma_m),$$

with mixing proportions  $\alpha_m, \sum_m \alpha_m = 1$  as a summation of weightings. Note that  $0 \leq \alpha_m \leq 1$ .  $\mu_m$  and  $\Sigma_m$  are location and scale parameters of the normal distribution.<sup>7</sup> [3,4].

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<sup>7</sup> <https://alain-vandormael.netlify.app/post/ksmooth/>. (Accessed on 12.08.2023);  
<https://mathematica.stackexchange.com/questions/61827/structure-of-kernelmixturedistribution-and-smoothkerneldistribution>. (Accessed on 12.08.2023)

### Research methodology

The role of software is inevitable if we need to apply the highly computational process. In order to conduct the process, the Mathematica software is used. The statistical viewpoint is about the kernel estimation method and its mixing form which provides an attractive and comprehensive competence in modelling the data set if the non-identically occurs at high degree or the assumption of being identical is violated importantly. The built functions in Mathematica software are capable to perform the kernel smoothing techniques precisely. On the other hand, after modelling the data set is performed, we can have the sampling form of function or the estimate form of the function  $f$ , i.e.,  $\hat{f}$ . Since  $\hat{f}$  is determined, the built functions in Mathematica provides a compatible platform to add this  $\hat{f}$  into random generator function in Mathematica, that is,

$$\text{RandomVariate}[\text{SK}[w], n];$$

where  $SK$  represents the smooth kernel function:

$$\text{SK}[w] = \text{SmoothKernelDistribution}[x, \{\text{Adaptive}, \text{Automatic}, .1\}, \text{PerformanceGoal} \rightarrow \text{Quality}];$$

and

$$\text{SK}[w] = \text{KernelMixtureDistribution}[x, \text{Automatic}, \text{"SemiCircle"}];$$

Comprehending  $\text{KernelMixtureDistribution}$ , whose PDF  $\text{SmoothKernelDistribution}$  interpolates, is essential for comprehending  $\text{SmoothKernelDistribution}$ . Simple coordinates for that interpolation make up the  $\text{SmoothKernelDistribution}$  internals (Lhabitant, & Gregoriou, (2008)

Note that even if the real data set is discrete, it is logical to expect that a discrete data set can convergence to continuous data set. For example, binomial distribution can convergence to normal distribution (Hastie, et. al., 2009; Casella & Berger, 2021).

### The computational procedure and summarizing

There are two main buildings which are the modelling on real data sets and the generating data sets. The following computational schema is used to perform the computation.

1. Import the real data set;
2. Perform the kernel estimation method via  $\text{KernelMixtureDistribution}$  and  $\text{SmoothKernelDistribution}$  functions in Mathematica;
3. Set a random number generation based on the kernel method;
4. Set the number of sample size in the computationally generated data set;
5. Get the statistics such as mean, median, standard deviation, median absolute deviation, minimum, maximum;
6. Set these values;

7. Summarize and make the graphical illustrations for quickly summarizing the results. The following section is divided for the results of the functions in Mathematica.

### **Results**

There are two main figures which are based on the sample sizes chosen as  $n = 246$  and  $n = 1000$ . The number of first sample size represents the number of real data sets. The second number of that is chosen arbitrarily; because, if the number of sample size increased, we aim to observe the behavior of artificial data set based on the determined function  $\hat{f}$  based on the kernel estimation method.

The kernel estimation method uses the continuous kernel function such as normal distribution. In the Mathematica software, there is an adaptative method based on the behavior of data set.

The following figures represent the statistics about arithmetic mean, median, scale estimate based on kernel method, standard deviation, mean absolute error, its variants such as moments based on the kernel method, minimum and maximum statistics as well as percents for the quantile statistics where and how the data set takes their values in order to observe which value can be generated for the probabilities such as 0.01, 0.25, 0.50, 0.75 and 0.99. These probabilities can be alternative statistics for the minimum and maximum values as well.

It is importantly noted that when the maximum values are taken into account, it can be observed that there is a potential estimation for the values being lower 5 million. However, since we perform an estimation procedure, it is logical to expect that there can be over 5 million. That is, it is confidently said that we can estimate values around 5 million for the numbers of Turkish stock investors.

On the other hand, the estimated value can be supported by means of the confidence interval as given below:

$$\hat{\theta} + z_{\frac{\alpha}{2}} \sqrt{Var(\hat{\theta})},$$

where  $\hat{\theta}$  represents the maximum values of the statistic occurred due to the replicated form conducted by simulation. In this case,  $[5 - 2 * 1,5 + 2 * 1] = [3,7]$  as a confidence interval of the maximum values.

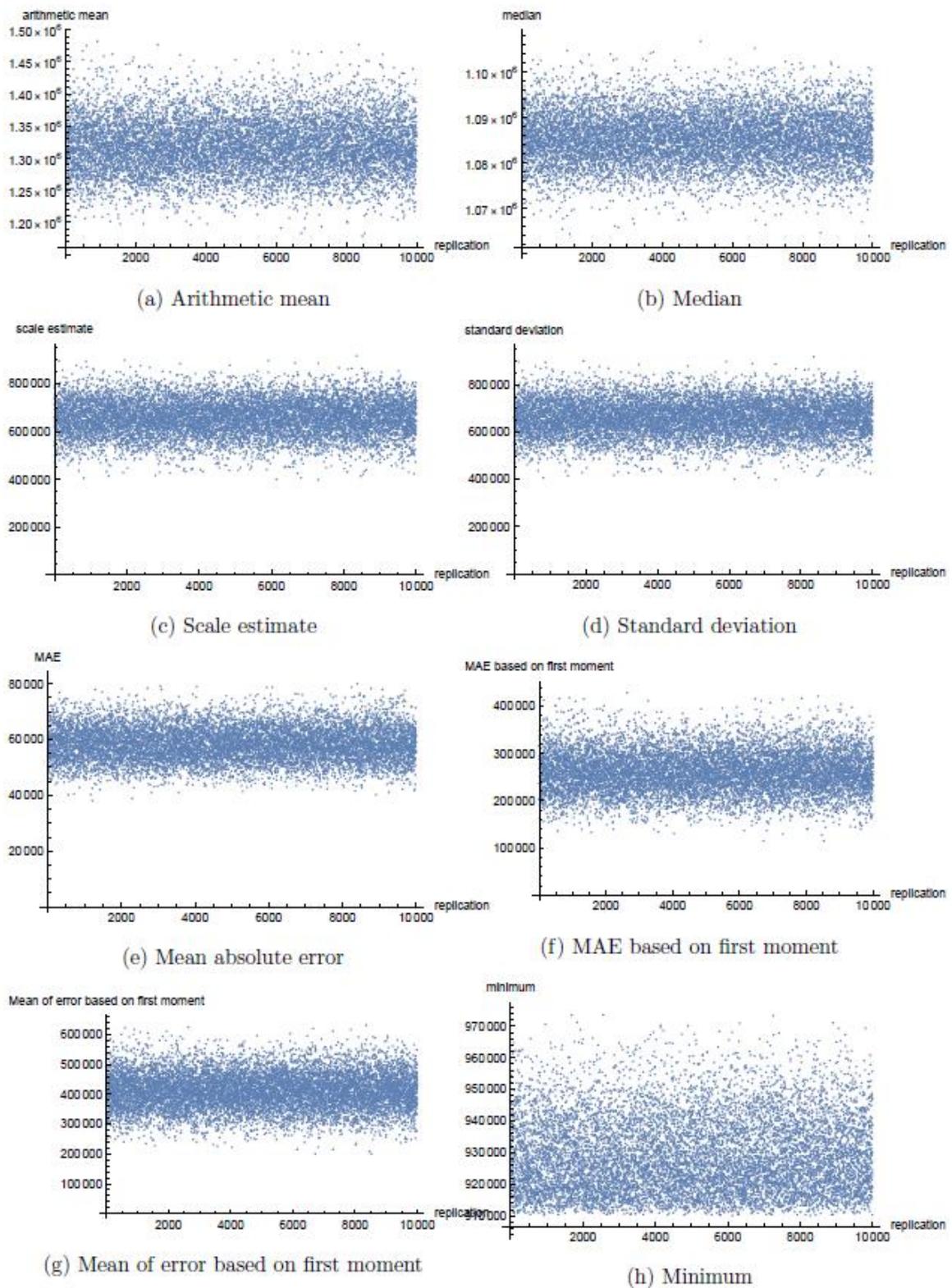


Figure 1: The statistics about the artificial data set when  $n = 246$  (continue)

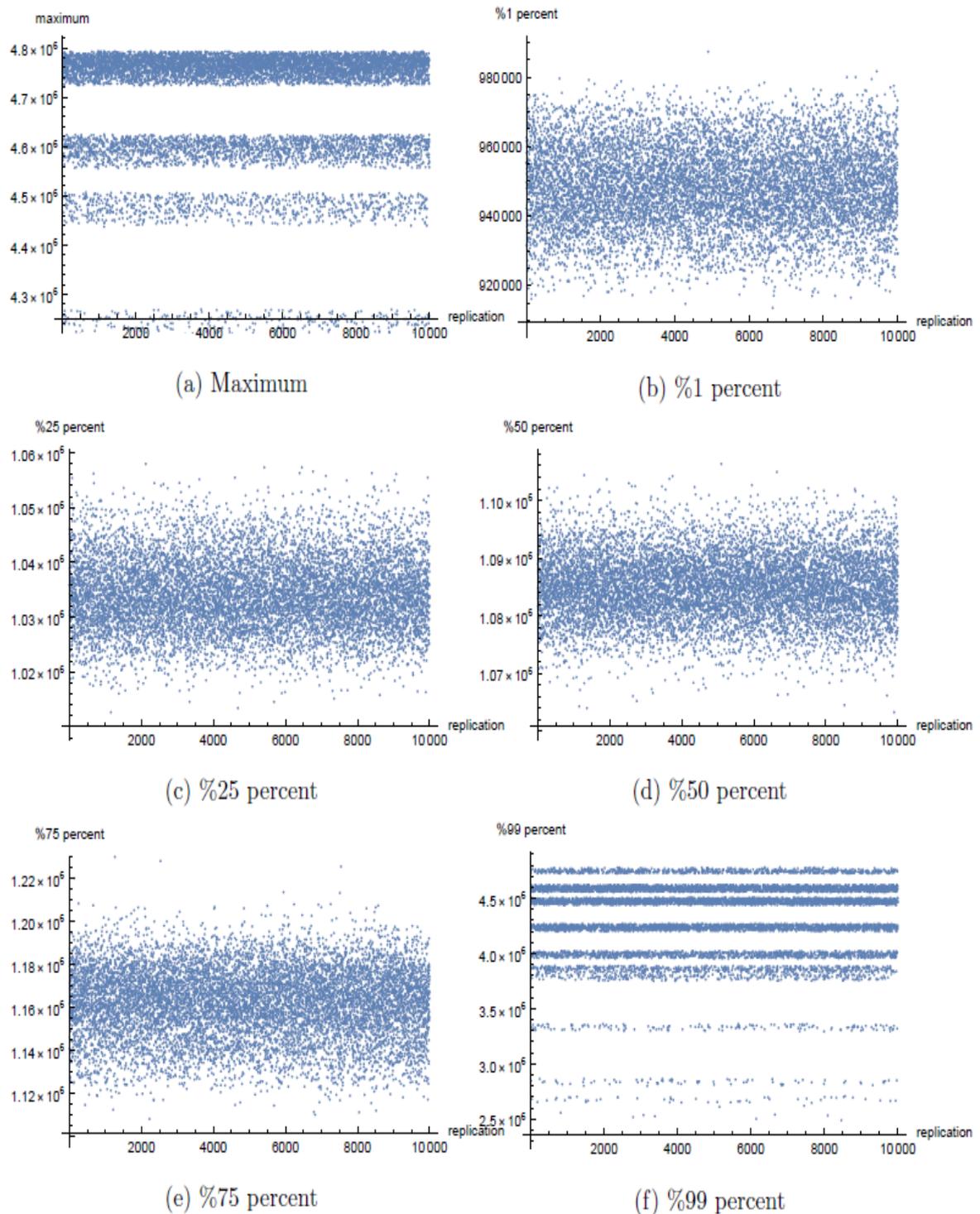


Figure 1: The statistics about the artificial data set when  $n = 246$  (continue)

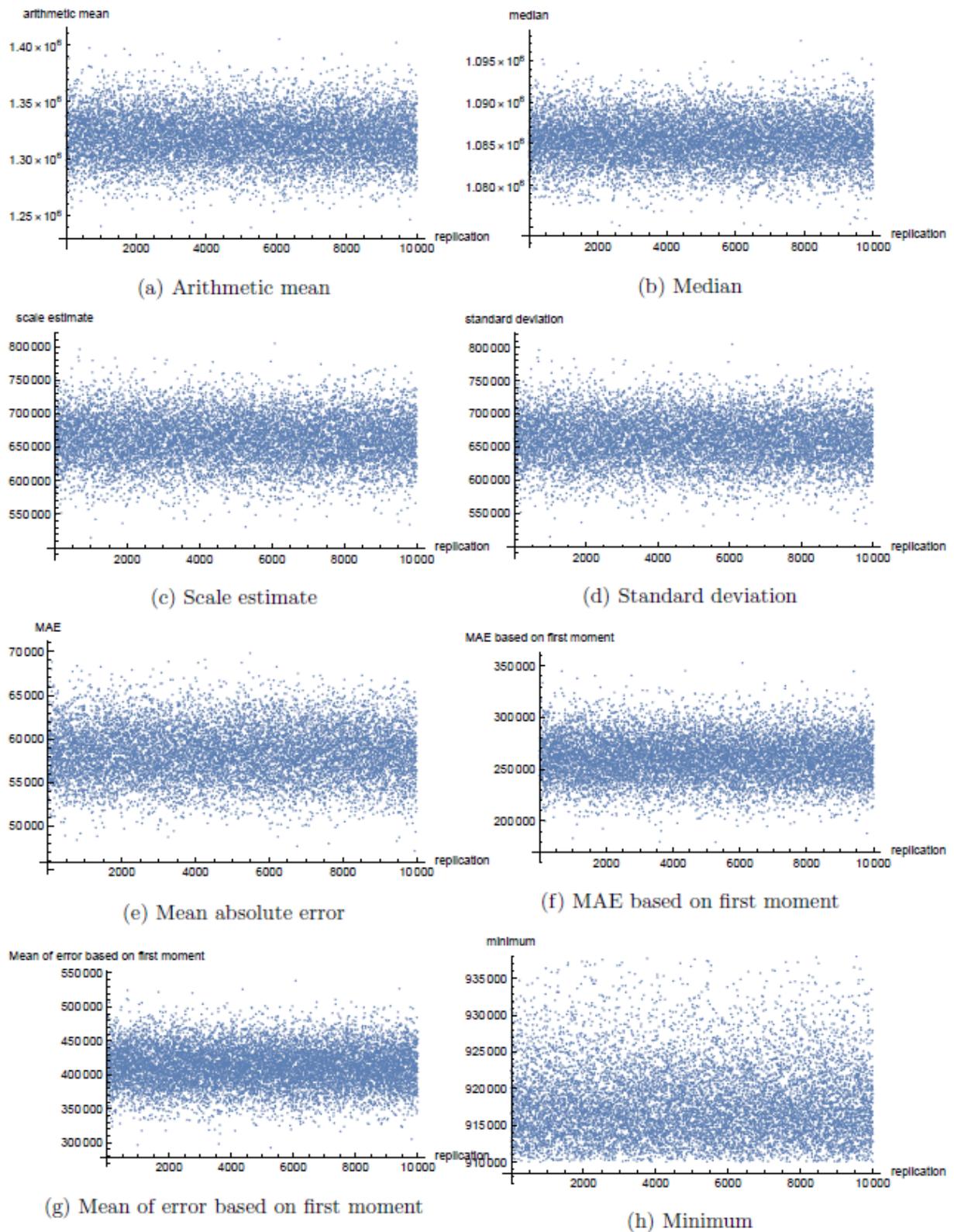
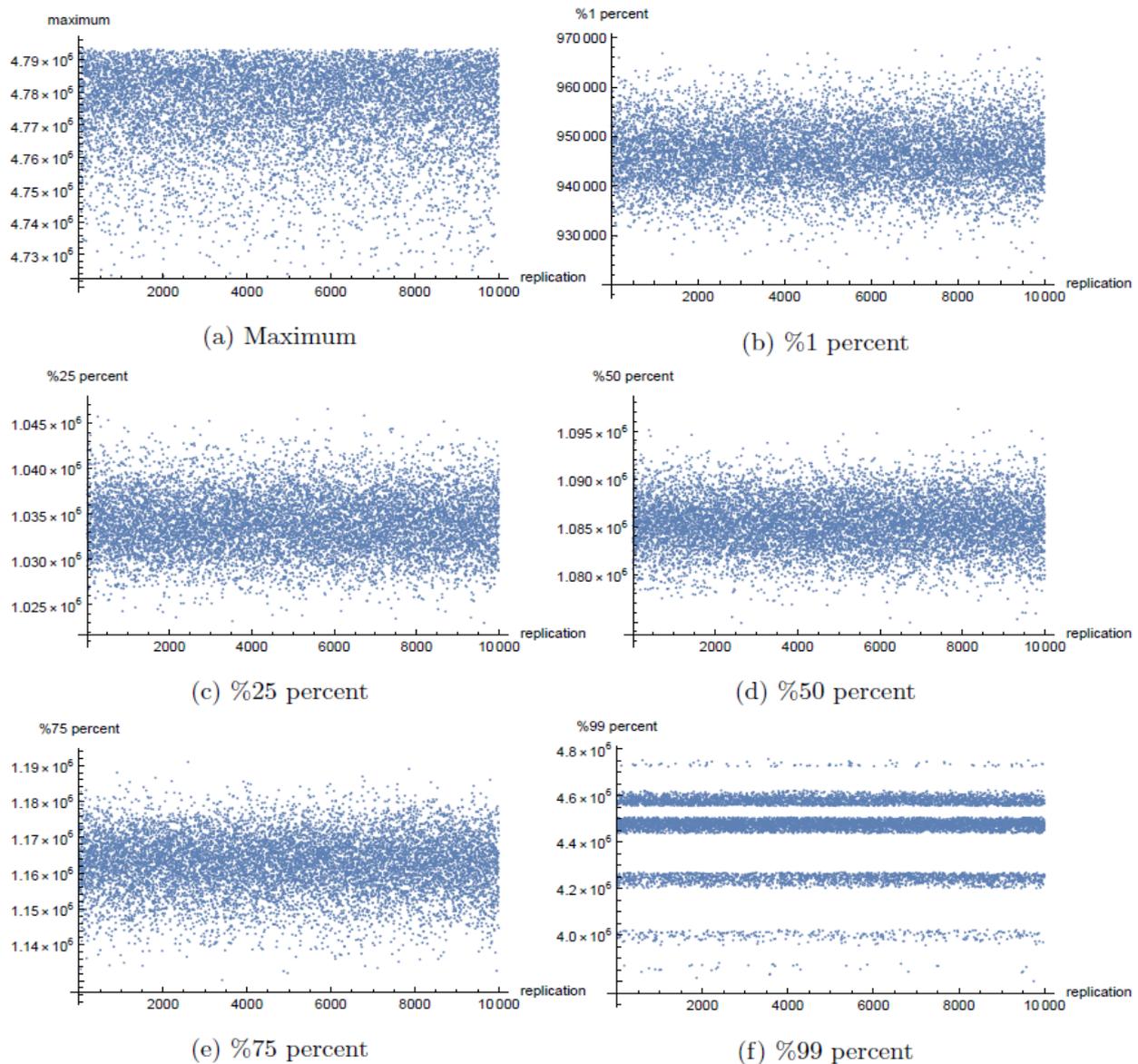


Figure 2: The statistics about the artificial data set when  $n = 1000$



**Figure 2: The statistics about the artificial data set when  $n = 1000$  (continue)**

Figure 1 and Figure 2 are mainly same statistics for the sample sizes 246 and 1000, respectively. The figures 1 and 2 cont. (a) represent the numbers for the statistics based on the maximum value. In addition, the scale estimate used for the confidence interval is given by the figures 1 and 2 cont. (c). The values from these figures labelled as (a) and (c) are responsible to construct a confidence interval given above. It should be noted that since these estimates for the scale parameter can be expected to be near or over 1 million due to the fact that we perform an estimation procedure.

### Discussion and conclusions

Since the kernel method is used to estimate the numbers of Turkish stock investor, the results of computational procedure have been based on the data-adaptive approach; because, the empirical

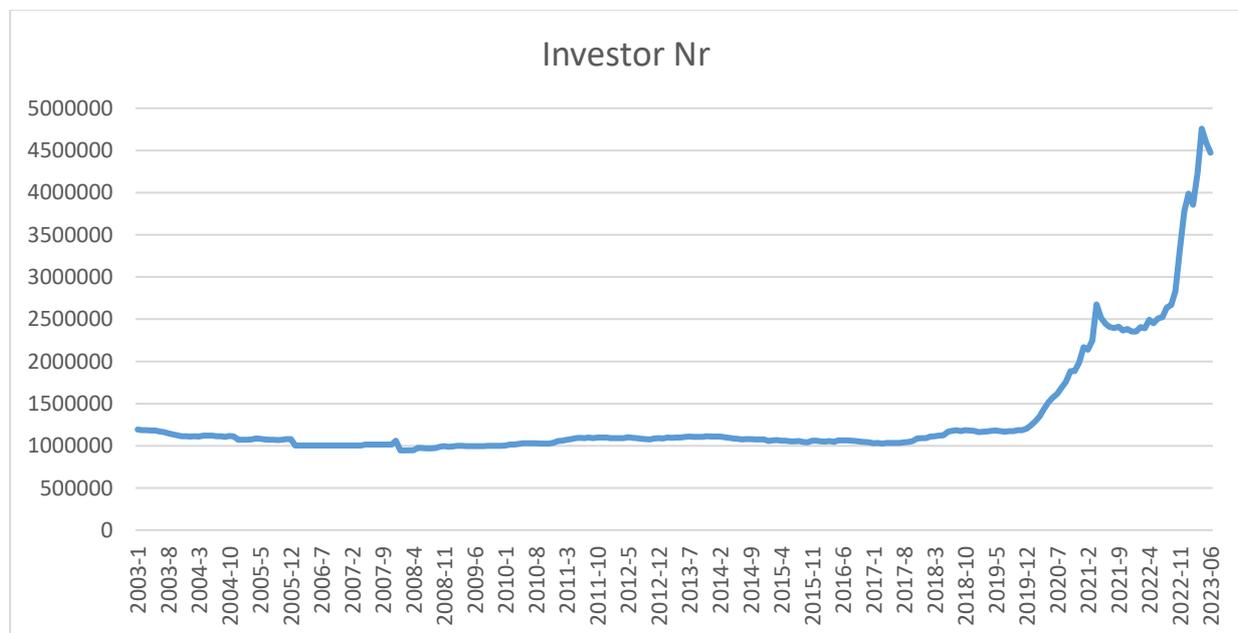
cumulative distribution function is mainly used in the kernel estimation method. In other words, the main idea in the kernel is the empirical probabilistic behavior and so the estimated values from the generated data based on this empirical probabilistic behavior have been observed around the values of real data. The estimated values for the maximum value of statistics are around 5 million for Turkish stock investor. The upper bound from the confidence interval is around 7 million. It is generally commented that we can accomplish to perform a good estimation for the numbers of Turkish stock investor and the kernel estimation method is performable to conduct a good estimation for such real data sets.

The forthcoming studies will be based on the parametric approaches and the mixing of the parametric models.

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#### Appendix: Turkish Stock Market Investor Number



## ADMINISTRATION OF TAXES AND LOCAL FEES BY THE STATE TAX SERVICE OF THE REPUBLIC OF MOLDOVA

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**Abstract:** Local taxes and fees constitute revenues of local budgets, of an administrative-territorial capacity (villages, cities, municipalities), but the financial resources constituted by local taxes and fees are used for public expenses for the needs of ensuring local budgets. And currently budgets of administrative-territorial units (ATU) have insufficient financial and fiscal potential, local economies facing the inability to generate the necessary amount of revenue. These are limited and do not allow the authorities of local public administration (LPA) to be accountable to the local collective of contributors. The share of own revenues in total budget revenues is relatively modest for most analyzed ATUs: LPA does not have its own important sources of income, and as a result cannot independently decide and solve many of the problems that have arisen. Local taxes and fees generate small amounts, which provide a small percentage of local budget revenues (low fiscal yield of local taxes and fees). Local authorities do not have real rights and tools to influence taxpayers in order to ensure the appropriateness and fullness of the payment of local taxes and fees. In this sense, economic experts and authorities of LPA recommend strengthening the own revenue base at the level of local public authorities, increasing the fiscal yield of local taxes and fees, including by increasing the efficiency of their administration, or request and argue the need to grant local public authorities (level 1 and 2) the freedom to introduce new local taxes and duties or rates additional to existing ones.

**Keywords:** local taxes and fees, own income, local budgets, tax administration, local public administration, local public authorities.

JEL Classification: H27, H71, H72

### Introduction

The amount of own revenues in local budgets is an indicator of the effort made by LPA in strengthening the premises for local economic development. Consolidating the own revenue base at the LPA level, including through the full implementation and in good conditions of the provisions of the Public Administration Reform Strategies, represents the basic solution for ensuring favorable premises for sustainable economic growth at the local level. Effective financial management requires local public authorities to ensure the stability of budgetary revenue sources, and this task can be achieved, first of all, by developing own revenue sources. Without the existence of relatively stable sources of own revenues, the structure of the revenue part of the local budget cannot be considered financially sustainable. [7]

The own revenues of the budgets of the administrative-territorial units are formed from local taxes and fees, provided for each territory separately, in accordance with the Tax Code and are directly and fully transferred to the respective budgets.

According to article 6 of the Tax Code of the Republic of Moldova, the tax is a mandatory payment free of charge, which is not related to the performance of specific and concrete actions by the empowered body or by the person with responsibility for it for or in relation to the taxpayer who paid this payment.

Wikipedia proposes other definitions of the notion of tax:

- tax is a compulsory and free levy, carried out by the state on the resources or assets of individuals or collectives and paid in money;
- the tax constitutes a source of financing the expenses of general interest of the state and local administration;
- it is an economic policy tool, through which part of the income is redistributed;
- taxes are a main source (along with loans and "printing" of banknotes/scriptural currency) of forming state budget revenues and financing public expenditures.

*The fee is a compulsory free payment that is not a tax.* [5, art.133]

*Local fee* is a mandatory payment made to the local budget. [5, art.28]

The system of local taxes and fees in the Republic of Moldova includes (table 1):

**Table 1 The system of local taxes and fees in the Republic of Moldova**

Code	Name according to the economic classification
113	a) real estate tax;
1133	a) private tax;
114610	b) natural resources fees;
114412	c) territorial planning fee;
142211	d) fee for organization of auctions and lotteries on the territory of the administrative-territorial unit;
114414	e) fee for placement (location) of advertising (commercials);
114423	f) fee for application of local symbols;
114418	g) fee for commercial and/or services rendering units;
114411	h) market fee;
114421	i) accommodation fee;
114422	j) balneal fee;
114413	k) fee for provision of passenger transportation services on the territory of municipalities, cities and villages (communes);
114416	l) parking fee;
142216	m) fee from dog owners;
114417	n) parking lot fee;
114426	o) sanitation fee;
114415	p) advertising devices fee.

**Source:** adapted by the author based on art. 6 of the Fiscal Code and according to the Information on incomes at the NPB corresponding to the classification of budget revenues administered by the STS

Local taxes and fees are mainly regulated by:

- Tax Code of the Republic of Moldova. Law of the Republic of Moldova no. 1163-XIII of 24.04.97. The Official Monitor of the Republic of Moldova no. 62/522 of 18.09.1997;
- Law no. 397-XV of October 16, 2003 regarding local public finances, with subsequent amendments and additions;
- Order of the Minister of Finance regarding budget classification no. 208 of December 24, 2015;
- Decisions of local councils regarding local taxes and fees;
- The reform strategy of the Public Administration from the Republic of Moldova for the years 2023-2030.

In accordance with the provisions of Title VII of the Tax Code, in the following the author reflects some basic elements of local taxes and fees (subjects of taxation, objects of taxation, taxable base and payment terms).

**a) Real estate tax** is a local tax that represents a mandatory payment to the budget from the value of real estate.

*Subjects of taxation* are legal entities and individuals, residents and non-residents of the Republic of Moldova:

- a) the owners of real estate on the territory of the Republic of Moldova;
- b) lessees who lease a privately owned agricultural real estate, if the lease contract does not provide otherwise;
- c) holders of patrimonial rights (rights of possession, management and/or use) over public property real estate on the territory of the Republic of Moldova;
- d) lessees or lessees of real estate belonging to public authorities and institutions financed from the budgets of all levels;
- e) lessees of real estate - in the case of the financial leasing contract;
- f) lessees or lessees of real estate privately owned by non-residents of the Republic of Moldova, if the lease/lease contract does not provide otherwise.

*Objects of taxation* are real estate, including inner-village or extra-village land, buildings, constructions, individual houses, apartments and other isolated rooms, including real estate at a construction completion stage of 50% and more, left unfinished for 3 years after the start of construction works. The degree of completion of the construction for the purposes of taxation is determined by technical experts in construction or by economic agents with activities in the field of technical expertise, or by the local public administration authority, based on the method established by the central specialized body of the public administration in the construction field.

*The taxable base* of real estate is the estimated value of these assets.

a<sup>1</sup>) In accordance with Art. 9 para. (1) from the State Budget Law for the year 2023 no. 359 of 22.12.2022, **the private tax** is a one-time payment that is levied when carrying out transactions with public property in the privatization process, regardless of the type of means used.

*Subjects of taxation* are legal entities and individuals from the Republic of Moldova, as well as foreign legal entities and individuals who, in the process of privatization, are given private ownership of public property.

*Objects of taxation* are public property, including shares.

The private tax rate is set at 1% of the purchase value of public property subject to privatization, including the value of shares subject to privatization. [3]

b) **Natural resources fees** are taxes collected in the case of the extraction of mineral resources in the form of water captured from any sources (springs), useful minerals (deposits), etc.

*Subjects of natural resources fees* are individuals who carry out entrepreneurial activity and legal persons who:

- a) extract water from surface and underground water sources;
- b) uses potable water from any source for the purpose of bottling;
- c) extract natural mineral water;
- d) uses water at hydropower plants;
- e) are the beneficiaries of the subsoil and carry out the extraction of useful minerals
- f) are the beneficiaries of the subsoil and use it.

*The object of the tax is:*

- a) the volume of water extracted from surface and underground water sources;
- b) the volume of potable water used from any source for bottling purposes;
- c) volume of extracted mineral water;
- d) the volume of water used by hydropower plants;
- e) the volume of useful minerals extracted;
- f) the underground spaces used for the purpose of the construction of the underground objectives, as well as the underground constructions exploited by the tax subjects.

Tax rates for natural resources are established according to annex no. 1 and 2 of Title VIII of the Tax Code of the Republic of Moldova.

**c) Territorial planning fee**

*The subject of taxation* – entities or individuals registered as entrepreneurs and persons carrying out professional activity in the justice sector, who have a taxable base.

*The subject of taxation* – the quarterly average number of employees and, additionally:

- in the case of individual enterprises and peasant households – the founder and members of the individual enterprise, the founder and members of peasant households;
- in the case of persons carrying out professional activity in the justice sector – the number of persons authorized by law to carry out professional activity in the justice sector.

**d) Fee for organization of auctions and lotteries on the territory of the administrative-territorial unit**

*Subjects of taxation* are entities or individuals registered as entrepreneurs and persons carrying out professional activity in the justice sector, who have a taxable base.

*The object of the tax* is the goods declared at the auction or the lottery tickets issued.

**e) Fee for placement (location) of advertising (commercials)**

*The subject of taxation* – entities or individuals registered as entrepreneurs who place and/or broadcast advertising information (except outdoor advertising) on telephone, telegraph, telex networks, means of transport, other means (except TV, Internet, radio, periodical press, prints).

*The object of taxation* – the services of placing and/or broadcasting advertisements by means of cinematographic services, video, telephone, telegraphic networks, telex, means of transport, by other means (except for TV, Internet, radio, periodical press, prints).

**f) Fee for application of local symbols**

*The subject of taxation* – entities or individuals registered as entrepreneurs, who apply the local symbols on the manufactured products.

*The object of taxation* – the manufactured products to which the local symbolism is applied.

**g) Fee for commercial and/or services rendering units**

*The subject of taxation* – individuals carrying out entrepreneurial activity and entities, which have objects of taxation.

*The object of taxation* – the units which, according to the Classifier of Activities in the Economy of Moldova, correspond to the activities set out in annex no. 1 to Law no. 231 of September 23, 2010 regarding internal trade.

**h) Market fee**

*The subject of taxation* – entities or individuals registered as an entrepreneur-administrator of the market.

*The object of taxation* – the area of the market land and buildings, constructions whose displacement is impossible without causing damage to their destination.

**i) Accommodation fee**

*The subject of taxation* – entities or individuals registered as entrepreneurs, who provide accommodation services.

*The object of taxation* – accommodation services provided by structures with accommodation functions.

**j) Balneal fee**

*The subject of taxation* – entities or individuals registered as entrepreneurs, who provide rest and treatment services.

*The object of taxation* – rest and treatment tickets.

**k) Fee for provision of passenger transportation services on the territory of municipalities, cities and villages (communes)**

*The subject of taxation* – entities or individuals registered as entrepreneurs, which provide car transport services for passengers on the territory of municipalities, cities and villages (municipalities).

*The object of taxation* – the transport unit, depending on the number of seats.

**l) Parking fee**

*The subject of taxation* – entities or individuals registered as entrepreneurs, who provide parking services.

*The object of the tax* - parking.

**m) Fee from dog owners**

*The subject of taxation* – individuals who live in housing blocks – state, cooperative and public housing, as well as in privatized apartments.

*The object of taxation* is the number of dogs in possession during a year.

**n) Parking lot fee**

*The subject of taxation* – entities or individuals owners of vehicles, who use the parking lot.

*The object of taxation* – the parking place specially arranged on the public domain and authorized by the local public administration authority, used for parking the transport unit for a certain period.

**o) Sanitation fee**

*The subject of taxation* – individuals who are registered as the owner of the residential real estate (house, apartment).

*The object of taxation* – the number of natural persons registered at the address declared as domicile.

**p) Advertising devices fee**

*The subject of taxation* – individuals who are registered entrepreneurs and legal persons, who own/use or own the advertising devices.

*The object of taxation* – the surface of the face (faces) of the advertising device on which the outdoor advertising is placed.

**The deadlines for tax payment and presentation of fiscal reports by the tax subjects for most taxes and fees are quarterly, until the 25th of the month immediately following the managed quarter, except for the tax from dog owners, the tax for parking and sanitation fees for which the payment term is according to the conditions established by the local public administration authority.**

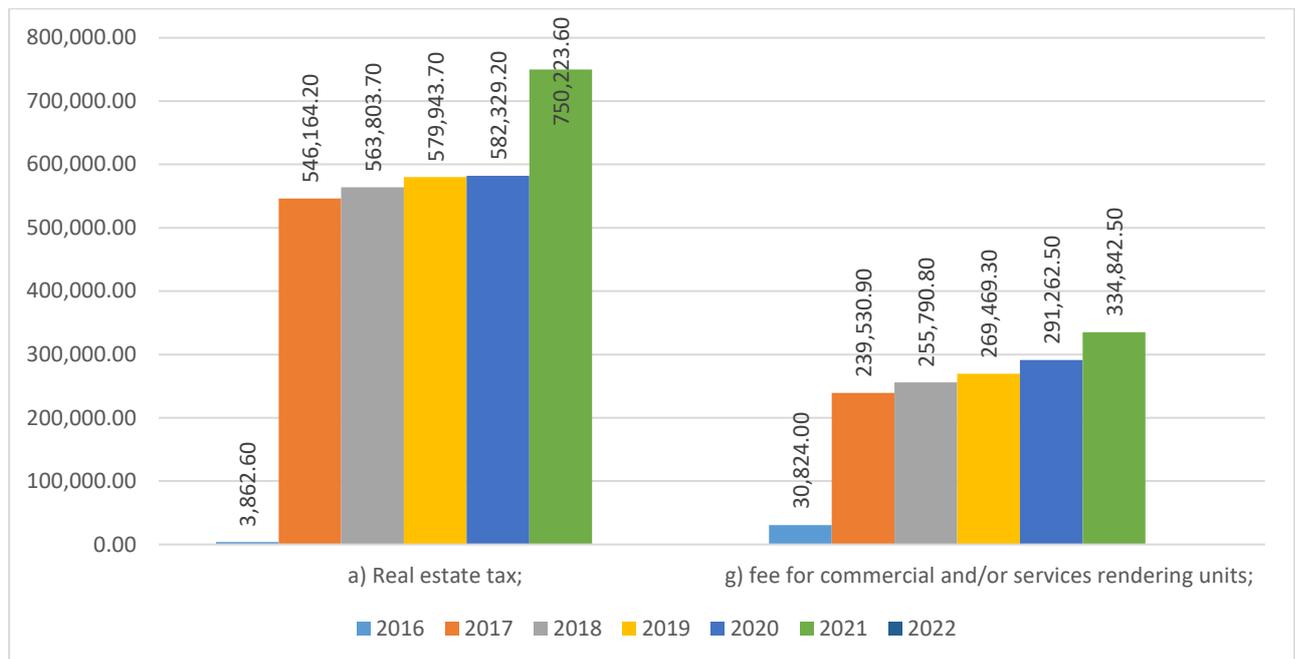
The rate of local taxes is established by the local public administration authority depending on the characteristics of the objects of taxation and they are found in the Decisions of the local councils approved at the end of each calendar year, but the State Tax Service exercises control over the way in which the local public administration authorities execute the obligations of local tax administration. [6]

**The evolution of income from local taxes and fees collected and administrated by State Tax Service from Republic of Moldova**

Based on the Information on revenues at the National Public Budget (NPB) corresponding to the classification of budget revenues administered by the STS for the period 2016-2022, the figures below examine the evolution of income from local taxes and fees collected in the Republic of Moldova.

Taking into account the fact that examining the evolution of receipts from local taxes and fees at the NPB, the author found that the largest share is held by the Tax on real estate and the Tax for commercial and/or service rendering units, and in this sense, considered appropriate to reflect the evolution of these 2 indicators separately from the other taxes and fees in order to have a clearer image regarding the evolution of the taxes and fees analyzed for the period 2106-2022.

Among the sources of own revenues that supply local budgets, the real estate tax is considered to be the source with the most pronounced financial and stability potential. Property taxes, local taxes and revenues from services and administrative fees provide over 86% of revenues from own sources. [2] Revenues from administrative services and taxes have the biggest contribution to the increase of the revenues of the consolidated local budget, specifically for rural areas, and revenues from property taxes - for urban areas.



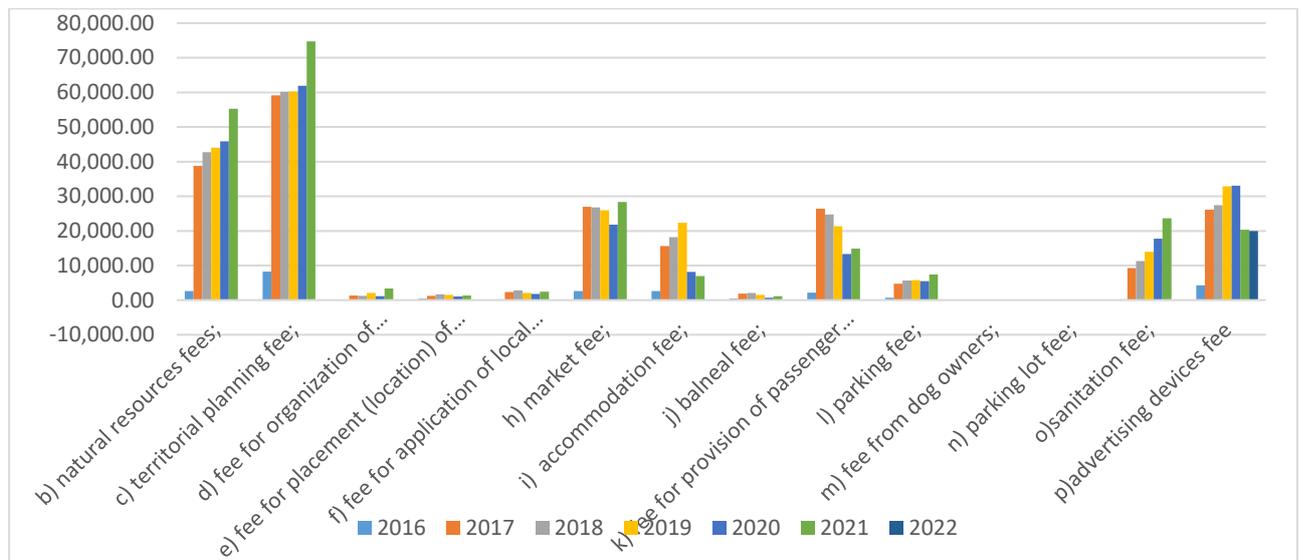
**Figure 1. Evolution of incomes from the Tax on real estate and the Tax for commercial and/or service rendering units for the years 2016-2022, thousands of lei**

**Source:** developed by the author on the basis of the Information on incomes at the NPB corresponding to the classification of budget revenues administered by the STS

Based on the analyzed data, a positive evolutionary trend of receipts can be observed for the entire analyzed period, a deviation being recorded in 2016 when the revenues from the Tax on real estate and the Tax for commercial and/or service rendering units registered low values compared to the periods subsequent.

The figure below reflects the evolution of local tax incomes with the exception of the Real Estate Tax and the Tax for commercial and/or service establishments. The author proposed to reflect not so much the revenues in absolute values, but to highlight through the graphic representation that after the Tax on real estate and the Tax for commercial and/or service rendering units, the largest incomes are from territorial planning fee, natural resources fees, market fee, accommodation fee, fee for provision of passenger transportation services on the territory of municipalities, cities and villages (communes), sanitation fee and advertising devices fee, although the evolution over time of these indicators is not stable, sometimes being even uneven.

In a recent study, the IDIS Viitorul expert, Veaceslav Ioniță, analyzes the revenues collected from local taxes and claims that, in his opinion, a few local taxes would constitute their considerable potential compared to other local taxes and fees, if the local authorities enjoyed more financial autonomy. These are - parking fee, sanitation fee, development fee, public lighting fee - and proposes a series of measures to improve the fiscal base of local authorities in the Republic of Moldova. [1]



**Figura 2. The evolution of incomes from Local taxes and fees for the years 2016-2022, thousands of lei**

**Source:** developed by the author on the basis of the Information on incomes at the NPB corresponding to the classification of budget revenues administered by the STS

Local taxes and fees, through their structure and low fiscal yield, contribute modestly to the financial autonomy of the local public administration in the Republic of Moldova. Therefore, it is necessary to take measures to increase the fiscal yield of local taxes and fees. [4]

However, identifying the level of local taxes, the tax base, and their collection is difficult due to the lack of complex databases that provide reliable and current data, and this makes impossible a modern management of the tax and budget system at the local level. In this context, the Public Administration Reform Strategy of the Republic of Moldova for the years 2023-2030 proposes measures to strengthen and expand transparency and citizen participation at the local level:

- increasing the share of local/district authorities with their own websites that constantly publish relevant information about their own activity and/or implement online participatory processes in terms of approving local taxes and fees, approving the budget, approving investment projects major for the local community;
- increasing decision-making transparency at the level of local public administration, by expanding the number of documents that must be published automatically/in principle, tracking the effective implementation of this and increasing the technical capacity of the new administrative-territorial units to publish information online;
- increasing transparency and access to local public services through digitalisation, etc.

A new system of local public finances began to be implemented from January 1, 2015, which constituted an important stage in the process of strengthening the financial autonomy of local administration, including by increasing transparency and predictability in the process of budget programming and execution and represented an important step forward in relation to the previous situation or the situation in neighboring countries, not members of the European Union. This new system has undergone adjustments and changes in previous years, particularly in terms of increasing

the resources allocated to the local public authorities – for example the increase in Income Tax rates, the full transfer of road tax from 2023, etc.

The local public administration financing system introduced in 2015 will continue to be the basis of the way local public authorities are financed. The realization of the reform of the local public administration requires a review, probably not of a large scale, of the current system of budget transfers to the local public administration. Such a reform would represent a step forward towards strengthening the administrative capacity at the level of local public administration, both level I and level II, and would allow the continuation of the financial decentralization process under conditions of efficiency and effectiveness. The basic structure of the intergovernmental financial transfer system will remain the same and some minor adjustments will likely be needed in the future. Also no other national taxes will be introduced in this sharing mechanism: in particular profit tax, VAT, excises. However, these taxes can be used to diversify and increase the Balancing Fund, from which the balancing transfer is distributed.

The improvement of the local public finance system - shared taxes, general and conditional transfers, as well as the increase of own revenues - will be done with the understanding that the changes cannot cover the vertical imbalance of LPA financing (vertical gap) and that the necessary adjustment can only be obtained through a territorial administrative consolidation or reallocation of powers (asymmetrical decentralization).

In the short and medium term, legislative changes can be made to strengthen the fiscal base of local public authorities and to further strengthen the system of incentives for better collection of local taxes and fees, regardless of the outcome of the administrative-territorial reform on a voluntary basis. The gradual reduction of tax niches must be in the permanent attention of the Ministry of Finance for all types of national and local taxes – a tax base as broad as possible and with as few exceptions as possible is a desire not only for efficiency, but also for fiscal fairness. In this sense, all the facilities and exemptions from the payment of local fees and taxes (including those on property) must be re-analyzed, provided in the Tax Code, but will be effectively applied exclusively through decisions of local councils. Other types of actions are also proposed to be considered:

- improving the system of local taxes and fees, so that their yield increases significantly, creating the conditions for increasing the share of own revenues in local budgets. At the same time, exemptions or payment facilities for local taxes and fees, including those on real estate, should be granted under the terms of the Tax Code, but only with the approval of local councils. This action will also be based on the piloting of public policy alternatives for increasing local own incomes, both for the urban and for the rural environment, which will be tested practically through specific technical assistance provided at the local level in different types of territorial administrative units, and which will then be generalized at the national level;

- improving the general transfer system, including the balancing one, by taking into account the adjustment of formula parameters, the average local performance in terms of local fiscal effort and the degree of collection of local taxes and fees, stimulating the development of the local tax base and discouraging the substitution of the local fiscal effort with transfers from the state budget;

- ensuring the digital interoperability of the entire tax administration with the national cadastre systems, with the systems of the Ministry of Finance, with other internal systems of the local public administration, as well as horizontal communication between the various local authorities. This aspect

is extremely important for an effective management of the own financial resources of the local authorities in the Republic of Moldova;

- continuing the improvement and training of local administration staff in modern budgetary and financial management techniques, adapted to the requirements of the EU, international donors, and the financial-banking environment. These measures become important in the conditions of getting closer to the European Union, the appearance of the capital market for local public authorities, the increase in the number of foreign or local investors, etc. [8]

All these measures proposed in the Strategy: to increase the fiscal base of local taxes and duties, to increase the share of own revenues in local budgets, to strengthen financial autonomy at the local level, contribute to the consolidation of the revenue system of the consolidated national budget, to a prudent budget management and does not put pressure on the budget deficit.

It is very important that different types of public policies for increasing local own incomes, both for urban and rural areas, are substantiated, combined in different schemes and tested practically through specific technical assistance provided at the local level in different types of territorial administrative units. Through this piloting, a refinement and development of these combined local public policies, of local development, can be obtained, which will later be used and generalized at the level of the entire local administration in the Republic of Moldova.

As the capacity of local public administration increases and the digitization of public services at the local level improves and expands, the full transfer of local tax and tax management (including property tax) to local councils must be gradually achieved. This involves: establishing the tax base (registering taxpayers), effectively establishing the tax rate in accordance with the law, calculating the amounts to be paid by each taxpayer, informing taxpayers, collecting owed amounts, managing delinquent payers, monitoring and control.

### **Conclusion**

In order to develop possible solutions for the improvement of the system of local taxes and taxes, a comparative analysis of the structure of local collectivities' own revenues and the share of local taxes and fees in the total of local resources is necessary in other states whose local public administration authorities are approximately similar to those from the Republic of Moldova, as well as other indicators that characterize the same level of regional economic development. Last but not least, it is appropriate to take into account the costs of administering these taxes and fees so that the maintenance costs do not exceed the revenue collections at the local level.

The most common property taxes and taxes due to local authorities are real estate tax, wealth tax, territorial planning fee, advertising tax, Tax for commercial and/or service rendering units, etc. Providing the possibility for local public authorities to manage and capitalize on the patrimony of the communities through the freedom to introduce new local taxes and fees or the capping of existing quotas, would represent an opportunity for local authorities to ensure the full collection of the necessary local taxes and fees - premises of local financial autonomy.

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## **THE COMMERCIAL BANK'S CONTRIBUTION TO THE OPTIMIZATION OF FISCAL MANAGEMENT**

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**Abstract.** The purpose of this article is to examine how commercial banks contribute to improving the quality of tax administration, highlighting the essential role these institutions play in the correct collection and reporting of taxes. The author also aims to highlight how banks facilitate the payment of taxes and tax contributions, thus contributing to the simplification of the payment process for both taxpayers and tax authorities. Finally, the purpose of the article is to emphasize the importance of commercial banks in ensuring equity and transparency in the tax system, with an impact on the sustainable economic development of a country. The methodology used in this research refers to the review and conceptual analysis of concepts and practices related to how commercial banks influence tax administration. In conclusion, the commercial bank is an essential piece in the tax administration puzzle. The role of these institutions is not only to ensure the payment of tax obligations, but also to correct and optimize the activity of the tax system.

**Keywords:** commercial bank, tax administration, taxpayers, services, government payments, tax liabilities

JEL Classification: G21, H21, H26, E42

### **Introduction.**

The Republic of Moldova faces various long-term challenges and trends at the national, regional and global levels, which will have a significant impact in the coming decades. The degree of uncertainty and unpredictability increases, which requires the adoption of new development paradigms that take into account limited resources and internal capacities. Rapid technological progress fundamentally changes the dynamics of society, opening up new opportunities for development, but technology often evolves faster than society's ability to adapt to it, generating significant long-term challenges. Despite these challenges, there are also numerous opportunities that can and should be exploited.

The financial system is one of the fundamental pillars of any national economy around the world. The three key elements of the financial system are represented by banks, insurance and investment funds. Obviously, the banking sector occupies the central position in the structure of the financial system.

### **The process of collaboration between commercial banks and state institutions.**

A nation's progress derives from the collaboration between commercial banks, government institutions, investors and market players. A country's development is hindered as long as the rules and laws in force are not respected. Therefore, the main participants must work together to improve and promote the financial environment of the country. The National Bank of Moldova has the role of coordinating the activity of commercial banks in the Republic of Moldova. Its main duties are to regulate and supervise banks to ensure that they operate safely, complying with the requirements of prudent and sound management. In order to maintain financial stability and strengthen the banking

system, as well as to prevent banks from engaging in high-risk operations, the National Bank of Moldova (NBM) conducts an active policy regarding the regulation and supervision of the banking sector. These measures must also guarantee the protection of the interests of depositors, but also of other creditors, as well as the proper functioning of the banking system, as well as their effective interaction with other state institutions. The commercial banks of the Republic of Moldova are closely connected with the key institutions of the state in order to fulfill the objectives set by both parties involved.

In the modern market economy, the activity of commercial banks has an important role, due to their connections with all areas of the economy. Commercial banks are a fundamental element in the global economy, playing a crucial role in the development and management of financial resources. In addition to their traditional functions of financial intermediation and provision of banking services, these institutions have a significant impact on the fiscal administration of a state. Banks aim to ensure the constant flow of capital and cash, to provide loans to industrial enterprises, the state and citizens, as well as to create favorable conditions for economic development.

One of the state institutions with which commercial banks interact directly is the State Fiscal Service. The State Fiscal Service is the public authority, empowered to administer taxes, fees and other payments in the interest of the state. The mission of the State Fiscal Service is to facilitate an efficient process of tax administration and service by creating favorable conditions for taxpayers to comply with the tax law, the uniform application of tax policy and regulations, and providing the necessary resources to the state to finance social projects and promote development society as a whole. Thus it collaborates with public authorities and institutions or any other entities with law enforcement powers or interested in implementing the provisions of fiscal legislation in the part related to fiscal administration. [5]

According to the current fiscal regulations, there are several areas in which the State Fiscal Service collaborates with financial institutions. One of the most important contributions of commercial banks to tax administration is the correct collection and reporting of taxes. Banks are required to keep records of their customers' financial transactions, including deposits, withdrawals, transfers and business transactions. This detailed information is essential for establishing taxpayers' income and assets, allowing tax authorities to calculate taxes correctly. Moreover, banks have an obligation to report suspicious or unusual financial transactions, which helps prevent tax evasion and money laundering.

A first aspect refers to the procedure for opening bank accounts for taxpayers, especially for economic agents, which according to art. 167 of the Fiscal Code, consists in the fact that the bank opens bank accounts and/or payment accounts for natural and legal persons, while the National Bank opens bank accounts and/or payment accounts in accordance with the Law on the National Bank of Moldova, only if they present a tax code assignment certificate or an equivalent document. Regarding the opening of these types of accounts (with the exception of transitory accounts intended for the execution of budgets, credit and loan accounts, term deposit accounts and temporary accounts for the accumulation of social capital), commercial banks are obliged to notify the Fiscal Service on the same day of the State through an automated information system for the management and transmission of electronic documents between the State Fiscal Service and financial institutions and/or payment companies.

Transactions made on a bank account and/or payment account opened (with the exception of temporary accounts intended for the execution of budgets, credit and loan accounts, time deposit accounts and temporary accounts for the accumulation of social capital, as well as accounts of natural persons who do not carry out entrepreneurial activities) can be initiated only after the commercial banks have received the electronic document issued and transmitted by the State Fiscal Service, which confirms the fiscal registration of the account.

The bank account and/or payment account is registered by the State Fiscal Service on the basis of an electronic document issued and transmitted by commercial banks to confirm the opening of the account. In the situation where the taxpayer has unpaid debts, the State Fiscal Service has the right not to issue the electronic document confirming the tax registration. The electronic document certifying the opening of the account and the electronic document confirming the fiscal registration of the account must be transmitted and received through the automated information system for the creation and transmission of electronic documents between the State Fiscal Service, financial institutions and/or payment companies and commercial banks.

Initially, this exchange of information between the State Fiscal Service and commercial banks in the Republic of Moldova was provided on paper, and the procedure could last a day or more, which prevented the taxpayer from using the account immediately after registration with the financial institution, the electronic exchange of information being released only in 2012. [1]

A significant moment in the process of collaboration between the State Fiscal Service and commercial banks was the implementation of the Circulation of electronic documents. This system is a component of electronic government based on modern information and communication technologies, and allows the creation, processing, digital signature, storage and transmission (circulation) of electronic documents between the State Fiscal Service and the financial institutions of the Republic of Moldova.

The system covers several functionalities such as:

- opening, modifying, closing or fiscal registration of bank accounts;
- issuing and managing provisions regarding the suspension of transactions on bank accounts;
- issuing and managing collection orders (incaso);
- accessing information on transactions on bank accounts (balance and turnover of financial means on bank accounts).

According to tax legislation, financial institutions draw up and submit the following documents to the tax authority:

- the certificate regarding the opening of bank accounts - when opening bank accounts for interested persons, the financial institution is obliged to inform the tax body on the same day;
- the certificate regarding the modification or closure of the account - the financial institutions will inform the fiscal body on the same day about the modification or closure of the bank account;
- the spine of the suspension provision - the suspension provision is issued in case of committing some violations. In this sense, a document is issued which is completed both by the fiscal body and by the financial institution, being, subsequently, kept in the file of the taxpayer.
- information regarding the full or partial execution of the collection order - if the taxpayer has funds in his bank account, the financial institution is obliged to execute, within the limits of these funds, the collection order of the fiscal body;
- the information notice regarding the balance available in the bank accounts - in the event that the taxpayer does not have funds in his bank account to settle, in whole or in part, the tax obligation, the

financial institution remits the collection order to the tax body, on the day of receipt, making the mention on it about the total or partial lack of means;

- the information regarding the circulation of funds, the balance on the bank accounts, the transactions and operations carried out - the respective document will be authenticated by the signature of the head of the financial institution, and the information will be presented to the tax authority for each separate bank account.

In turn, according to the procedures established by law, the State Fiscal Service draws up and sends the following documents to the address of the financial institution:

- the certificate regarding the recording of bank accounts - the document contains information regarding the acceptance of the State Fiscal Service to record the taxpayer's bank account. The document is confirmed by signature;

- refusal to register the bank account for tax purposes - for certain internal reasons, the State Fiscal Service may limit the taxpayer's right to use new bank accounts. Respectively, the fiscal body expresses its refusal to confirm receipt of the new bank account in its records;

- the provision regarding the suspension of operations on the taxpayer's bank accounts - the fiscal body can remit both the financial institution in which the taxpayer has bank accounts, and the provision regarding the suspension of operations on his bank accounts;

- collection order on the taxpayer's bank accounts - starting with the day following the day in which the arrears appeared or in which it was learned about its appearance, the fiscal body is entitled to submit collection orders, which have the value of executive documents;

- the communication about the cancellation of the provision regarding the suspension of operations on the taxpayer's bank accounts - this provision is canceled once the violation for which the suspension was applied is liquidated;

- bank subpoena - by means of the bank subpoena, the person is invited to the tax body to submit documents or present other types of information, relevant for the determination of the tax liability State Fiscal Service. [1]

These documents, whether they are generated by financial institutions and sent to the State Fiscal Service or vice versa, are created in electronic format and are transmitted through the automated document circulation information system. In accordance with Art. 167 and art. 197 of the Fiscal Code, the Main State Fiscal Inspectorate issued Order no. 284 of 19.04.2012, according to which "electronic documents confirming the opening, modification, closing or fiscal registration of bank accounts, suspension of transactions on bank accounts, as well as information on the balance and circulation of financial means on bank accounts, will be transmitted and received mandatory through the SIA CCDE between the State Fiscal Service and financial institutions. As the technical administrator of the information system of the State Fiscal Service, ÎS "Fiscservinform" has the responsibility to administer, maintain, develop and maintain the operation of the SIA CCDE.

The document circulation system between the fiscal body and financial institutions brings numerous advantages, improving the quality, speed and transparency of the process of optimizing the administration and management of fiscal obligations, based on the principle of equity. Among the obvious benefits are:

- safe and centralized storage of documents, eliminating the need for additional costs for transport and courier, as well as saving materials such as paper and office supplies;
- the use of modern IT systems allows for a significant reduction in the response time between submitting the taxpayer's request and receiving a response, facilitating the administrative process;

- the implementation of this system leads to a streamlining of the internal stages required in a specific procedure, which allows the reduction of the number of officials assigned to execute the activities of the process, freeing human resources for other tasks.

Another aspect of the collaboration between the State Tax Service and commercial banks is related to tax management in terms of taxpayer compliance. This involves procedures for the forcible collection of assets from the accounts of defaulting taxpayers, as well as other tax administration measures such as collection or provision of cash flow information.

The suspension of operations on bank accounts is an action carried out by the authorities with powers defined by law and has the objective of restricting the rights of taxpayers and other persons to whom the suspension procedure is applied, in terms of the use of available funds or those to be deposited in bank accounts, with the exception of those intended for credit and temporary accounts for the accumulation of social capital, as well as accounts of natural persons who are not involved in commercial activities.

The authorities empowered by law to suspend operations on bank accounts issue suspension documents (in the form of provisions, ordinances, etc.) which they transmit to banks through the electronic exchange of information, in banks where taxpayers and other persons who may be affected by suspension procedure have open accounts.

When receiving a stay of execution document, banks are required to:

- register the suspension document in accordance with the bank's internal procedures;
- stop the operations in the bank accounts according to the provisions of the suspension document, with the exception of the operations that are allowed in accordance with the legislation in force;
- provide information to the issuing body of the suspension document regarding the availability of funds in the accounts, when this information was requested;
- the seizure of funds from bank accounts is carried out by the authorities authorized by law, in order to ensure the execution of executive documents;
- mark on a copy of the enforceable document the date and time at which it was received for enforcement.

If the balance of the bank account is not sufficient to cover the amount specified in the enforcement document, the bank will apply the seizure to the extent of the available means and will inform the body issuing the enforcement document about the amount for which the seizure was applied. As the funds accumulate in the account, the bank has the obligation to attach them until the full amount indicated in the enforcement document is secured.

The indisputable collection of funds from the bank accounts of the taxpayer/debtor is carried out by the bank based on the collection order issued by the person authorized by law with this right. The collection order is issued in the state language and is forwarded both to the account opened in Moldovan lei and to the account opened in foreign currency, depending on the account and currency indicated in the collection order. [6]

Commercial banks in the Republic of Moldova carry out monthly withholdings and financial transfers in favor of the Population Support Fund. This fund was created with the aim of financing programs with a special purpose in the field of social assistance, supporting social services included in the minimum package of social services in accordance with Government regulations, as well as financing

other social assistance measures established by the Ministry of Labor and Social Protection. Also, the fund supports the remuneration or increments for staff working in the field of social assistance and involved in social projects financed from external sources, within the limits of the allocations provided in the agreements or memoranda of understanding signed between the Ministry of Labor and Social Protection and the development partners. The fund also provides financing for social aid canteens.

One of the extended ways in which the Population Support Fund is financed consists of transfers obtained through mandatory additional payments, which represent 0.1 percent of the total amount paid by individuals for the purchase of foreign currency in cash and traveller's checks in foreign currency in exchange for cash. These transactions take place at foreign exchange offices and licensed banking institutions that carry out cash foreign exchange activities with individuals, including through currency exchange devices.

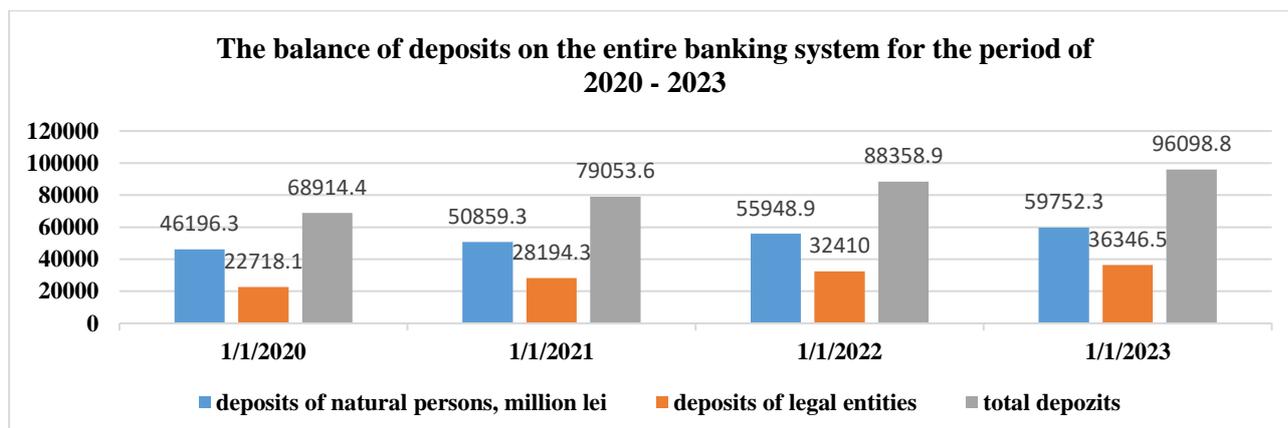
Banking institutions/currency exchange points are obliged to provide monthly, by the 25th of the month following the managed period, reports on payments to the Population Support Fund in the form specified by the State Fiscal Service. This reporting of payments to said fund must be done using automated electronic reporting methods as a priority.

Commercial banks/exchange points are obliged to transfer the accumulated amounts monthly, until the 25th of the immediately following month, to the treasury accounts of the second-level local budgets, depending on the location of the locality, according to the payment method through the treasury system of the Ministry of Finance. [4]

Commercial banks in the Republic of Moldova and government institutions, especially the State Fiscal Service, constantly maintain a close collaboration, which means that commercial banks contribute to the withholding of tax due from interest paid to individuals.

According to the Law on the modification of some normative acts no. 257 of December 16, 2020, which entered into force as of January 1, 2021, an amendment was made to Article 90 (1) of Fiscal Code no. 1163/1997. According to the provisions of this law, interest paid to resident natural persons, calculated as of January 1, 2021, is subject to taxation.

Following this change, banks, savings and loan associations, and issuers of corporate securities initially applied a 3% tax rate on interest paid to resident individuals. However, according to the Law on the modification of some normative acts no. 356 of December 29, 2022, amendments were made to article 901 paragraphs (37) and (38) of the Fiscal Code of the Republic of Moldova. Thus, banks now withhold a tax of 7% from the interest paid to resident natural persons for the balances of deposit accounts, current accounts and card accounts. In addition, banks acting as primary dealers apply a tax rate of 12% on income in the form of interest and/or capital growth obtained by natural persons from government securities issued by the Ministry of Finance of the Republic of Moldova.



**Figure 1. The balance of deposits throughout the banking system for the period January 2020 - January 2023, million lei**

*Source: Prepared by the author based on the "NBM Report: Structure of deposits in the banking sector" <https://www.bnm.md/bdi/pages/reports/drsb/DRSB10.xhtml> (cited 16.10.2023)*

If we evaluate the impact of the introduction of the tax on the interest paid to individuals, we can see that the total balance of deposits in the entire banking sector registers a positive trend, in the sense of increasing the level of deposits in the bank, which attests to the fact that the level of taxation and the increase of the tax rate from 3% at 7%, it did not negatively influence the decisions of the population, which reflects the increased confidence of individuals in the banking system or more attractive interest rates. (figure 1).

In the Republic of Moldova, the state securities market was established in 1995. Since then, the Ministry of Finance, which issues state securities, in collaboration with the National Bank of Moldova as a state agent, has implemented a series of measures to develop a modern financial market:

- a) organized the primary market of state securities based on the principles of transparency and fair competition between participants;
- b) they created a system of primary dealers with the aim of ensuring the subscriptions of state securities and developed the secondary market of these securities;
- c) have guaranteed the safe and secure registration of ownership of state securities within the system managed by the Central Single Depository of Securities.

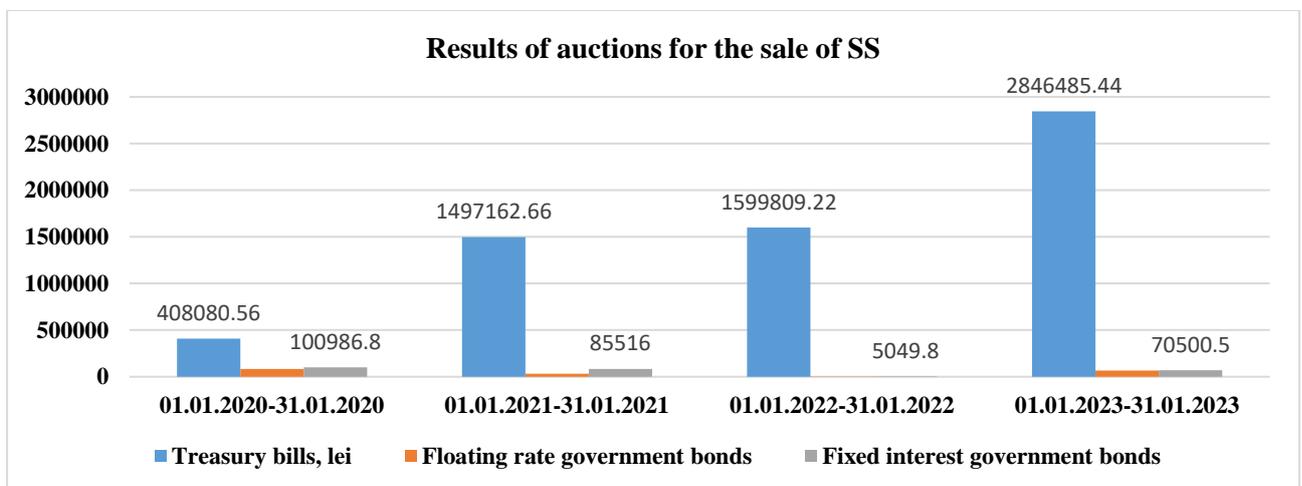
The state securities market (SSM) in the Republic of Moldova operates through commercial banks that have the capacity of primary dealers. These banks have concluded agreements with the National Bank of Moldova to perform the functions of primary dealer on the state securities market.

Primary dealers have the opportunity to participate in the SS placement auctions in their own name and on their own account, but also on behalf of their customers at their request. Customers of primary dealers can be both natural and legal persons, resident or non-resident.

The National Bank of Moldova, in accordance with the criteria established for the selection of banks as primary dealers and according to the assessment of their activity, decides on the list of primary dealers. The NBM also conducts quarterly analyzes of the activity of primary dealers and may suspend the agreement on the performance of primary dealer functions in case of non-compliance with the criteria.

If we analyze the volume of VMS realized, we also observe a positive dynamic (figure 2.). According to Figure 2, we can see that all types of State Securities (SSM) auctioned have seen significant increases in sales volumes, which is largely due to the attractive interest rates offered.

The evolution of the state securities market in 2023 was influenced by the high level of the inflation rate in 2022 and the measures adopted by the National Bank of Moldova (NBM) in order to combat inflation. During the year, the NBM increased the base rate from 8.50% to 21.50% and increased the reserve requirement in the national currency, the Moldovan leu (MDL), from 28% to 40%. In this context, interest rates for VMS with a maturity of 1 year increased from 9.88% to 21.85% in November 2022. However, starting in December, the NBM adopted an opposite approach by reducing the base rate and the reserve requirement mandatory in MDL.



**Figure 2. Results of auctions for the sale of State Securities for the months of January 2020- January 2023, lei**

*Source:* Prepared by the author based on "Results of auctions for the sale of State Securities" <https://www.mf.gov.md/ro/datoria-sectorului-public/rezultatele-licitatiilor> (cited 16.10.2023)

Today's business environment is characterized by continuous change, and volatility, uncertainty, complexity and ambiguity are its defining features. These conditions have created opportunities for the implementation of new technologies, against the background of the evolution of consumer demand.

Commercial banks have adopted a proactive approach to these changes, orienting their strategies towards organic development, business model reorganization and the launch of innovative digital products. The banking industry is undergoing exponential evolution, transforming service channels, technologies and methods of customer interaction.

Consumer behavior has changed rapidly, moving from the traditional banking model to a preference for modern technologies, self-service and remote servicing. Banks have implemented digital initiatives that allow customers to access a wide range of products and services without the need to physically travel to branches. In addition, online banking has introduced the concept of "digital onboarding," allowing individuals to become online customers in a simple and efficient way.

Collaboration is an essential element in this ever-changing business environment. Both internally and externally, success involves cooperation between employees, customers and implemented systems.

This aspect is also valid for commercial banks in the Republic of Moldova, which must work in close collaboration with state institutions to achieve their common objectives.

At the state level, development and prosperity require the involvement of all public institutions and entities operating on the country's territory. Commercial banks have an important role in this process and harmoniously collaborate with state institutions to achieve the main objectives and contribute to the development of society as a whole. This collaboration is essential to ensure a solid foundation for economic growth and population well-being.

**Commercial bank-economic agent, directly participating in the formation of public financial resources.**

We analyzed the banking system as a link in the "bracelet" of institutions that contribute to the optimization of the fiscal management process of the obligations towards the state of economic agents and natural persons. But at the same time it is very important to mention that commercial banks are also financial institutions that are subordinate to state institutions, and at the same time they are also economic agents that carry out entrepreneurial activity, obtain income, respectively they are taxpayers that honor their tax obligations on time. Commercial banks contribute by paying taxes and fees both to the revenues of the state budget and to the budgets of administrative-territorial units.

The taxation regime of commercial banks in the Republic of Moldova is based on a series of taxes and fees that apply to financial institutions in the country. The main aspects of this taxation regime relate to the net income tax (the rate of 12% applied to the income obtained from the entrepreneurial activity). This tax is applied to the net profit obtained by the bank during a fiscal year and is determined according to the tax legislation in force.

There are also special fees that apply to banks, such as the bank deposit guarantee fee. This is a fee that banks pay to insure their customers' deposits should the bank experience financial difficulties. Value added tax, another tax owed by commercial banks, for the services they provide. This includes charging banking services such as transaction fees and other financial services. All according to art. 103, paragraph 12 (letters a-g), some financial services performed by commercial banks are VAT-exempt supplies without the right of deduction, such as: granting or transmitting credits, credit guarantees, other guarantees of cash operations and crediting, operations related to the record of deposit accounts, including deposit, settlement and budget accounts, etc. For the other services offered by commercial banks, the VAT rate of 20% is applied.

If we are to analyze the obligations of commercial banks, due in the local budgets, we mention the obligation related to the property tax. Commercial banks may be subject to property tax on the buildings, land and other assets they own. The rates and thus the amount of property tax may vary depending on the value of the assets and local regulations. The tax for the development of the territory is another obligation that commercial banks have, which is calculated from the total number of employees and is paid into the local budgets. In the same vein, commercial banks have the status of employer, which is responsible for calculating, withholding at the source of payment, transferring the fiscal obligations related to salary payments (income tax from salary payments, mandatory medical insurance premiums), and of course, social security contributions (24% of the total payroll), as well as reporting, submitting tax returns.

If commercial banks use advertising to promote their services, they may be subject to advertising fees depending on local regulations. There are other local taxes and fees that may vary depending on the location and specific business of the bank. These may include, for example, environmental charges or sanitation charges.

So, we conclude that commercial banks, both from the Republic of Moldova and from other member states of the European Union, have an ordinary tax regime, similar to that applied to economic agents carrying out an entrepreneurial activity, without any exemptions or deductions, being different only tax application rate. There are, however, in international practice, commercial banks that individually approve a tax regime, which they apply in their current activity and in their relations with clients or other state institutions.

### **Conclusions.**

In conclusion, through their activity, banks carry out mechanisms for collecting temporarily available financial resources and, at the same time, place them with commercial institutions, economic agents, households, etc. that need capital supply. In this way, banks fulfill an essential role of financial intermediation.

Commercial banking is an essential piece of the tax administration puzzle. By collecting and reporting financial information correctly, facilitating tax payments, applying strict regulations and providing information on undeclared accounts, commercial banks contribute significantly to increasing the quality of tax administration and optimizing the tax management of taxpayers' obligations. These institutions not only help in making taxpayers pay, but also in ensuring fairness and transparency in the tax system, which is essential for a country's sustainable economic development.

In order to improve the process of collaboration between commercial banks and state institutions in the tax field, we propose the following measures:

1. informing the banking business environment about the changes and plans in the field of tax administration that may affect their activity;
2. organizing work sessions to analyze and properly understand the changes that have occurred in the field of fiscal administration and to implement them effectively in daily activity;
3. identifying, in collaboration, the solutions for the problems that may arise in the fiscal administration process;
4. research and implementation of digital solutions that reduce costs and facilitate collaboration between commercial banks and state institutions in the fiscal field.

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## DIGITAL FINANCIAL ASSETS IN THE CONTEXT OF THE CURRENT CONFIGURATION OF THE BANKING INDUSTRY

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**Abstract.** In the current context, the need to study the role of digital financial assets, in particular banking assets, is gaining more and more attention, as we are living in a time when these assets seem to be moving towards a „consensus" or rather a general adoption. Users of digital financial assets range from retail customers to traditional banks and financial service providers. There are different views on the essence and content of digital banking assets, the attitude of authorities towards these assets, the technologies that underpin them, the regulation of these assets, and the prospects for their evolution both in terms of forms of development and number of transactions. The aim of this research is to study digital financial assets, specifically in banks. An important role will be devoted to the role of central banks and their contribution to the management and issuance of digital financial assets. We will analyse the impact of the development of digital financial assets on the global financial system and how these digital assets change the payments system. We will analyse the strengths and weaknesses of banks' digital financial assets compared to cryptocurrencies. Research methods will be description, comparison and synthesis. Accordingly, we will elucidate the phenomenon of digital financial assets in the domestic market and in international practice.

**Keywords:** digital assets, banking, convergence, information technology, globalization, regulation

JEL Classification: F65, F69, G21, G28, O31

### Introduction

Currently, we all feel the benefits and inconveniences of the virtual world. Everyday life is becoming increasingly digitalized and this means that most traditional assets are being transformed into digital assets.

Digital assets are any „electronic record" that we own under license or manage. To qualify as a „digital asset", you need the following conditions: it is an online account or digital file that you can access online, via your phone or PC, and that requires authentication. These include an email, online bank account, social media accounts, cloud and digital photos, etc.

If we talk about „digital banking assets", digital assets are only the online bank account, not the money in the account. From the category of accounts, which are currently digitized, we can list: term deposit accounts, credit accounts, including mortgages, accounts associated with cards, electronic trading and brokerage accounts, credit monitoring and budgeting services, cryptocurrency platforms and crypto assets, insurance accounts (such as for car insurance, home insurance, life insurance, health insurance).

Digital bank files can include documents, photos, account statements, while software can include financial, legal and tax software, mobile and WEB applications.

### **I. Risks associated with digital banking assets**

The emergence of new digital products and the rapid adoption of IT in the financial sector has not only a positive effect, but also comes with certain challenges (risks). So one of the most difficult to regulate financial market instruments are digital assets. The biggest controversies are related to cryptocurrencies. In some countries, cryptocurrencies can be used as payment instruments. For example, the European Union has not yet enacted requirements to regulate cryptocurrency transactions, but some companies are allowed to make payments with digital currencies.

The risks associated with the development of the digital private money market are largely related to the lack of control over such operations by the state. Given the non-mandatory identification of users of crypto platforms and owners of crypto wallets, there is a *risk of fraud and tax evasion*. In this case, the mandatory authorization and identification of participants in the crypto market would help increase its transparency. However, this measure could not fully compensate for these risks.

The fact is that when the cryptocurrency market is small, the lack of monetary regulation does not have such a noticeable impact. The situation may change as the share of digital money in circulation increases.

Even in the case of the implementation of monetary policy, the result will be reduced, since the central bank is not able to fully control and regulate the issuance of private cryptocurrencies. Payment transactions in cryptocurrencies can uncontrollably increase the money supply because they remain „invisible” to the central bank until the person wants to withdraw them in the central bank's currency. In this way, forecasting and regulating the circulation of money becomes a difficult task. This, in turn, increases *inflation risks*.

As for investing in cryptocurrencies to generate additional income, the high volatility of the market causes high risks of investment loss.

The opportunity to quickly make money from exchange rate dynamics constantly attracts new users to the crypto market. This allows, on the one hand, to introduce modern investment instruments, and on the other, involves people in the investment process, including those from countries with underdeveloped financial systems.

However, the quick desire to make money can lead to losses due to an unplanned decline in the value of digital assets.

In addition to the difficulty of predicting the price dynamics of digital assets, fluctuating cryptocurrency exchanges also pose a risk to investors.

For example, some crypto platforms Thodex from Turkey, Africrypt, Finiko from Russia went bankrupt and investors lost their money [Luzgina, 2022].

The digital asset industry is expanding and this manifests itself on the evolution of the financial market. The use of digital assets in traditional financial services (TradFi) carries risks and imposes new areas of application on supervisors.

Banks are increasingly exploring digital assets. Financial institutions use digital cash and central bank digital currency, issuance of digital bonds, digital asset trust, blockchain-based payment instruments.

„Financial institutions continue to explore the potential of payment services based on blockchain or digital assets. In Deloitte's December 2021 Merchant Adoption of Digital Currency Payments Survey in collaboration with PayPal, nearly three-quarters of respondents reported that they plan to accept payments in cryptocurrencies or stablecoins in the next 24 months. Moreover, 87% of merchants agreed that organizations that accept digital currencies have a competitive advantage in the market” [Deloitte, 2023].

TradFi should re-evaluate its approach to risk management and compliance.

Traditional risk assessment and annual assessment are inadequate for managing risks related to digital assets. There is also a lack of a standard on the necessary controls.

*The money laundering risk* linked to cryptocurrencies is becoming a barrier to adoption by TradFi. It is more difficult to detect the origin of financial assets. Financial crime compliance programs will require advanced staff expertise to keep up with the risks.

Banks face challenges integrating crypto and FinTech issuer clients as they find it harder to assess their *counterparty risk* for digital asset business models.

Table 1 shows the global digital asset adoption index on 12 September 2023. Are presented the top-20 most representative countries. Most countries are in the Central & Southern Asia and Oceania region and Latin America.

**Table 1. The 2023 Global Crypto Adoption Index Top 20 on September 12 2023**

Country	Region	Overall index ranking	Centralized service value received ranking	Retail centralized service value received ranking	P2P exchange trade volume ranking	DeFi value received ranking	Retail DeFi value received ranking
India	Central & Southern Asia and Oceania	1	1	1	5	1	1
Nigeria	Sub-Saharan Africa	2	3	2	1	4	4
Vietnam	Central & Southern Asia and Oceania	3	4	4	2	3	3
United States	North America	4	2	8	12	2	2
Ukraine	Eastern Europe	5	5	3	11	10	10
Philippines	Central & Southern Asia and Oceania	6	6	6	19	7	7
Indonesia	Central & Southern Asia and Oceania	7	13	13	14	5	5
Pakistan	Central & Southern Asia and Oceania	8	7	7	9	20	20

Brazil	Latin America	9	9	11	15	11	11
Thailand	Central & Southern Asia and Oceania	10	8	15	44	6	6
China	<a href="#">Eastern Asia</a>	11	10	5	13	23	23
Turkey	Middle East & North Africa	12	11	9	35	12	12
Russia	Eastern Europe	13	12	10	36	9	9
United Kingdom	Central, Northern, & Western Europe	14	15	20	38	8	8
Argentina	Latin America	15	14	12	29	19	19
Mexico	Latin America	16	17	18	30	16	16
Bangladesh	Central & Southern Asia and Oceania	17	18	19	33	22	22
Japan	<a href="#">Eastern Asia</a>	18	22	21	49	18	18
Canada	North America	19	25	23	62	14	14
Morocco	Middle East & North Africa	20	27	25	21	26	26

Source: based on Chainalysis (2023)

### **Regulation of banks dealing in digital assets**

Thus, the International Monetary Fund sees the need to adopt uniform cross-state principles and standards in the area of digital asset regulation. There is a need to develop special regulation of digital asset transactions at the national level, which should include licensing and control of digital asset service providers. Adapt current legislation to regulate the functioning of the digital asset market in those market sectors where it is objectively necessary. Improving risk management, introducing capital adequacy requirements, liquidity and other standards for financial companies trading in digital assets is key to the stable functioning of the digital asset market, according to the IMF.

For its part, the Basel Committee on Banking Supervision published in June 2021 a consultation document on the prudential regulation of risks associated with crypto-assets. The main proposals include dividing all crypto assets into two risk groups. The risk weights in the first group may vary and, traditional tokenized assets will generally be subject to the same rules for determining credit and market risk weighted assets as the corresponding traditional assets.

In the second group of crypto assets, the risk weight is always 1250%.

Banks with direct or indirect holdings of crypto-assets will be subject to the supervisory review process (Pillar 2) established by the Basel capital adequacy framework.

The Basel Committee document also defines additional responsibilities for banks, including the development and implementation of a system to assess the risks associated with crypto assets, including the coverage of operational and cyber risks. Banks must be guided by the FATF2 rules on anti-money laundering and counter-terrorist financing. As for supervisors, they determine requirements at national level for banks working with crypto assets, including taking into account additional risks in stress tests, making changes to capital requirements, creating additional buffers for underestimated risks and introducing additional limits.

As banks continue to explore digital assets, regulators have created processes to protect the banking system. In the US, a joint statement was issued by supervisors outlining the main risks to banks

associated with digital assets and participants using digital assets. Banks were instructed that they must seek written permission from supervisors before engaging in certain activities with digital assets and must demonstrate that they have adequate risk management tools in place before undertaking activities such as providing trust services to customers who hold cryptocurrencies.

The possibility of introducing blockchain technology for processes and procedures relating to customers, transactions and sanctions is also being explored.

Regulators are seeking to create greater supervisory discipline among market participants to protect customer interests.

Banking regulators are treating new digital asset product offerings much like new licensing efforts, meaning that business plans, financial, governance, risk and compliance documents will need to be developed and reviewed before a license is obtained.

In order to launch any digital asset product offering, banks will need to train staff in digital asset risk management.

## **Conclusions**

TradFI is taking advantage of increasing regulatory clarity and trying to gain a more market share. New ecosystems are developing blockchain-based infrastructures and solutions to create innovative business models and disrupt traditional ones.

Working with innovative tools such as cryptocurrencies certainly involves a number of risks.

Private cryptocurrencies are traditionally seen as speculative financial assets. In order to reduce and diversify risks and to increase the efficiency of people operating with digital assets, digital literacy of the population is necessary. However, an equally important condition for the efficient functioning of the market is the formation of transparent and understandable rules for all participants.

Banning crypto-trading in some countries, while allowing it in others, may lead to the formation of regional crypto-centers, create further imbalances in the development of individual countries' financial markets and increase the underground economy and the flow of capital to more favorable jurisdictions, and leave the national financial systems of countries less open to innovation lagging behind in digital development.

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## AGILE TRANSFORMATION IN BANKING: OPTIMISING MANAGEMENT PROCESSES FOR MAXIMUM PERFORMANCE

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**Abstract:** The purpose of adopting the Agile methodology in banking is to help banks, regardless of size and legacy, optimize their processes to operate like agile startups. The Agile methodology enables banks to form dedicated teams to rapidly introduce new functionality, collaborate across functions to identify future growth directions, and provide technology leaders with the tools necessary to ensure that the IT infrastructure scales efficiently to support the ever-increasing diversity of business needs.

**Keywords:** banking management, banking system, agile methodology, optimize processes, performance

JEL Classification: M15: IT Management

### Introduction

Adopting Agile methodology within the banking system aims to optimize processes in various types of banks, regardless of their size and history, in a similar way to the agile approach of startups. This methodology facilitates the building of specialized teams to rapidly launch new functionalities, promoting cross-functional collaboration to identify future development directions. It also provides technology leaders with the tools to ensure a flexible IT infrastructure capable of supporting the ever-expanding diversity of business requirements.

The goal of adopting Agile methodology in banking is to help banks, regardless of size and legacy, optimise their processes to act like agile startups. Agile enables banks to create dedicated teams to rapidly roll out new functionality, collaborate across functions to identify next directions for growth, and provide technology leaders with the tools to ensure their IT infrastructure can grow efficiently and support the ever-increasing diversity of business needs.

### Optimising banking processes by implementing Agile methodology

To optimise banking processes by implementing Agile methodology, banks need to have the following major **advantages** to benefit all stakeholders, including customers:

1. Banks need to address critical issues effectively. By adopting Agile practices, banks will gain a major advantage in effectively addressing critical issues. Agile methodologies focus on incremental and iterative product development, allowing banks to immediately address and adapt improvements and feedback received from users.

Through the incremental approach, each iteration allows banks to identify and fix errors in the product, contributing to its continuous improvement. These benefits apply not only to products but also to banking processes. Different teams can collaborate more effectively and regularly to adjust the process based on feedback.

Adopting Agile practices therefore enables banks to quickly and efficiently address critical issues, optimise products and processes and deliver an improved customer experience. This iterative and adaptive approach allows banks to stay in step with the ever-changing needs and requirements of their customers, thus giving them an added value and competitive advantage in the market.

2. Banks need to be responsive and customer-centric. Agility helps banks to be responsive and more focused on customer needs. By applying Agile principles, banks can work more effectively with customers to develop products and services together. As the banking industry is subject to ever-changing government policies and regulations, collaboration with customers becomes critical.

By adopting an Agile approach to project management, banks can solicit regular feedback from customers, both before and after the launch of products or services. Continuous feedback collection helps to increase the ability to respond promptly to customer needs and to adapt products and services according to the feedback received. This constant feedback process helps companies become more responsive and customer-centric as they work closely with customers to provide better solutions and ensure that their products and services optimally meet customer needs and preferences.

3. Promotes collaboration between teams. Fostering collaboration between teams is one of the key aspects of agility. The Agile Manifesto stresses the importance of people and interactions over processes and tools. In the context of banking, the agile philosophy encourages direct communication as the most effective way to transmit information and collaboration between agile teams. This approach has significant benefits as teamwork plays a key role in banking.

Implementing Agile methodologies in the banking system allows different teams to communicate and share ideas, collaboratively tackling complex problems. By regularly sharing information between teams and employees, the accuracy and efficiency of banking operations is improved. This means that banks can benefit from a greater collective understanding of challenges and opportunities, allowing them to find better solutions and make more informed decisions. Effective collaboration between teams also brings synergies and innovation, helping to develop banking products and services in a way that is faster and more responsive to customer requirements.

4. Improved transparency and productivity. Implementing agility in banking brings with it benefits in

terms of improved transparency and productivity. One of the key aspects of agility is the promotion of transparency according to the values expressed in the Agile methodology. In this case, the emphasis is that all employees involved in the project should have access to essential information and that there should be no secrets about it.

By promoting transparency and accountability, banks can become more efficient and confident. Banks can win public support, protect their independence and improve the effectiveness of their policies. By disclosing relevant information and taking collective responsibility, banks can create an environment where decisions and actions are more transparent and better understood by all stakeholders. This leads to greater trust and understanding on the part of customers, employees and other stakeholders.

Transparency also improves productivity as employees have access to the information they need to do their jobs more efficiently. They can better understand goals and priorities, collaborate more effectively with colleagues and make informed decisions in a timely manner. Transparency also supports a culture of continuous learning and improvement, as mistakes and opportunities for improvement can be identified and addressed in an open and constructive way.

5. Regular reflection and adjustment. The fifth way in which agility helps to transform banking is to become better and more efficient every day. One of the key principles of the Agile methodology stresses the importance of reflecting and adjusting behaviour to become more effective. This principle encourages communication between teams and employees so that they can constantly learn and improve.

Given the evolving nature of banking processes, retrospective meetings after each iteration allow management and teams to collaborate, communicate and discuss the limitations of existing banking processes and ways to improve them. By constantly evaluating performance and identifying opportunities for growth and efficiency, banks can continually adjust and improve their practices and processes.

This agile approach encourages learning from experience and adaptability to change, allowing banks to quickly adapt to new market requirements and implement incremental improvements. By addressing iterative cycles of assessment and adjustment, banks can identify and eliminate problems and bottlenecks that could hinder efficiency and innovation.

Thus, by integrating a continuous improvement mindset, banks can become better and more efficient over time, adapting to changing needs and requirements and strengthening their market position. Through this agile approach, banks can optimise their operations, increase their performance and remain competitive in an evolving banking environment.

6. Banks need to restructure their organisational structure. The last significant way in which banking agility will transform banks is by restructuring their working culture, operational mechanisms and processes. By adopting agile practices, banks will experience a change in the way they operate, with a greater emphasis on customer centricity, collaboration and transparency.

Agility will promote a working culture where all banking teams will have a broader understanding of the whole process and develop better ideas to achieve common goals. It will create an environment where teams can collaborate more effectively, sharing information and experiences to improve banking processes and provide better, more customer-centric services.

By improving communication and collaboration between departments and teams, agility will help eliminate organisational silos and promote a more integrated and synergistic approach within banks. Teams will work together to identify and solve problems, find innovative solutions and bring about continuous improvements in banking processes.

By implementing transparency at all organisational levels, agility will enable employees to have a clearer and more comprehensive view of banking activities and objectives. This will promote individual and collective accountability and facilitate more informed and effective decision-making.

By transforming the working culture, mechanisms and processes, banking agility will contribute to increasing operational efficiency, developing innovative products and services and creating an enhanced customer experience. By adapting to rapid changes in the market and addressing challenges and opportunities in an agile way, banks will be able to remain competitive and adapt in a rapidly evolving financial environment (Figure 1).

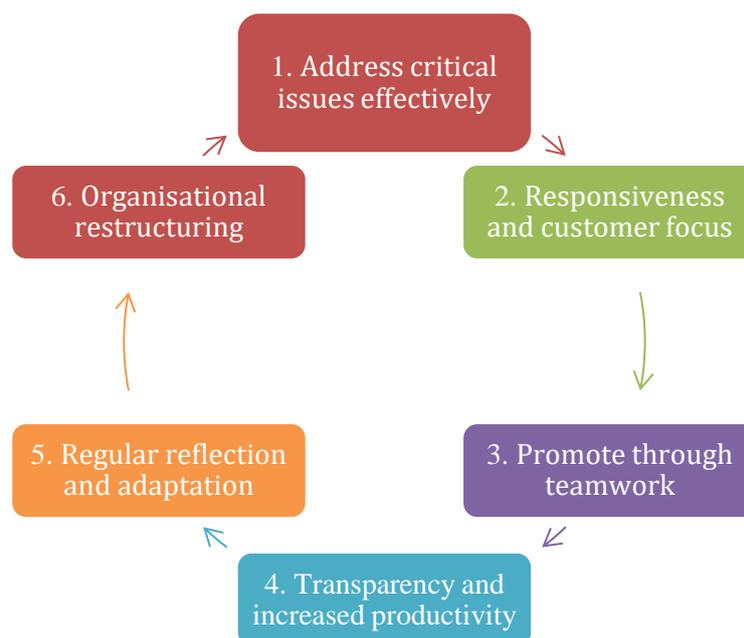


Figure 1 Optimizing banking processes by implementing Agile methodology

Source: authors own study

**The agile approach involves developing software in incremental and rapid cycles: the focus is on customer and bank interactions, with less emphasis on processes and tools. Priority is given to responding to change rather than detailed planning. According to the Agile model, each banking product or service needs to be approached differently and existing methods need to be adapted to fit the specific banking service. The Agile process is popular because of its unique features such as flexibility and adjustability. The**

agile process model is an iteration-based approach to software development. Like an iterative model, the agile method breaks the project down into smaller components and involves long-term planning. These smaller components are addressed in iterations, each lasting approximately three weeks. These iterations in turn involve cross-functional teams working in different areas, including requirements, design, construction/iteration, testing, implementation and feedback. At the end of each iteration, a product is presented to customers and other key stakeholders.

The agile method offers the flexibility to make changes at any time to the banking product to meet its requirements. In addition, incremental testing reduces potential risks. However, continuous interaction with customers can involve additional effort from everyone involved, including stakeholders, customers, testing teams and development teams.

The Agile methodology provides a project management method called Scrum - a well-known framework that adopts the agile approach and relies on small cross-functional teams to work on projects. The core principle of Scrum is the recognition that the world is complex and unpredictable, making it difficult to accurately predict end results, timelines, costs and quality. These issues are discovered and learned during the process of delivering the product or service.

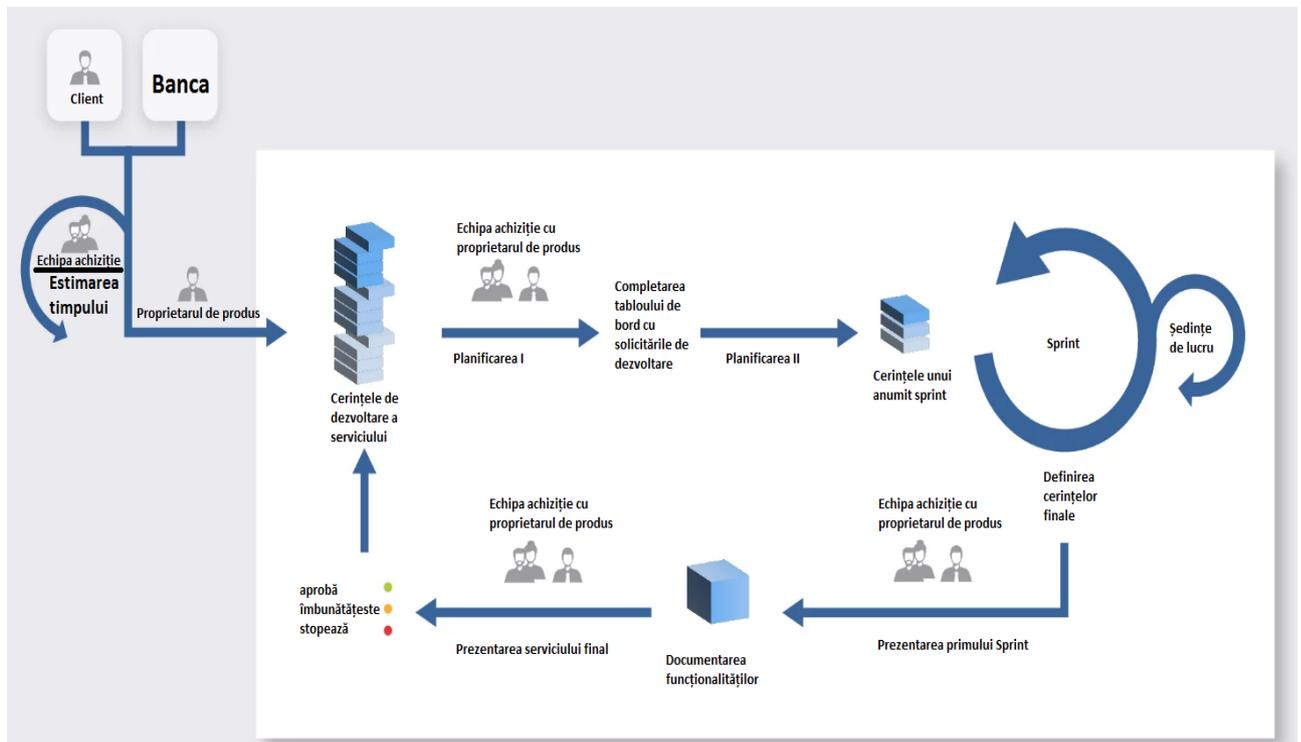
Scrum principles are not limited to specific projects, but can be applied in different contexts in order to be more efficient and achieve better results. In Scrum, results are achieved through iterative work, with each iteration being called a Sprint. Teams work in sprints, shorter periods of time.

In this context, a list of written requirements is used and the product manager (product owner) prioritises them and breaks them down into tasks for the team. The team has daily meetings where individual members take responsibility for the specific tasks they are working on. The team's daily progress is recorded in a chart to highlight progress. At the completion of the Sprint a demonstration is presented to the Product Manager. In addition, the team has retrospective meetings where they discuss lessons learned and knowledge they can apply in the next Sprint to become more effective.

Scrum consists of three stages: Pre-Sprint, Sprint and Post-Sprint. Scrum teams use a concept called the Development Requirement Dashboard, which is a list that mainly contains the technology and business requirements as well as the features needed for the banking product. Each team has a product owner or product manager responsible for creating technical requirements and monitoring the project. The project manager has a business-oriented perspective and may not be as involved in the technical aspects of product development. For this reason, technical colleagues and managers can contribute suggestions and features to consider.

Project managers go through the development requirements and select the features that will be included in the banking product release as part of the banking product development requirements. All the elements needed to implement the features are written into the requirements of a particular sprint, which is a part of the lifecycle of a banking product or service. The work required to complete the feature implementation is done in sprints, which typically last 30 days. There are meetings where the product owner decides what

features will be included in the next Sprint, and the development team decides what requirements are needed to deliver those features. Plan together the activities to be done in the Sprint. The planning phase ends with the setting of Sprint goals, called Sprint achievements. If some features cannot be completed within a Sprint, the Sprint objectives can still be achieved (Figure 1).



**Figure 2. Schematic presentation of the development of a banking service applying the Agile methodology**

Source: authors own study

After the completion of a sprint, meetings are held where the team reviews the process and looks back at what has been achieved. This stage is crucial to assess progress and understand the technical aspects of the work done. The features developed are also demonstrated to customers. Post-sprint meetings are important to get feedback and identify what needs to be considered in the next iteration, as well as to determine what processes can be optimised, what can be done differently and more efficiently. These meetings conclude with the development of a plan for the next phase of the project.

A graphical chart is used to monitor the progress of the project. This chart illustrates the amount of work left to be done each day. The amount of work is expressed in hours and is measured by the number of days remaining in the sprint. Work hours are reduced according to daily reports from team members, which record the hours spent on each task and the progress made as a percentage. This allows the project manager to monitor daily progress and react accordingly.

## Conclusion

The Agile approach involves developing software in rapid, incremental cycles, focusing on interactions between customers and the bank, and reducing the importance of processes and tools. Priority is given to adapting to change rather than detailed planning. According to the Agile model, each banking product or service should be approached in a unique way, with existing methods adapted to suit the specifics of banking. The Agile process is popular because of its unique features such as flexibility and adaptability.

The Agile methodology offers the flexibility to make changes to the banking product at any time to meet its requirements. Incremental testing also reduces potential risks. However, continuous interaction with customers may require additional effort from all parties involved, including stakeholders, customers, testing and development teams.

A chart is used to monitor the progress of the project. This graph illustrates the amount of work remaining to be done each day. The amount of work is expressed in hours and is measured by the number of days remaining in the sprint. Work hours are reduced according to the daily reports of the team members.

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## **FRAUD DETECTION IN FINANCIAL TRANSACTIONS USING IOT AND BIG DATA ANALYTICS**

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**Abstract:** Credit cards, mobile wallets, and other electronic payment methods are gaining popularity. Online transactions are increasingly the norm — global fraud increases as electronic payments increase. As credit cards and online shopping become increasingly popular, fraud has skyrocketed. Fraud detection and prevention are being prioritized due to the global economy.

**Keywords:** Big Data Analytics, Apache Spark, SMOTE, Ensemble Learning Methods, Fraud Detection, Sequential Model.

JEL Classification: G21, G23, C8

The trillion-dollar fraud business threatens financial loss and financial institution trust. Financial fraud detection could avert trillions in losses. Thus, detecting fraud is one of the most challenging real-world problems. Unbalanced datasets with more "normal" samples than fraud cases impair fraud detection. Rapid fraud changes complicate training cutting-edge machine learning classifiers. If there were more labeled datasets in real-world settings, fraud detection solutions could learn from the events in the training dataset to identify fraudulent patterns. Businesses need a fraud detection solution that can be trained on unlabeled financial transaction datasets widely available in financial transaction systems to detect fraudulent occurrences accurately. This paper proposes a fraud detection approach based on a memory compression methodology (FDMCM) machine learning approach to enhance detection. We suggest using a machine learning network to identify fraudulent transactions and a novel nonlinear embedded machine learning base autoencoding layered technique to correct dataset imbalances. The proposed model has 93% success with an 80:20 training-validation dataset accuracy ratio. Because digital financial transactions are becoming increasingly commonplace, banks and other financial institutions need to have trustworthy fraud detection systems in place. Throughout the past few years, big data analytics has established itself as a vital resource for the fight against financial crime. Big data analytics helps detect fraudulent conduct by analyzing vast amounts of data derived from various sources, such as transaction records, customer profiles, and historical data [1]. Each sector—finance, government, healthcare, public sector, and insurance—is susceptible to fraud, which can manifest itself in various guises. Laundering money, cybersecurity dangers, evading taxes, making fraudulent insurance claims, forging bank checks, stealing identities, and financing terrorist organizations are all common fraud. Detecting fraudulent activity is an issue that garners a lot of interest in the data mining field. Seeing fraudulent use of credit cards is the primary focus of the vast majority of academic research on ensuring the safety of financial transactions. Typically, fraudulent dealings are characterized by several complexities. They are exceedingly unusual when put into the perspective of the millions of transactions that occur every day, and the manipulators behind them are well-organized and have thought out their plans. They would study the ideas underpinning target fraud detection systems, particularly expert-driven systems, and then develop ways to circumvent those systems [2, 4, 5].

Additionally, fraudulent transactions often conclude very fast, which is another reason why real-time fraud detection system are necessary. Recent research has made numerous attempts to develop efficient models for detecting fraud; nonetheless, many questions still have not been answered. To begin, &quot; concept drift & quot; refers to the ever-changing and dynamic

character of user patterns, regardless of whether or not they are real. The designs of transactions are influenced by various circumstances, including consumption and seasonality; fraudulent manipulators, on the other hand, must change their ways to avoid being discovered continuously. In addition, context plays a significant role in fraudulent transactions, and sequential settings are the fundamental building blocks of fraud detection algorithms. Despite this, sequential fraud detection is a field that has undergone a relatively limited amount of research. Finally, logs of financial systems often include several diverse forms of discrete data. This is because logs are multimodal documents with different attributes stated for each mode of operation. There are alternatives for preventing and detecting fraud that are both proprietary and open-source software can be utilized. The dashboard, data import and export, data visualization, customer relationship management integration, calendar management, budgeting, scheduling, multi-user capabilities, password and access management, application programming interfaces, two-factor authentication, billing, and management of customer databases are all features that are typically included in fraud analytics software [3]. In the modern digital era, financial transactions have become increasingly reliant on technology, resulting in a substantial increase in the volume and complexity of data generated during these transactions. This shift has also given rise to new challenges, especially in the realm of fraud detection and prevention. To address these challenges, financial institutions are turning to emerging technologies such as the Internet of Things (IoT) and Big Data Analytics. This paper explores the role of IoT and Big Data Analytics in enhancing fraud detection within financial transactions, focusing on their significance, implementation, and benefits devices, which include sensors, cameras, and various data-capturing tools, play a vital role in gathering real-time data about financial transactions. These devices are embedded in ATMs, point-of-sale (POS) terminals, and mobile banking applications, allowing for the continuous monitoring of transactions and their associated data [5,6,7]. The continuous flow of data generated by IoT devices enables the timely detection of abnormal or suspicious activities. Furthermore, Big Data Analytics complements IoT by processing and analyzing the vast amount of transaction data collected. It employs advanced algorithms and machine learning techniques to detect patterns and anomalies within the data. The synergy between IoT and Big Data Analytics offers financial institutions the capability to identify fraudulent activities promptly, minimizing potential losses and safeguarding the integrity of financial systems.

It highlights the ever-evolving nature of fraud detection techniques, compelling organizations to adapt continuously to emerging threats. Moreover, it underscores the pivotal role of data analytics in identifying and preventing fraud, ultimately serving to preserve trust, financial stability, and the integrity of digital transactions in an interconnected world. In a world where fraud knows no boundaries, a well-structured and proactive fraud detection system emerges as a bulwark against the tide of deception and financial risk. financial fraud detection with big data analytics is an essential topic of study.

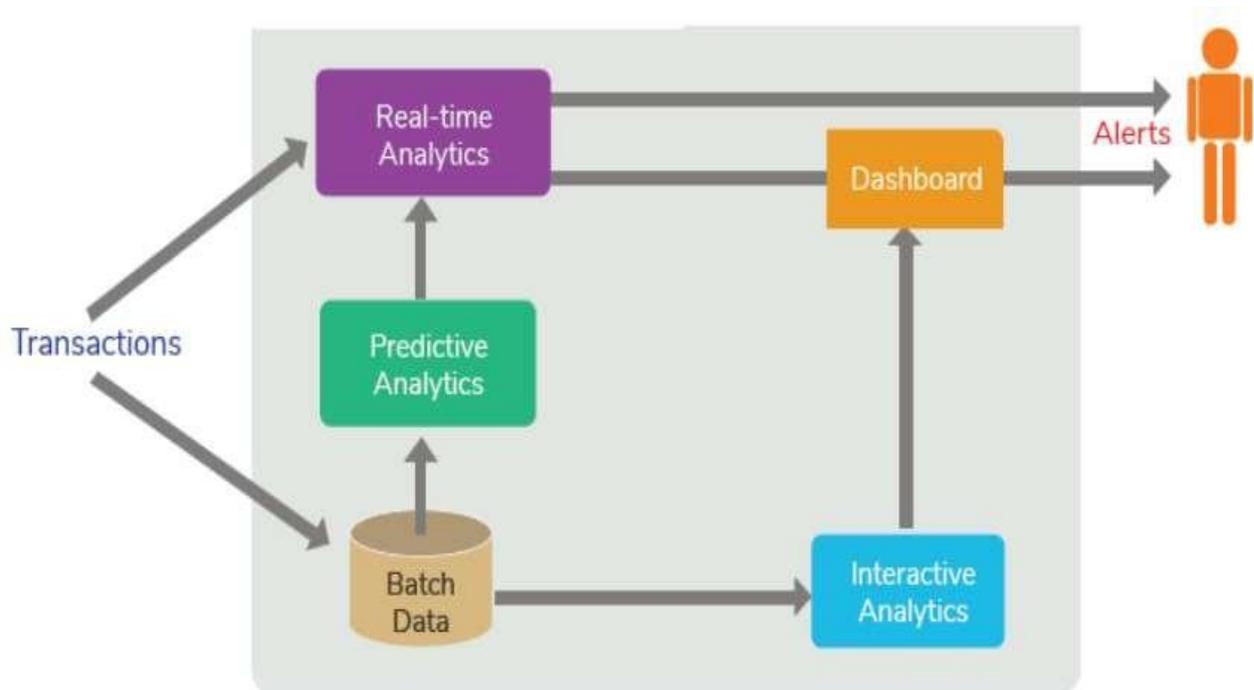


Figure 1. Basic Architecture of Fraud Detection System

Source: Own work based on [1]

Detecting fraudulent operations using conventional approaches is growing increasingly difficult as the number of financial transactions rises. This research explores the difficulties in financial fraud detection and suggests a fraud detection approach based on a memory compression methodology (FDMCM) machine learning approach to enhance detection accuracy. The proposed system harnesses big data technologies, machine learning algorithms, and graph analytics to deliver accurate and efficient fraud detection capabilities in financial transactions [8,9,10,11]. The evaluation parameters assist in guaranteeing that the system is up to snuff in terms of what is needed for a reliable fraud detection system, such as accuracy, precision, recall, processing speed, scalability, robustness, and cost. The potential fraud detection approach based on memory compression methodology (FDMCM) has much better potential when compared with other techniques. According to experimental results on the publicly available IEEE-CIS fraud dataset comprised of real-world e-commerce transactions provided by Vesta, FDMCM has significantly improved fraud detection performance compared to other machine learning methods. Our long-term goal is to develop an original, practical model for detecting fraud by learning as much as possible about the characteristics and habits of financial transactions. When it comes to detecting and preventing financial transaction fraud, the future of big data analytics is bright and holds great promise for accuracy and efficiency.

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## MODERN WAYS OF FINANCING ECONOMIC AGENTS

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**Abstract:** Financial innovation is closely linked to the evolution of technology, its dynamics being ever greater. Technology, in various forms, is increasingly present in the financial market, with consumers having to adapt to new trends. Innovation in the financial market has emerged as a natural response of consumer needs for financial products and services to technological progress in recent years.

Subject of the study consists in highlighting the need to apply financial instruments, as well as ways of financing economic agents from the Republic of Moldova in order to improve access to financing through the use of alternative sources. The future of finance is digital: consumers and businesses are increasingly turning to digital financial services, innovative market participants are implementing new technologies, and existing business models are changing. Digital finance has helped citizens and businesses cope with the unprecedented situation created by the COVID-19 pandemic. FinTech solutions have helped expand and accelerate access to loans.

The research methodology used: theoretical and statistical analysis, systemic and situational approach.

**Key words:** Innovation, financing investments, the financial market, technologies, venture capital, crowdfunding.

**JEL Classification:** D26, G3; G21; L26; M21.

### Introduction.

*The actuality of the subject.* The digital transformation of the economy has changed the innovation process and business models, including in the field of financial services. Although technological innovation in finance is nothing new, investment in new technologies has increased substantially in recent years and the pace of innovation is exponential. The use of new technologies in finance brings the promise of increased competition and new, more efficient or beneficial products and services.

*The degree of research of the problem.* The national program for promoting entrepreneurship and increasing competitiveness in the years 2023-2027, in the Evaluation Report of the Development Strategy of the Small and Medium Enterprise Sector 2012-2020 had some recommendations:

- incorporation into the regulatory and institutional framework of the concepts of crowd

funding, business angels, clusters, business takeovers;

- more attention needs to be paid to supporting innovation, which should focus on those with real potential in forward-looking sectors;
- access to finance must remain a major concern and be more sustainable, so that the focus is on beneficiaries with the potential to generate value, especially SMEs with growth potential;
- the introduction of targeted support programs to stimulate the integration of SMEs in clusters and value chains with high export potential;
- more attention should be paid to developing innovative solutions to climate change and strengthening awareness of sustainable economic development and biodiversity protection to ensure a sustainable rural economy.

The national development strategy “European Moldova 2030” (SND), approved by Law no. 315/2022 establishes as the first general objective “Increasing income from sustainable sources and mitigating inequalities” which contains three specific objectives, one of which refers to “Development of opportunities for innovations and entrepreneurship”.

We mention that the analyzed topic was developed through the contribution of local researchers such as V. Ganea, V. Cerbușca, A. Timuș et al.

*Formulation of the researched problem.* The research problem consists in highlighting the need to apply financial instruments, as well as ways of financing economic agents in the Republic of Moldova in order to improve access to financing using alternative sources.

Recognizing that innovation is a key driver of economic development, the Global Innovation Index (GII) aims to provide an innovation ranking and rich analysis referencing around 130 economies. Over the last decade, the GII has established itself as both a leading reference on innovation and a “tool for action” for economies that incorporate the GII into their innovation agendas.

If we examine the situation of the Republic of Moldova during the years 2020-2022 with regard to the evolution of the GII, we note a negative evolution in 2021, from 59 rankings to 64 in 2021. In 2022, however, there is an increase from 64 to 56.

**Table 1. The GII rankings for the Republic of Moldova (2020–2022)**

<b>Year</b>	<b>GII</b>	<b>Innovation inputs</b>	<b>Innovation outputs</b>
2020	59	75	48
2021	64	80	54
2022	56	78	46

**Source:** [https://www.wipo.int/edocs/pubdocs/en/wipo\\_pub\\_2000\\_2022/md.pdf](https://www.wipo.int/edocs/pubdocs/en/wipo_pub_2000_2022/md.pdf)

On the indicator of innovation inputs, the Republic of Moldova holds positions clearly lower than that which appreciates the results of innovations, the difference increasing from 26-27 in the years 2020-2021 to 32 in the last year of analysis.

The deciphering of the components of GII for the analyzed years is presented in table 2.

**Table 2. Deciphering the components of the Global Innovation Index 2020-2022**

Name of the components of the GII	The position		
	2020	2021	2022
<b>Pillar 1.</b> INSTITUTIONS (political environment, regulatory environment, business environment)	81	81	98
<b>Pillar 2.</b> HUMAN CAPITAL AND RESEARCH (education, tertiary education, Research & development (R&D))	75	77	62
<b>Pillar 3.</b> INFRASTRUCTURE (ICTs, General infrastructure, Ecological sustainability)	88	82	84
<b>Pillar 4.</b> MARKET SOPHISTICATION (Credit, Investment, Trade, competition, & market scale)	42	74	58
<b>Pillar 5.</b> BUSINESS SOPHISTICATION (Knowledge workers, Innovation linkages, Knowledge absorption)	88	87	79
<b>Pillar 6.</b> KNOWLEDGE AND TECHNOLOGY OUTPUTS (Knowledge creation, Knowledge impact, Knowledge diffusion)	51	54	49
<b>Pillar 7.</b> CREATIVE OUTPUTS (Intangible assets, Creative goods and services, Online creativity)	51	53	43

**Source:** [https://www.wipo.int/edocs/pubdocs/en/wipo\\_pub\\_2000\\_2022/md.pdf](https://www.wipo.int/edocs/pubdocs/en/wipo_pub_2000_2022/md.pdf),  
[https://www.wipo.int/edocs/pubdocs/en/wipo\\_pub\\_gii\\_2021.pdf](https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021.pdf)

In the last year, the Republic of Moldova performs above in four pillars, namely: Human capital and research, Market sophistication, Business sophistication, Knowledge and technology outputs and Creative outputs.

The weak points of the Republic of Moldova, reflected in the GII 2021-2022, can be seen in table 3.

**Table 3. The weaknesses of the Republic of Moldova in the GII 2021-2022**

2021		2022	
Indicator name	Rank	Indicator name	Rank
Global corporate R&D investors, top 3, mn US\$	41	Policies for doing business	107
QS university ranking, top 3	74	Global corporate R&D investors, top 3, mn USD	38
Logistics performance	108	QS university ranking, top 3	72
GDP/unit of energy use	107	Logistics performance	106
Domestic market scale, bn PPP\$	116	Domestic market scale, bn PPP\$	118
GERD performed by business, % GDP	76	GERD performed by business, % GDP	74
Innovation linkages	119	University-industry R&D collaboration	101
University-industry R&D collaboration	116	State of cluster development and depth	114
State of cluster development and depth	126	Research talent, % in businesses	67
Global brand value, top 5,000, % GDP	80	Global brand value, top 5,000, % GDP	77
National feature films/mn pop. 15–69	101	n/a	-

**Source:** [https://www.wipo.int/edocs/pubdocs/en/wipo\\_pub\\_2000\\_2022/md.pdf](https://www.wipo.int/edocs/pubdocs/en/wipo_pub_2000_2022/md.pdf),  
[https://www.wipo.int/edocs/pubdocs/en/wipo\\_pub\\_gii\\_2021.pdf](https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021.pdf)

We noticed that mostly the weak points of the innovative system in the Republic of Moldova remain present in 2022, the financing of research and development activities by the business environment

being at an unsatisfactory level. Thus, the implementation of financial innovations in boosting investment activity remains a priority objective.

*Financial innovation* is defined as the act of creating and then popularizing new financial instruments, as well as new financial technologies, institutions and markets. Financial innovation refers both to technological advances that facilitate access to information, transactions and means of payment, and to the emergence of new financial instruments and services, new forms of organization and more developed and complete financial markets.

Modern ways of financing the company through the application of innovations that can be applied to enterprises in the Republic of Moldova refer to:

1) *Venture capital* appears in the form of a fund with risk capital or venture capital, which represents a specialized institution, which accumulates and places investments in the capital of companies with high potential, in the early stages of development, and after the increase in the stock market value, disposes of the share (or shares) held in their capital. Given the fact that in the market economy the business, as a rule, starts from a small business, venture capital funds, by their nature, are in direct contact with SMEs, unlike other funds that invest in early stage enterprises expansion or restructuring.

The cycle of venture capital begins with the mobilization of the means necessary for investments, it continues with the selection and realization of investments, monitoring and increasing the value, the fruition of the investment and ends with the distribution of the gains made, and then the cycle starts again. Depending on the specifics of the fund, the private equity cycle can last between 3-5 years in the case of buyout investments and 7-10 years in the case of venture capital investments.

At the same time, venture capital provides companies with operational assistance provided by a professional management, essential for the harmonious development of the business. The mission of venture capital funds is to facilitate SME access to venture capital as a profitable source of medium and long-term financing, while traditional financial institutions come to support businesses at the stage when venture investments have been justified and they capitalized.

Plans to introduce a legal framework regarding venture capital have existed for several years in the Republic of Moldova, but have not yet materialized. Since 2015, a draft law that takes into account existing EU regulations has essentially remained dormant. Private investments are available from angel investor associations, crowdfunding platforms, foreign private equity funds, but the current regulatory framework in the Republic of Moldova does not stimulate such investments.

The expansion and success of venture capital is strongly influenced by several factors, including the availability of innovative and high-growth businesses, the investment readiness of businesses, and a policy framework that favors equity investment. In the absence of these factors, it is not expected that the Republic of Moldova will gain a significant share of venture capital investments in the financing of startups and SMEs in the coming years.

2) *Informal investors*, also known as business angels, invest their own funds, unlike venture capital funds, which manage other people's resources. Business angels are people who, in addition to investing in businesses that will bring them an income over a period of time, invest ideas and experience for the development of start-up and growth businesses.

In most cases, business angels are former entrepreneurs and managers, they usually fill the self-financing space, entering the company when it cannot attract credits, and the need for capital is too small to be attractive to venture capital investors.

Obviously, the venture capital fund will not agree to invest in a company with a cost of evaluating the financing request higher than the potential financial income.

Business angels are willing to invest small amounts, and the investment process is simpler and less expensive. Angel groups are, in general, local organizations formed by 10 to 150 accredited investors, interested in investing in start-up activities.

Business angels investments are usually applied in areas where other financing instruments, such as bank loans or financing from European funds, are not a viable alternative - either where the projects or companies are not mature enough or where the procedures and the criteria that other tools assume are too thick for companies. For this type of financing, we discuss projects or companies at the beginning of the road that need initial capital to be able to develop a product idea. It should stimulate more young businesses, i.e. those that were established no more than three years ago, because they have the most important business dynamics, but also the greatest associated risk. If these businesses succeed, they generate many jobs, prosperity and positive economic effects in general.

3) *Mezzanine financings* represent hybrid instruments and refer to long-term subordinated loans of five to eight years, repayable in full at maturity, with the financier having the option of becoming a shareholder of the borrowed company, at a given moment, when the majority shareholder changes of the company or it is listed on the stock exchange.

The costs associated with this type of financing consist of the fixed interest charged and the income obtained from the sale of the shares held in the company. The holder of a mezzanine instrument will enjoy a level of priority, often holding the shares of the other shareholders as collateral.

A mezzanine financier will usually negotiate various put or call options in order to ensure the liquidity of his holdings, in order to contribute to the acquisition of a controlling position in the event that the company's performance drops dramatically, as for to resort to them in case of a possible exit from the company.

The advantages of mezzanine financing are determined by the fact that they allow business owners to obtain growth capital by increasing the degree of indebtedness without exposing the company to a high level of debt service demand because the holders of mezzanine instruments are rewarded by preferential dividends only when the enterprise is profitable.

International practice presents mezzanine financing as an alternative financing tool, but which does not correspond to every type of business. Although it is a form of financing that requires from the entrepreneur a high degree of knowledge in terms of financing, profitability estimation, risk calculation, it is a financing tool that must be taken into account by businesses that register rapid growth and need funding for research-innovation activities.

4) *Equity crowdfunding* consists of selling a share of your business to a number of investors in exchange for investment. The existence of equity financing is well established, with private equity, venture capital and angel investment having long played a role in the development of companies.

The main difference between crowdfunding and these traditional models is that, rather than establishing a one-to-one relationship, it is offered to a wide range of potential investors, some of whom may also be current or future clients. Equity crowdfunding does this by matching companies with potential angels through an internet-based platform.

Four crowdfunding models are known:

- model based on donation - for a cause with a social purpose;
- reward-based model - similar to an agreement between the supplier and the buyer, before the purchase of the product or service. The cost of the reward to the entrepreneur should be less than the cost of the product;
- lending-based model – a low or zero interest rate is charged, usually to support social entrepreneurs.

Before considering crowdfunding as a source of financing, both the advantages and challenges of this tool must be analyzed:

- the need for a diversified network to support the collection of funds;
- the crowdfunding system loses its effectiveness the larger the amount of money needed for the business. It is ideal to choose a partial financing of the project through this instrument and obtain complementary funds from other financing sources;
- success in collecting resources depends on the reward system.

Crowdfunding is a financing technique derived from crowdsourcing, based on the idea of involving the community as a potential investor.

Crowdfunding platforms mediate the obtaining of financing for various projects, by putting entrepreneurs in contact with investors.

As a result of the approval of Law No. 181 from 07-07-2023, starting from March 1, 2024, the business environment of the Republic of Moldova will have a more accessible financing alternative, using crowdfunding tools.

According to the document, the National Commission for Financial Markets (CNPF) will authorize, regulate and supervise the activity of crowdfunding service providers. In this sense, crowdfunding can be seen as a new business model that uses technological innovations and offers small and medium-sized enterprises (SMEs), at any stage of development, an alternative financing tool by connecting investors directly with business environment.

The maximum ceiling of resources that can be attracted by SMEs for a business project through crowdfunding platforms is 1 million euros. This financial instrument will allow citizens to invest their available resources in business projects. Transactions will take place on digital platforms and through secured means of identification, which will lead to the avoidance of bureaucratic procedures. In addition, the crowdfunding platforms will also allow the intermediation of loans for eligible individuals, who have the right to benefit from consumer financing projects in the maximum amount of 7,500 euros.

## Conclusions

The challenges that exist at the current stage regarding economic development, which also has an influence on the application of financial instruments aimed at the activity of enterprises in the Republic of Moldova, refer to low economic productivity, demographic challenges, skills mismatch and a high vulnerability to both climate-related shocks and external ones, as well as global crises that generate additional uncertainties for the country's economy. There is a need to develop the regulatory and institutional framework to allow the development of alternative sources of financing, such as crowdfunding, business angels and financial technology (fintech). From the aforementioned, we conclude that the effective development and promotion of innovative financial instruments will contribute to the substantial boost of the financing of enterprises in the Republic of Moldova.

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## THE IMPACT OF THE PANDEMIC CRISIS ON THE FINANCING MECHANISM OF THE HEALTH CARE SYSTEM IN THE REPUBLIC OF MOLDOVA

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**Abstract:** Health care is one of the basic services guaranteed by the state companies. The level of spending on health, like those on education, can be considered an indicator of the level of development of a nation. Most countries with advanced economies allocate important resources to finance the health sector, as a premise for the healthiest possible generations and long-term sustainable development.

The COVID-19 pandemic is affecting everyone. Globally, millions of people have been infected with this virus, and hundreds of thousands have lost their lives.

The topic addressed is considered to be actual considering that in the Republic of Moldova the pandemic is putting increasing pressure on the health care and social protection systems, causing major interruptions of economic processes and limitations of social life, deepening inequalities and proving how vulnerable we are. The era of COVID-19 has transformed the healthcare system into an extremely important sector. In addition to increasing spending on the necessary health care and implementing all actions in a non-pandemic situation, additional resources are needed to prevent, spread and treat the coronavirus.

The Republic of Moldova has recognized the fundamental role of health protection, representing an essential condition that contributes to increasing the quality of life of the population, as well as to the development of health capital. The national security and economic development of the country largely depends on the functioning of an effective health care financing system in order to preserve the health of the population as the main productive force of society.

The main purpose of the paper is to analyze the impact of the pandemic crisis on the financing mechanism of the health care system in the Republic of Moldova.

The given research analyzes the total expenses for health protection and their structure in the Republic of Moldova. We also analyze the financing mechanism, during the pandemic crisis, of the health care system in the Republic of Moldova.

**Key words:** health care system, financing health care, COVID-19, pandemic crisis, Republic of Moldova.

**JEL:** H12, H51, I18.

### Introduction

The Republic of Moldova has recognized the fundamental role of health protection, representing an essential condition that contributes to increasing the quality of life of the population, as well as to the development of health capital. The national security and economic development of the country largely depends on the functioning of an effective health care financing system in order to preserve the health of the population as the main productive force of society.

The main purpose of the paper is to analyze the impact of the pandemic crisis on the financing mechanism of the health care system in the Republic of Moldova.

To achieve the mentioned goal, the following basic objectives were drawn:

- studying concepts regarding the health care system;
- analysis of research on the financing of the health care system;
- analysis of the organization of the health care system in the Republic of Moldova in order to determine the sources of financing;
- analysis of total expenses for health protection and their structure in the Republic of Moldova;
- analysis of the financing mechanism during the pandemic crisis of the health care system in the Republic of Moldova.

To carry out the work successfully, several research methods were used: analytical method (data analysis and synthesis), comparison, historical and logical method, deduction.

The informational and methodological support of the research is the legislative and normative acts of the Republic of Moldova, the data provided by the Ministry of Health, the National Medical Insurance Company, the National Bureau of Statistics, as well as the works of local and international authors, etc.

The structure of the paper is designed to cover all research objectives. It includes two chapters, conclusions, bibliography.

Chapter I "Theoretical and methodological approaches regarding the financing of the health care system" refers to the development of the concept of health care and the concept of health capital. The analytical retrospective of the research on the financing of the health care system was carried out and the research of the organization of the health care system in the Republic of Moldova was carried out in order to determine the sources of financing.

Chapter II "Analysis of the impact of the pandemic crisis on the financing mechanism of the health care system in the Republic of Moldova" analyzes the total expenses for health care and their structure in the Republic of Moldova. We also analyze the financing mechanism during the pandemic crisis of the health care system in the Republic of Moldova.

The paper ends with the presentation of the conclusions. In the Conclusions, the main conclusions related to the conducted research are presented.

### **Theoretical and methodological approaches regarding the financing of the health care system**

#### **Development of the concept of the health protection system in order to capitalize on the health capital**

When we talk about health, we actually mean health services. The other side of the health coin - prevention - is at the bottom of the list in most agendas (ŞNSPM, 2006). In general, health is not valued until the moment it is affected and a disease occurs, such as the COVID-19 pandemic that affected the whole world and at the same time opened the eyes of all public authorities how important health is for capitalizing and economic growth of a country.

We are going through a period in which we are faced with the increase in the costs of medical services and the increase in the impact of diseases on the entire population of the country. Although the slogan "prevention is cheaper than cure" may seem old-fashioned, we believe it is truer than ever. It is necessary to do health education and to promote health in the Republic of Moldova in accordance with international standards, especially of the European Union.

Health represents one of the sectors of major importance in the life of any society. Its importance is justified by the indispensable nature of the services it produces, the volume of resources it uses, the number of people it serves and the numerous links it creates with other fields of activity (Ețco, 2000).

The health of the population is a basic element in the harmonious development of the state and a key element of economic security, being in direct correlation with the state of the national economy and the political stability of society. Health is not only one of the basic human rights, but also a success of the welfare state, a necessary condition for the progress of modern society (Oprunenco, Popa, 2011).

Health care is a public service with special characteristics. First of all, the necessity of access to health protection for all individuals is known. Secondly, the probability of the risks and their magnitude, the multiple collective effects, with negative influences such as epidemics and pandemics or positive influences such as the prevention of diseases through vaccinations, must be taken into account.

The health care sector is also indispensable for the economic development of the state, contributing to the development of the medicine and medical equipment industry, offering a large number of jobs in the health field.

Thus, health protection is not only a medical assistance problem, but also a problem with a deep social and economic character.

Interpreting the health of the population through the prism of the socio-economic approach is related, in general, to the development of society and, in particular, the economy. Health care and the economy are interdependent, because the health of the population is essential for the economic development of the country. Health has an impact on economic performance, and this happens both at the country level and at the individual level.

It should be emphasized that, at present, the issue is not only about reforming the health sector, but also strengthening all activities in the health sector and modernizing it as a whole. The goals of the reform are the same - preserving and strengthening the health of the population, however, the tasks to achieve this goal differ. So, if the healthcare sector needs to address quality improvement issues.

All of the above allows us to consider the health care sector as a socio-economic system of the state, where health is not an end, but a means to achieve well-being and satisfaction of physical, cultural and spiritual needs. Therefore, the health of the population consists in the health of every citizen of the society. At the same time, the health status of a certain individual is determined by several factors, but by no means all of them are able to influence the health care sector as a whole. In this context, it is necessary to look for a new conceptual approach, when the health of the population, in the broadest sense, is the only objective criterion in the development of society.

Thus, health protection - is a complex, dynamic, functional socio-economic system that society

produces and uses at any stage of its development in order to protect and promote the health of each individual and the population as a whole. Health protection acts as an integral part of the level and quality of life, playing an important role in the economic development of the country, ensuring the reproduction and quality of the labor force, for creating the basis of socio-economic growth and social progress.

In science, a variety of approaches have been formed to define the concept - the health care system. In a broad sense, the health care system is seen as an integral part of population health care. In a narrow sense, it represents the totality of healthcare actions, carried out with the aim of maintaining and improving the health status of each individual and the population as a whole.

Researcher Lisitsin Iu. defines the health care system representing the system of public, social-economic and medical processes, which ensure the protection and high level of health of the population. In this sense, through the social orientation of the state's activity, the health care system continues to occupy a fundamental place in society (Лисицин, 2010).

Under the pressure of current circumstances, the health care system begins to be applied not only in the field of social assistance, but also acquires an economic characteristic, as it is associated with such economic processes as financing, management, planning.

The health care system can be seen as the totality of organizations and institutions, scientific associations, specialists and other subjects, whose activity refers to quality assurance and control, production, sale and purchase of medicines, medical equipment, medical services, as well as the implementation disease prevention measures. Also, this activity is associated with issues regarding the organization and financing of the health care system, aimed at ensuring a high level of training of health care specialists.

Medical services are considered by economic science as a set of goods and services that consumers use for their anticipated positive impact on their health. This reasoning is the basis of what is known in economic science as the theory of human capital.

Human capital is a concept that began to be studied in economics in the 50s of the 20th century by researchers Schultz Th. and Becker G., who initiated the modern theory of human capital. Within this theory, the authors treat educational expenses and health insurance expenses as investments that result in increased labor productivity and, implicitly, lead to the economic growth of a country (Shultz, 1972; Becker, 1994).

For the first time, the components of human capital are materialized in educational capital and biological capital. Both education and health expenditures are seen as investment as well as consumption. The investment being considered to be of a continuous character, aiming at either the development or the maintenance of the capital stock (Stoican, 2012).

Educational and health expenses are treated by Shultz Th. as investments, in order to increase labor productivity, implicitly economic growth, and progress in the field of health and education is the key variable of economic development. Thus, in the opinion of Shultz Th. a source of training and improvement of human capital is health services, being a major factor in the production of human capital. Considering that, health infrastructures and services affect people's life expectancy and vitality (Shultz, 1972).

In this sense, the correlation between the expenses for health care and the life expectancy of the population is formed, which determines the importance of studying the organization of the health care system of a country.

According to the author, from an economic point of view, health capital means the expenses incurred for the protection of health with the aim of increasing labor productivity in the future and contributing to increasing the incomes of both the individual population and the country as a whole.

Health capital being a component of human capital, represents the main value of a modern society as well as a fundamental factor in the country's economic growth. The formation of health capital requires significant expenditures from both the population and the state.

In this context, health capital represents the investments made in health that contribute to the reduction of illnesses and mortality, prolonging the working capacity of the individual and thus influencing the increase in the duration of the operation of the human capital.

One of the main indicators of the economic and social development of modern society is the level and quality of health services offered to the country's population. No branch of the economy, including health care, can normally exist and develop in conditions of insufficient financing of the health care system.

In the author's opinion, the health care system is the functional set of interdependent components considering the production and development of resources, organization of resources, financing, management of medical services and finally the provision of services, which determines the health status of individuals and the country's population with the purpose of capitalizing on health capital.

So, in the author's opinion, the connection between health capital and the health care financing system is a vital one, a fact that argues for their approach in the complex.

At the current stage, the socio-economic development of the country suggests an increase in the role of health capital, being the main factor of economic development, which implies the adaptation to specific requirements of the health care field, including increasing the satisfaction of the population with quality medical services.

### **Analytical retrospective of health care financing research**

At the current stage, the need to research the financing of the health care system is motivated by the fact that the Republic of Moldova needs to increase the efficiency of the health care system from the perspective of attracting additional financial resources.

The peculiarity of research in the field of health care consists in the combined nature of financial relations and, as a consequence, financial resources. In this context, we consider it relevant to establish our opinion on the concept of financial resources of the health care system.

The financial resources of the health care system represent the totality of the monetary resources generated from the state budget, extrabudgetary funds, mandatory health insurance funds, voluntary contributions, used to strengthen the health of the population, as well as the development of the public

and private health system.

Șișkin S. mentions that, "the concept of the health care financing system is used to characterize the health care systems, taken into account from an economic point of view (budgetary, medical social insurance, private). The financing system includes individuals and organizations, associated through monetary relations with reference to healthcare" (Шишкин, 2003).

In this sense, we believe that the definition of the health financing system only from the point of view of the forms of resource allocation does not reveal all the elements and relations regarding the financing of the health protection system. The concept being used in a narrow sense, only as a totality of state financial institutions operating within the health care sector, which, in our opinion, is not quite complete.

In the author's opinion, there are a number of premises that underlie the discovery of the essence and content of the financing of the health care system:

- the purpose and objective of the financing refers to the increase in the quality of the health capital and the provision of medical services accessible to the population;
- all financial relationships;
- diversity of funding sources;
- participants who contribute to the formation, distribution and use of financial funds.

The local economists Hîncu R., Secrieru A. conceptually analyzed the sources of financing measures related to health protection, identifying the most important ones, such as: funds allocated from the budget (central or local); health insurance contributions; population resources and foreign aid. In the same way, the economic efficiency of the health protection activity was specified by reducing the period of incapacity for work due to illnesses, limiting the spread of diseases. Improving and maintaining health has the effect of increasing average life expectancy, increasing work capacity, saving important financial funds and finally, increasing national income (Hîncu, 2004; Secrieru, 2004).

Economist Stratulat O. conducted research on the concept of public spending on health, level indicators, structure and dynamics, as well as the efficiency of public spending on health. And regarding the financing of public expenditures for health, he specified that the volume of financial resources for health is influenced on the one hand by the needs of the population, and on the other hand by the economic possibilities of the state (Stratulat, 2001).

Tintiuc D. mentions the sources of financing the health system by identifying the budget financial means and the extra-budgetary financial means, the health system budget and the mandatory medical insurance funds being specified (Tintiuc, 2007). In the opinion of the author, this approach does not correspond to the reality of the market economy. Because, at the current stage, an increasingly important role in the financial assurance of the health care system belongs to private funding sources, as a complement to public funding sources.

That is why, for a clearer understanding of the mechanism of formation and use of financial resources of the health care system, it is necessary to search in detail the basic concepts regarding the financial mechanism of the health care system.

In the socio-cultural and economic context, health protection occupies a special place, because it reflects the relations, beliefs and obligations of the authorities towards society. That is why each state tends to develop its national health policy and strategy for the optimal use of financial resources based on cultural, social and economic premises.

The mandatory health care insurance model applied in the Republic of Moldova operates on the basis of mixed sources of financing consisting of:

- 1) insurance premiums paid by employers and employees;
- 2) amounts paid by natural persons not employed in the labor field;
- 3) transfers from the state budget for the categories of persons insured by the Government;
- 4) and other sources (Soltan, Moşneaga, 2010).

Every year the role of employees becomes more and more important in the financing mechanism of the health care system and in the following years it has the possibility to exceed the sources allocated from the state budget according to the volume of receipts to the mandatory medical assistance insurance fund. The effect of partial replacement of funds from the budget with other new financial sources is typical for a financial reform in the field of health care with a favorable action on its functionality (Soltan, Moşneaga, 2010).

The expert of the World Health Organization Kutzin Joseph characterized the financial reforms of the healthcare system in the Republic of Moldova as a "model - example" for countries in transition, highlighting the following results obtained within this reform:

- compared to 5 other CIS countries, in which the mandatory health care insurance was applied, in the Republic of Moldova, an adequate level of funding of the health care system was maintained;
- the presence of an effective approach to financial protection through the accumulation of financial resources both from the state budget and from the contributions of employers and employees, and natural persons (Soltan, Moşneaga, 2010).

Based on the National Human Development Report of the Republic of Moldova, it was mentioned that the transition processes have weakened the capacity of the health care system, negatively affecting its quality and accessibility. The consequences of the economic crisis of the 1990s led both to the reduction of the budget financing of state medical institutions and to the reduction of access to medical services. With the implementation of mandatory health care insurance and the application of the expenditure optimization mechanism, the financial situation of the health care system improved. However, there are also some failures such as the reduced coverage and limited services offered through the medical insurance system that reduce the access of vulnerable groups and individuals to quality health services (Vaculovschi, Vremeş, 2011).

The independent analytical center "Expert-group" carried out the investigation of the transparency and economic efficiency of the use of the funds of the national insurance company in medicine and highlighted that the introduction of mandatory health care insurance in the Republic of Moldova in 2004 allowed the revitalization of the health care system in that country period. However, medical

insurance is only one of the important elements for the efficient functioning of the health care system (Oprunenco, Popa, 2011).

According to the Health System Development Strategy for the period 2008-2017, one of the problems that needs to be solved is the financing of the health care system. Funding is one of the main factors that determine the sustainable functioning of the health system and creates favorable conditions for meeting the needs and demand of the population for quality medical services and the appropriate volume.

The general objective is to improve the financing of the health system and payment mechanisms for health services. The specific objectives are the following:

- 1) improving the financing of the health system;
- 2) improving the payment and contracting mechanisms for services;
- 3) increasing equity and transparency in the allocation of resources and financial protection of citizens (Government Decision nr.1471 of 24.12.2007).

We believe that transparency in the allocation of financial resources is very important as an objective regarding the improvement of the financing of the health care system, which will be achieved under the conditions of the development of statistics in the field of health care regarding the annual publication of indicators that analyze the level of financing of the health care sector through highlighting the role of each funding source, but also the efficient use of financial resources.

The necessary measures to achieve the objectives and expected results of improving the financing of the health system will be achieved through:

- increasing the funds of mandatory medical assistance insurance;
- ensuring state guarantees in participating in the financing of the health system;
- reviewing the participation capacities of local public administrative authorities in the development of the infrastructure of medical and sanitary institutions in the territory;
- the development of optional forms of insurance for the provision of services above the medical assistance package

In the author's opinion, increasing the funds of compulsory medical assistance insurance can be achieved by establishing financial instruments for the accumulation of financial resources, such as the vice tax applied to alcoholic beverages and tobacco.

The development of optional forms of medical insurance is indeed a necessary measure to improve the financing of the health care system in the Republic of Moldova, taking into account the severe insufficiency of financial resources in this area.

The National Health Policy represents a set of priorities and development directions in the field of health, stability through political decision, for a period of 15 years, in order to strengthen the health of the population and reduce inequities between different social groups and regions of the country (Government Decision nr.886 of 06.08.2007).

Achieving performance in the health care system is determined by the successful exercise of the 4 basic functions:

- administration;
- financing;
- generating resources;
- providing services.

One of the principles for achieving the objectives of the National Health Policy is the sustainable financing of the health care system and the generation of resources, which refer to the planning, mobilization and allocation of resources at all levels and are determined by the estimated needs for maintaining an adequate level of health, as well as for mitigating risk factors (Government Decision nr.886 of 06.08.2007).

Therefore, the development priorities of the health system in the Republic of Moldova that are outlined in the National Health Policy, the Health System Development Strategy include interventions for those areas of the health care system that are to be improved and perfected along the way.

#### **Organization of the health care system in the Republic of Moldova in order to determine the sources of financing**

One of the basic components of the health care system is its financing. The financing of the health care system refers to the accumulation of financial resources and their distribution with the aim of ensuring the provision of quality medical services for the population. The accumulation of financial resources is carried out from the point of view of the participants of the health care system in the Republic of Moldova.

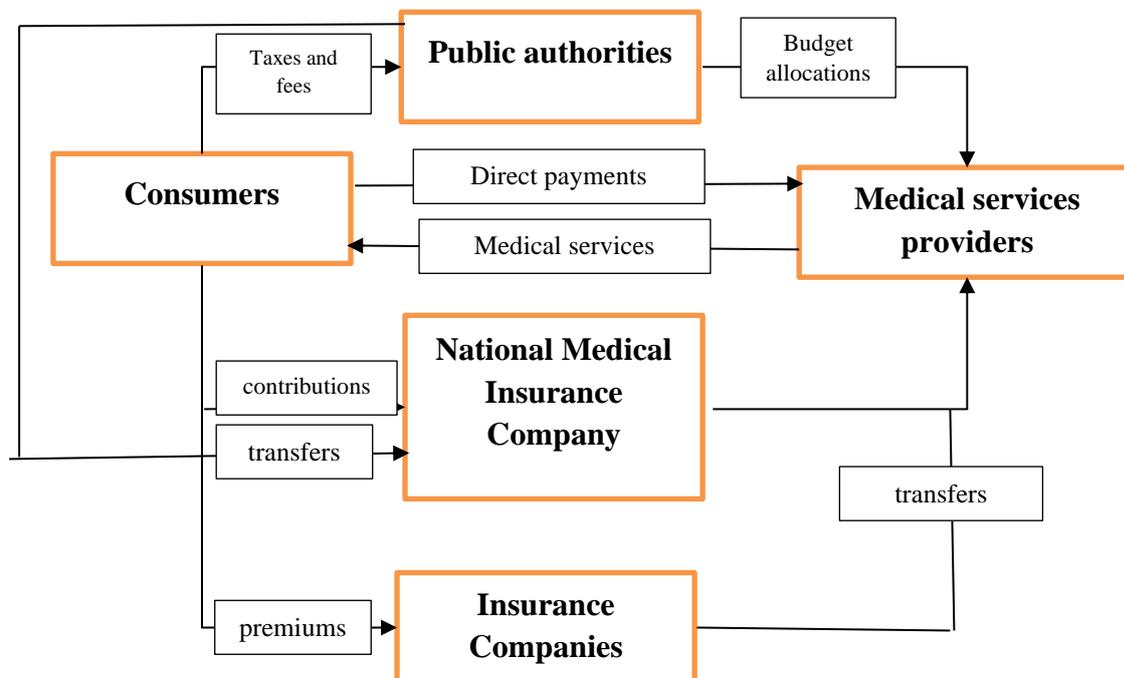
The relations in the health care system are mainly carried out in monetary form (taxes, insurance premiums, compensations) as distribution and redistribution relations. The system of relationships in health care are based on the flows of financial resources used within specialized financial mechanisms.

The financial resources intended for health care are collected from several sources: general direct and indirect taxes accumulated in the state budget; local taxes accrued to the budget of local public authorities; the contributions of employees and employers, the contributions of people with free practice accumulated to the mandatory health care insurance funds, direct payments paid by patients for the use of medical services, optional medical insurances (Figure 1.).

The distribution of public financial resources is carried out through the participation of the intermediary National Medical Insurance Company (NMIC), and the private ones are carried out through insurance companies or through direct payments of the beneficiaries of medical services. Finally, the financial resources are used by the providers of medical services, which are public and private medical and sanitary institutions based on the contracts concluded with NMIC or insurance companies (Figure 1.).

The health care system in the Republic of Moldova is a system based on mandatory medical insurance, according to the insured's ability to pay, in which there are, however, other possibilities

for paying for medical services, apart from settlements between medical service providers and the public insurer, such as: optional medical insurance and direct consumer payments shown in Figure 1.



**Figure 1 The health care system in the Republic of Moldova at the current stage**

Source: Developed by the author according to source (Copăceanu, 2015).

The main participants of the health care system are:

1. consumers of medical services represent persons insured through mandatory medical insurance or optional medical insurance and uninsured persons;
2. medical service providers represented by public or private institutional providers (hospitals, family doctor centers, diagnostic centers, offices, etc.) and independent providers that provide health services such as professionals;
3. public authorities that are represented by the central administration (Government, Ministry of Health, Ministry of Finance) and local administration;
4. the national medical insurance company organizes, conducts and directs the process of mandatory medical assistance insurance by forming financial funds intended to cover expenses;
5. insurance companies act as insurers in the organization of optional medical insurance.

Characteristic for the local health system is the extension of the involvement of the state through the

existence of a public institution with the role of insurer. The advantage lies in the high level of risk distribution and coverage. But despite all this, the insufficiency of the financing of the domestic health care system is felt. That is why we appreciate the need for a conceptual approach regarding the typology of sources of financing the health care system existing at the current stage in the Republic of Moldova with the aim of elucidating certain new ways of financing that would improve the financial assurance of the domestic health care system.

The development of the research methodology of the funding sources of the health care system will be carried out following the specifics of the financing and operation of the health care system in the Republic of Moldova organized predominantly on the basis of the mandatory medical insurance model.

The main participants contributing to the financing of the health care system are:

1. The central and local public administrations that carry out the financing of medical institutions from the respective budgets (the state budget, the budgets of territorial administrative units) and cover the expenses for the persons insured by the state in the system of compulsory medical assistance insurance.

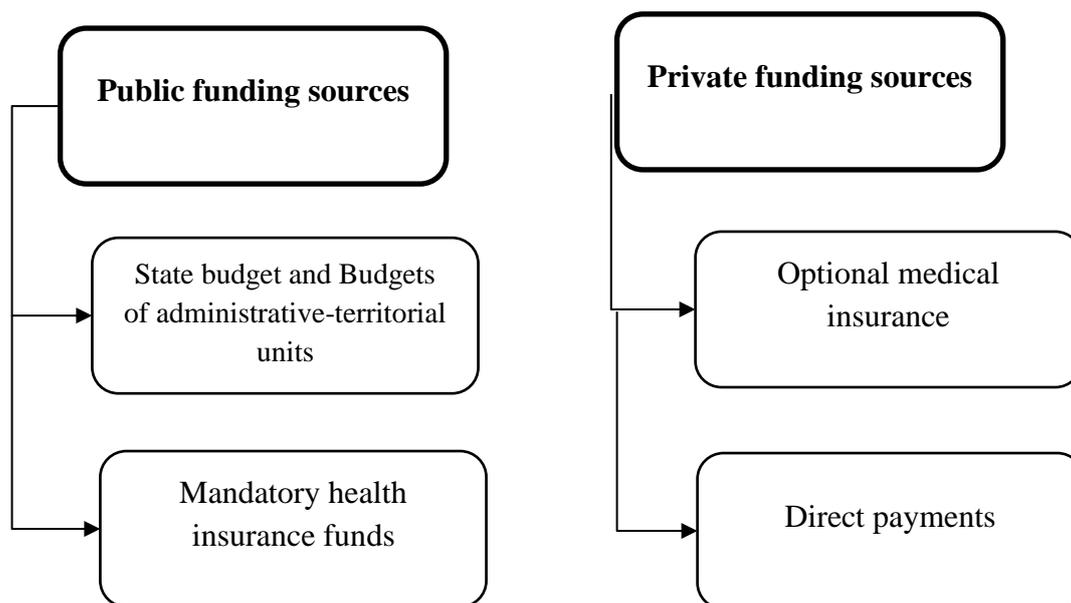
2. Employers (organizations from different sectors and forms of ownership) achieve financing through:

- the contributions of the mandatory medical assistance insurance for employees;
- voluntary medical insurance premiums for employees;
- payments for medical services provided by medical institutions to employees.

3. Consumers or beneficiaries participate in financing through

- mandatory medical assistance insurance contributions as a percentage or fixed amount;
- direct payments for medical services provided by medical and sanitary institutions;
- optional medical insurance premiums.

In the mandatory healthcare insurance system, consumers are divided into employed and unemployed persons, which determines specific peculiarities regarding the financing of the system. Mandatory medical assistance insurance for categories of unemployed persons is carried out from the state budget. And for those who are not included in the list, the insurance is carried out individually by procuring the mandatory medical assistance insurance policy. The volume of services provided under the mandatory health care insurance can be extended under the terms of the optional health insurance or through direct payments to the health care provider for the services provided (Law nr.1585-XIII of 27.02.1998). Voluntary health insurance participates in the financing of the health care system only theoretically. In this context, direct payments constitute the financial burden of consumers of medical services.



**Figure 2 The sources of financing the health care system in the Republic of Moldova**

Source: Developed by the author according to source (Copăceanu, 2015).

Based on the previously reported information, we proposed to identify the sources of financing the health care system presented in Annex 1 - The sources of financing the health care system in the Republic of Moldova at the current stage, being determined by the author sources of financing, participants in the formation of funds, payers of medical services and providers of medical services of the domestic health care system.

In the author's opinion, the financing of the health care system is based on the public and private sources of financing presented in Figure 2.

Mandatory healthcare insurance funds are intended to cover the costs of treating conditions conditioned by the occurrence of the insured events (Law nr.1585-XIII of 27.02.1998). Mandatory health care insurance funds are created in the order established by state regulations from the employer's payroll fund and by paying mandatory health care insurance premiums either by percentage contribution from salary and other rewards or representing a fixed amount. The size of the premiums is established annually in the law on compulsory health care insurance funds.

The financial sources of optional medical insurance are formed by the payment of insurance premiums by employers who insure their employees and the payment of insurance premiums by natural persons who insure themselves individually with insurance companies, being the consumers of medical services.

Direct payments are paid by consumers of medical services following the provision of services by medical and sanitary institutions. At the same time, direct payments can be paid by employers to medical institutions for the provision of medical services to employees.

In the Republic of Moldova, the sources of financing the health care system are not clearly identified.

In the author's opinion, the sources of financing the health care system can be grouped according to

the following classification criteria:

- According to the affiliation of the financial funds, they are: -Public financing sources, which include the financial sources of the central public administrations and local public administrations, the financial sources of the mandatory medical assistance insurances; - Private funding sources, which include financial sources of voluntary health insurance, direct patient payments, as well as health savings accounts.
- According to the type of insurance, the following can be identified: - Funding sources formed through insurance, which refer to mandatory and optional medical insurance; - Non-insurance funding sources, which characterize the financial sources of central public administrations and local public administrations, direct payments by patients.
- According to the origin of the financing sources: - Internal financing sources consisting of financial sources within the country; - External funding sources consisting of financial sources from other countries or organizations in the field of health care, in the form of donations, aid.

Based on the typology of the funding sources of the health care system, statistical information can be developed in the field of health that would highlight the origin of the financial sources and the expenses incurred in the field of health care.

Following the analysis of the characteristics of the main sources of financing of the national health care system, the research methodology of the financing of the health care system was developed, which allows the determination of the correlation between the financial relations and the financial funds (public and private) carried out between the participants in the financing of the health care system of health with the purpose of the need to develop the financial mechanism of health care.

In our opinion, the financing of the health care system refers to the accumulation of financial resources and their distribution with the aim of ensuring the provision of quality medical services for the population. The accumulation of financial resources is carried out based on the analysis of the funding sources of the health care system in the Republic of Moldova.

The distribution of financial resources from public sources is carried out through the participation of the intermediary National Medical Insurance Company, and from private sources the distribution is carried out through insurance companies.

### **Analysis of the impact of the pandemic crisis on the financing mechanism of the health care system in the Republic of Moldova**

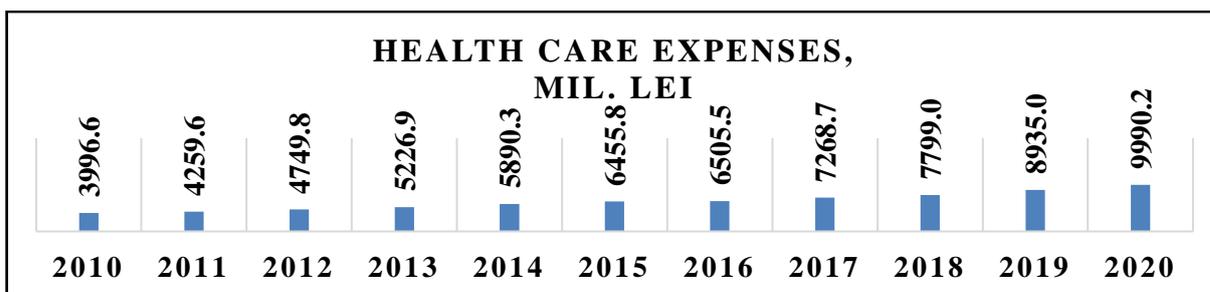
#### **Analysis of the health care expenditures**

Health care is one of the basic services of a society. The level of spending on health, like that on education, can be considered a reasonable indicator of the degree of development of a nation. Most countries with advanced economies allocate important resources to finance the health sector as a prerequisite for the healthiest possible generations and long-term sustainable development.

Taking into account the latest events faced by the population of the entire world, namely the pandemic caused by COVID-19, as a result of which the entire population of the globe suffered. All sectors of the national economy registered increases in public expenditures and decreases in budget revenues. The most affected being the health sector which registered an increase in expenses and during this

time the sources of financing in this sector also decreased, and the state being forced to resort to new urgent methods of financing this sector. This is understandable, as all state economies have used and are still using all the resources at their disposal to defeat this virus.

Next, to observe the impact of Covid-19 on health care spending, we will analyze Figure 2 and see how health care spending increased during the Covid-19 period:



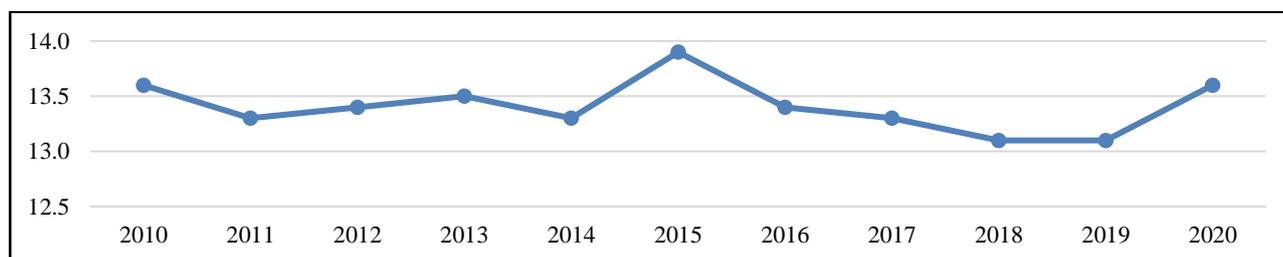
**Figure 2. Evolution of expenses in the field of health care in the period 2010-2020**

Source: Prepared by the author based on data from the National Bureau of Statistics.

According to Figure 2, we observe that in the period of 2010-2020 the expenses from the national public budget of the Republic of Moldova regarding health care, have maintained an upward trend, respectively they have increased from 3996.6 million lei in 2010 to 9990.2 million lei, during this period there was an increase of approximately 150%, and from year to year health care expenses increased by 6-15%.

The greatest trend of increasing expenses in the field of health care was recorded from 2018 to 2019 and 2019 to 2020, when expenses increased by 15%, compared to the previous year, it is observed that there is an increase in the financial resources from the state budget regarding health protection.

Next, in order to see what was the impact of the crisis caused by Covid-19, we will analyze what was the share of health care expenses in the total budget expenses (Figure 3).



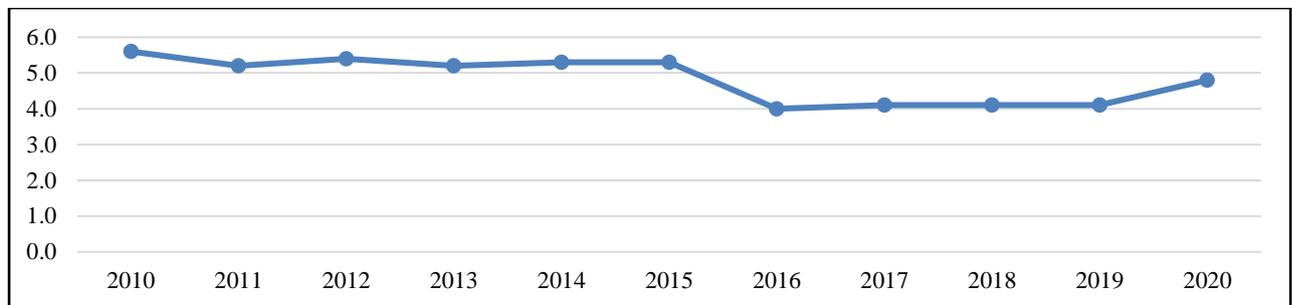
**Figure 3 Evolution of the share of health care expenses in total budget expenses**

Source: Prepared by the author based on data from the National Bureau of Statistics.

According to Figure 3, we observe that from 2010 to 2015 the share of health care expenses varied, their trend being unstable from year to year, but from 2015 to 2019 this trend was downward, which indicates that the state finances less and less money in this sector, but from 2019 to 2020 we observe an increase in these expenses, and this happened only because of the pandemic created by Covid-19.

In order to elucidate the specifics of the financing of the health care system in the Republic of

Moldova, we will reflect the trend of the share of health care expenses in the GDP in the period 2010-2020 (Figure 4), the years of reforming the way of financing the national health system through the creation of mandatory medical insurance funds.



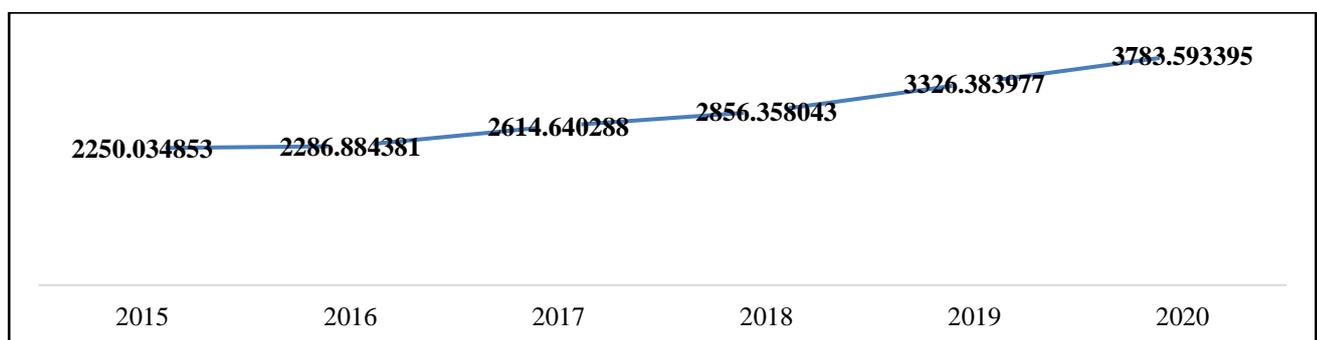
**Figure 4 Evolution of the share of health care expenses in GDP**

**Source:** Prepared by the author based on data from the National Bureau of Statistics.

The share of total health expenses in the gross domestic product reflects the possibility of financing the health system in the Republic of Moldova and shows a decrease in 2020 compared to 2010 by 0.8%. This was caused by several reasons, because in 2020 the Gross Domestic Product decreased and health care expenses increased. This was also caused by the crisis caused by the pandemic, respectively we obtained these values, being the fact given in Figure 4 is visible, from 2016 to 2019 this share was on a slightly upward trend, and from 2019 to 2020 we observe a sudden increase.

To see what changes have occurred in public health services for each individual citizen, we will perform an analysis of the evolution of health care expenditures per capita (Figure 5).

In Figure 5, we notice that in the period 2015-2020, health care expenses per capita were on an upward trend. The biggest evolution took place in 2018 to 2019, where they increased by 470 lei per person, also a considerable increase took place from 2019 to 2020, where these expenses increased by 457 lei. But this value is not a large one, because the population of the Republic of Moldova from 2015 to 2020 was on a downward trend, and health care expenses were on an upward trend (Figure 5).



**Figure 5. Evolution of public expenditures for health care per capita in the Republic of Moldova in the period 2015-2020**

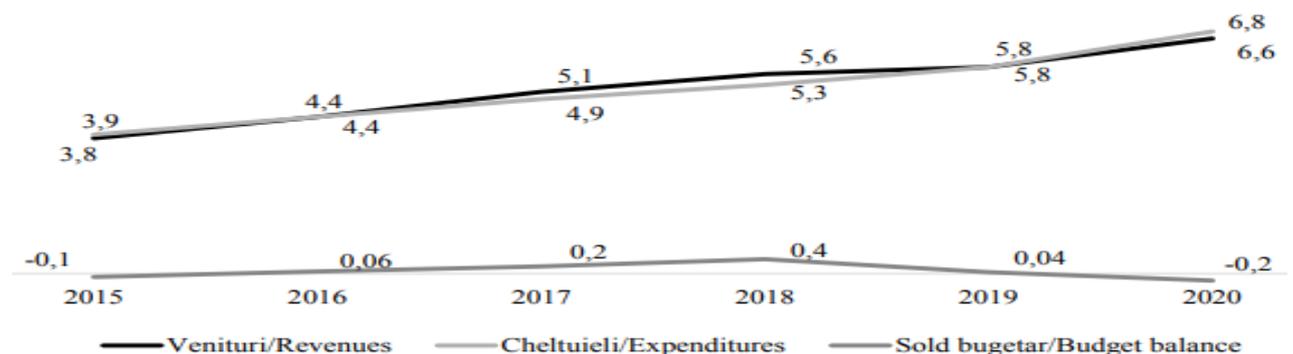
**Source:** Prepared by the author based on data from the National Bureau of Statistics.

The implementation of mandatory health insurance in the Republic of Moldova in 2004 established a new relationship between providers, financiers and consumers of medical services. Thus, the roles

of medical service providers/medical institutions and their financiers were delimited through the establishment of the National Medical Insurance Company, an institution called to assess and insure the risk of disease. The financial instrument for the accumulation and distribution of disease risk insurance resources, managed by the National Medical Insurance Company, are the mandatory medical assistance insurance funds, drawn up annually and approved by law by the Parliament of the Republic of Moldova (Cebotari, 2010).

Accumulations to the mandatory medical assistance insurance funds are provided from the following sources:

- transfers from the state budget;
- mandatory medical assistance insurance premiums, in percentage size, paid by employers and employees;
- mandatory medical assistance insurance premiums in a fixed amount paid by natural persons with permanent residence in the Republic of Moldova;
- compulsory medical assistance insurance premiums paid by foreign citizens and stateless persons without a stable domicile in the Republic of Moldova;
- other sources of revenues (Cobzari, *et al.* 2015).



**Figure 6. Evolution of the execution of the Mandatory Health Insurance Funds for the period 2015-2020, as of November 1, billion lei**

Source: (ADEPT, 2020).

The allocation of means from the emergency funds is carried out based on Government Decisions, within the limits provided in the state budget for the respective funds and only through the central and local public authorities, corresponding to the area of competence. As applicants for means from the Government's emergency funds, both central and local public authorities, as well as budgetary institutions and non-commercial organizations can be. The evolution of MHIF execution in the period 2015-2020, as of November 1, which we present in Figure 6, shows that the budget deficit increased by 0.1 billion lei. Therefore, the volume of expenses exceeded the volume of revenues by 0.2 billion lei, as of November 1, 2020. At the same time, we mention that, in the reference period, both revenues and expenses increased approximately 1.7 times

Following the analysis, it was found that 2020 was affected by the crisis created by the Covid-19 pandemic. This is clearly seen in the previous figures, with the state making major efforts to combat, or rather to alleviate, the negative effects that have befallen the country. The government allocating large sums of money to combat it, because the negative effects occurred in all sectors of the national

economy, but the greatest damages, both financial and social, occurred in the field of health care, where dozens of people die daily they lost the fight against this virus (Petroia, Zubcova, 2020).

### **The financing mechanism of the health care system in the Republic of Moldova in the era of COVID-19**

Preserving health and fighting disease are among the oldest concerns of man. Although the concern for health is as old as the human condition, nowadays we find that, more often than not, health becomes important to us only when it is lacking.

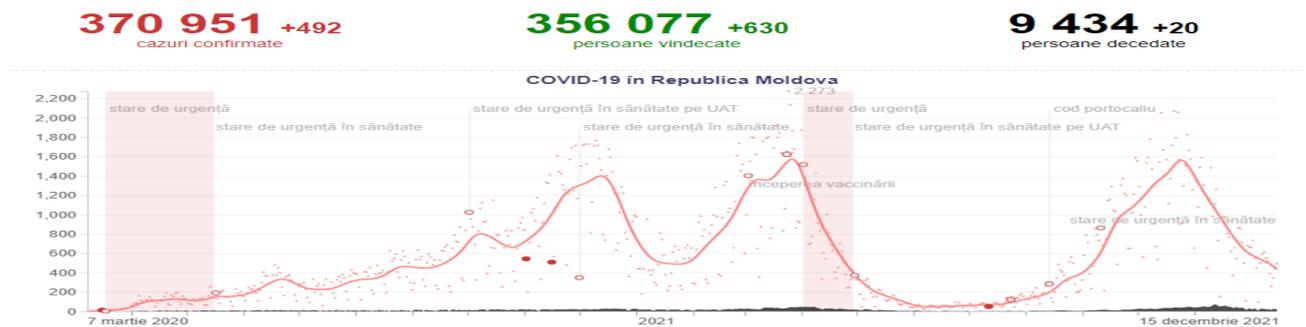
The coronavirus pandemic is the defining global health crisis of our time and one of the greatest challenges since World War II. The healthcare system in the Republic of Moldova, like that in most countries of the world, was not fully prepared to face the pandemic, being underfunded and understaffed, affected by the lack of clear protocols for the circumstances in question, insufficient technical and professional capacities, outdated infrastructure, limited medical equipment and supplies, poor logistics, fragile communication and trust.

In addition to the acute burden that COVID-19 is placing on the health system, many population groups are experiencing a lack of access to essential, routine health services due to the disruptive effects of restrictions, physical distancing and mobility limitations imposed in response to COVID-19.

COVID-19 is an infectious disease caused by the SARS-CoV-2 coronavirus, reported for the first time worldwide in December 2019, and in the Republic of Moldova on March 7, 2020 (Figure 7). Moldova faced a single wave of the pandemic, characterized by a steady increase in the number of infections, which ended with the start of vaccination against COVID-19 in March 2021 and the administration of the second dose of the vaccine.

The authorities of the Republic of Moldova reported on the spread of the virus at the end of January, after which the epidemiological situation of infection with the new type of coronavirus was examined by the Extraordinary National Public Health Commission (CNESP) on February 2, 2020. Depending on the degree of risk for public health, the Commission successively instituted from February 24 to March 13 alert level yellow, orange and red. The last one was assigned after 6 cases of COVID-19 had been confirmed in the Republic of Moldova, and the World Health Organization announced on March 11 the phase of pandemic transmission of the virus.

The main measures approved by the Commission concerned the suspension of the educational process, the suspension of regular air transport with the areas affected by the COVID-19 pandemic, the interruption of the activity of leisure, training and recreation institutions and religious gatherings. The increase in the number of cases of infection with the new coronavirus led CNESP to extend on March 15 the number of preventive measures by suspending international passenger rail transport and temporarily stopping commercial activity, with the exception of grocery stores, pharmacies and gas stations (alegeri.md).



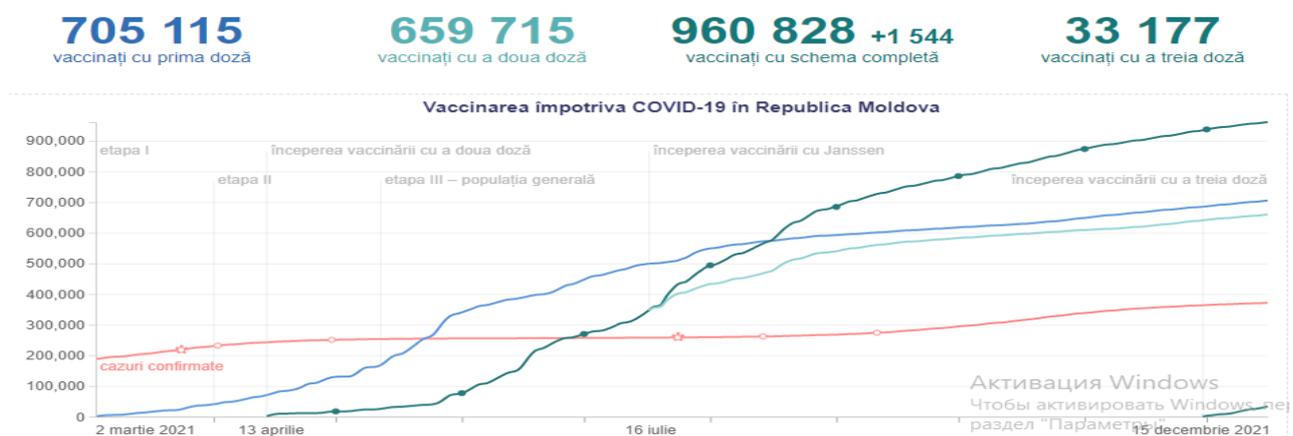
**Figure 7. The situation of the COVID-19 pandemic in the Republic of Moldova during the period of March 7, 2020 - December 15, 2021**

Source: (alegeri.md).

The dynamic of confirmed cases of COVID-19 was constantly rising during the state of emergency. From the beginning of the COVID period inclusively until December 15, 2021, more than 370,950 cases were confirmed in the Republic of Moldova, of which 356,077 people were vaccinated and 9,434 people died (Figure 7).

Vaccination is a method of prophylactic immunization against serious diseases, by inoculating a vaccine. The vaccination process against COVID-19 started in the Republic of Moldova on March 2, 2021 with the AstraZeneca serum and is being carried out in three stages, taking into account different population groups and the availability of vaccines.

The first stage targeted medical staff and people from foster care centers, the second – adults over 60, people with comorbidities, teachers and law enforcement employees. The third phase, fully launched on May 19, 2021, includes the general population. The initiation of the vaccination process and immunization with the second dose of the vaccine led to a sudden decrease in the number of infections with COVID-19 (Figure 8).



**Figure 8. Vaccination against COVID-19 in the Republic of Moldova during the period of March 2, 2021 - December 15, 2021**

Source: (alegeri.md).

Following the analysis of the figure mentioned above, we find that the number of people vaccinated

with the complete vaccine schedule in the Republic of Moldova is over 960,800 people, and 705,115 people are vaccinated with the first dose, 659,715 vaccinated with the second dose and 33,177 people vaccinated with the third dose.

A pandemic is a multilateral threat. In addition to the obvious impact on population health, pandemics also pose an important threat to the economy. In the Republic of Moldova, the era of COVID19 has transformed the health care system into an extremely important sector. In addition to increasing spending on the necessary medical assistance and implementing all actions in a non-pandemic situation, additional resources are needed to prevent, spread and treat the coronavirus. Therefore, they include: resources for consumables, protective equipment, laboratory tests, reagents, disinfectants and the additional remuneration of personnel directly involved in the process of combating this virus. These important costs can result in a comparable impact on population health, as all economic factors are directly correlated with key health outcomes (Petroia, Zubcova, 2020).

The government reacted to the pandemic by adopting a package of fiscal budget measures. In the health care sector, additional financial means have been allocated for the procurement of the necessary medical and protective equipment. In order to financially support these measures, three amendments to the Law regarding State Budget for 2020 no.172/2019 were adopted, which reflect a more flexible framework of budgetary and fiscal measures, including to support the other components of the national public budget, such as be the local budgets, the state social insurance budget and the Mandatory Medical Insurance Fund (MMIF). Thus, the allocations of budget funds provided for a medium term 2021-2023 by Government Decision no. 776 of 28.10.2020 include the following measures to support the health care sector:

- purchase of protective equipment - 41.4 million lei, measures provided from the Government's emergency funds;
- the allocation of financial means for equipping hospitals with medical equipment/devices and reusing medical spaces – 100.0 million lei, from the loan from the Development Bank of the Council of Europe;
- the allocation of financial means for patient transport units, medical and protective equipment, other critical expenses – 422.6 million lei, from the World Bank loan account;
- the 30% increase in the salaries of medical personnel starting from September 1, 2020 – 519.5 million lei and the granting of a salary increase for pre-hospital emergency medical assistance staff trained in providing medical assistance to people who meet the criteria of the COVID-19 case definition – 65 .4 million lei (Petroia, Zubcova, 2020).

Health care financing in the era of Covid 19 was largely due to donations from other states with vaccines, as a result of the direct purchase of the Republic of Moldova or through the COVAX platform (Figure 9). The COVAX platform is a global initiative that facilitates equitable access to vaccines against COVID-19, free for 20% of the population for the 92 countries that are part of the initiative, or purchased at preferential prices.

#	Sursa	Total	AstraZeneca	Pfizer	Sinopharm	Sputnik-V	Sinovac	Janssen	Moderna
1	Achiziționare directă	502 580		402 480			100 000	100	
2	China	150 000			150 000				
3	COVAX	283 590	108 000	125 190					50 400
4	Emiratele Arabe Unite	2 000			2 000				
5	Letonia	30 000	30 000						
6	Lituania	26 500	26 500						
7	România	506 220	405 600	100 620					
8	Rusia	306 000				306 000			
9	Statele Unite ale Americii	302 400						302 400	
10	Turcia	70 000					70 000		
	<b>Total</b>	<b>2 179 290</b>	<b>570 100</b>	<b>628 290</b>	<b>152 000</b>	<b>306 000</b>	<b>170 000</b>	<b>302 500</b>	<b>50 400</b>

**Figure 9. Providing the Republic of Moldova with a vaccine against COVID-19**

Source: (alegeri.md).

The vaccination campaign against COVID-19 in the Republic of Moldova is carried out with seven types of vaccine, six of which with the administration of two doses - Vaxzevria (AstraZeneca), Comirnaty (Pfizer), Sinopharm, Gam-COVID-Vac (Sputnik-V), CoronaVac (Sinovac) and Spikevax (Moderna). The Janssen vaccine, developed by the Johnson & Johnson company, is administered in a single dose starting on July 16, 2021. From the start of the immunization process to December 5, 2021, 1,645,940 doses have been used, and the vaccination rate has reached the threshold of 28.9% (Figure 10).

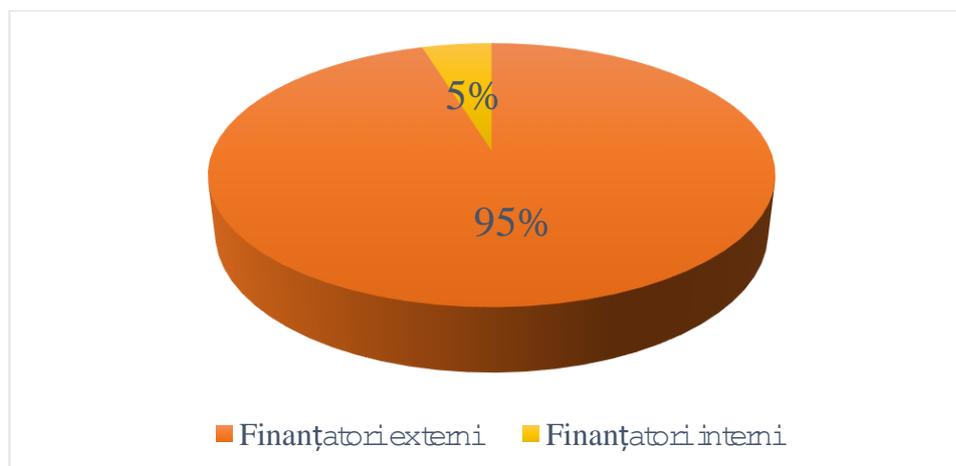
Vaccination against COVID-19 is free and recommended by all national and international health institutions, being an effective method to stop the pandemic. Vaccinated persons can check and download the vaccination certificate in electronic format on the certificate-covid.gov.md platform.

#	Vaccin	Recepționat	Administrat	
1	AstraZeneca	570 100	581 610 +2 628	100,0%
2	Pfizer	628 290	371 734 +17 270	59,2%
3	Sinopharm	152 000	83 300 +1 561	54,8%
4	Sputnik-V	306 000	206 959 +2 041	67,6%
5	Sinovac	170 000	104 002 +2 393	61,2%
6	Janssen	302 500	298 285 +4 912	98,6%
7	Moderna	50 400	50 +50	0,1%
	<b>Total</b>	<b>2 179 290</b>	<b>1 645 940 +30 855</b>	

**Figure 10. Vaccine doses received and administered in the Republic of Moldova during the period of February 27, 2021 - December 5, 2021**

Source: (alegeri.md).

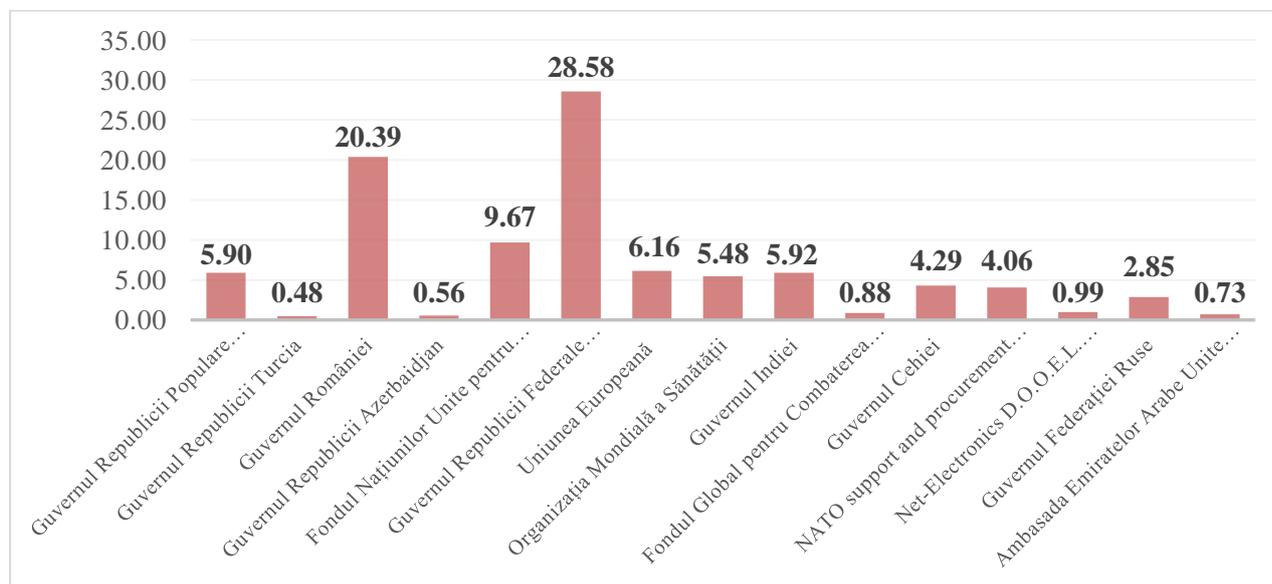
In this hard and difficult period for all, the Republic of Moldova, in addition to vaccine donations, received donations from 43 external financiers and 509 internal financiers of essential medical products, such as personal protective equipment, ventilators and thermometers, medicines, tests, consumables and accessories, medical devices, etc. in a total amount of 897 542 369.4 lei, of which 95% of the amount goes to external financiers and 5% to internal financiers (Figure 11).



**Figure 11. External and internal donations offered to the healthcare system of the Republic of Moldova in the fight against the COVID-19 infection until October 12, 2021**

Source: Developed by the author based on source (Ministerul Sănătății, 2021).

The Government of Germany occupies the 1st place in the top 15 external financiers who have offered donations to the healthcare system of the Republic of Moldova in the fight against Covid-19 until October 12, 2021, followed by the Government of Romania with over 20%; United Nations Children's Fund by over 9%; European Union over 6%; Government of India with 5.93%; Government of the People's Republic of China with 5.90% etc. (Figure 12).



**Figure 12. Top 15 external financiers who have donated to the healthcare system of the Republic of Moldova in the fight against Covid-19 until October 12, 2021**

Source: Developed by the author based on source (Ministerul Sănătății, 2021).

The pandemic crisis represents a major challenge for the entire international community, which is barely accumulating the necessary experience in combating the COVID-19 infection, exchanging information and cooperating with specialized international organizations. The first lesson, learned immediately after the outbreak of the crisis, is that in a globalized world the adequate response to the pandemic challenge can only be a complex one, on different levels at the national and international

level.

In the Republic of Moldova, the prevention of the spread of the COVID-19 infection and its effects required the adequacy of the legislative framework regarding states of emergency, existing at the time of the outbreak of the pandemic, as well as an extraordinary financial and administrative effort, with a major impact on the social-economic processes on short term, as well as on citizens' incomes, without knowing the medium and long-term impact.

The crisis highlighted that the Republic of Moldova has a legal framework according to international standards for the management of various states of emergency. The organizational effort of the authorities was appreciable, but the efficiency in combating the spread of the COVID-19 infection proved to be low. The main problem in managing the crisis was the decision to limit population testing. (ADEPT, 2020).

### **Conclusions**

Funding is one of the main factors that determine the sustainable functioning of the health system and creates favorable conditions for meeting the needs and demand of the population for medical services of adequate quality and volume. The correct and timely application of the system's financing regulatory levers allows increasing the fair access of the population to medical services, ensures the rational and efficient use of resources and favors the positive motivation of medical service providers. In the socio-cultural and economic context, health protection occupies a special place, because it reflects the relations, beliefs and obligations of the authorities towards society. That is why each state tends to develop its national health policy and strategy for the optimal use of financial resources based on cultural, social and economic premises.

Currently, the healthcare sector, both in the Republic of Moldova and throughout the world, is in a very difficult situation, because all the countries of the world are facing the new type of virus that has taken over the entire world economy. The Government of the Republic of Moldova being forced to allocate large sums of money to combat this virus. The pandemic highlighting all the negative aspects faced by the medical system in the Republic of Moldova, thus the Government had to identify new financial resources in order to combat the virus, putting the pandemic and its combat in the first place.

We are also aware of the fact that the Republic of Moldova is going through difficult times, because in addition to the fact that we are a developing state, the health care system is one that in some places slows down, but also the unconsciousness of people who do not want to respect the quarantine measures, make the fight against this virus for the Republic of Moldova seem like a movie with a tragic ending.

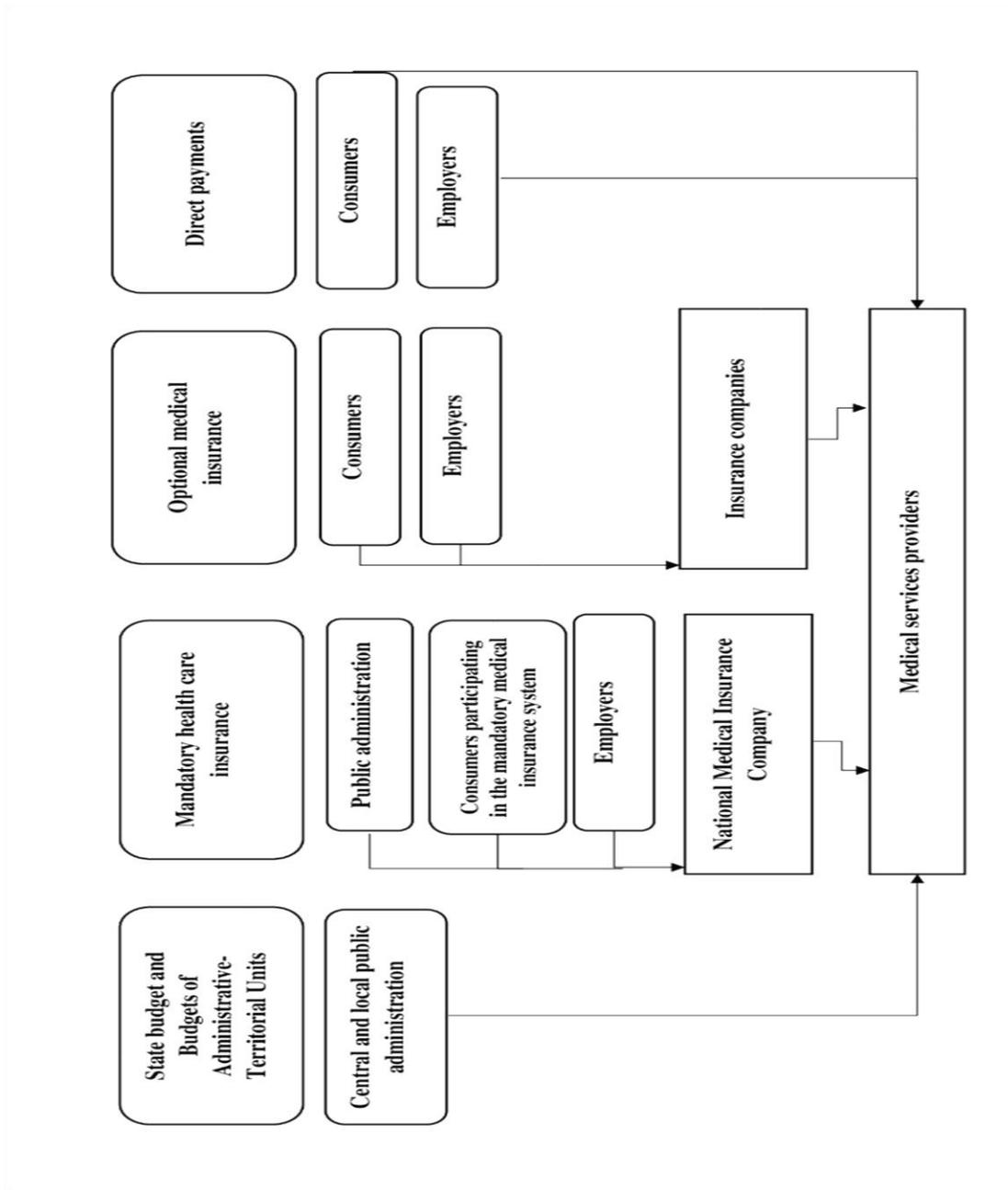
Thus, the years 2020 and 2021 become the most affected years in the last period of time, and they are the years with the highest expenditures in the field of health, both in real terms and in terms of their share in GDP.

For these reasons, in order to return to the state of well-being again, together with the state, we as citizens must also contribute to combating this virus, and not necessarily through financial sources but through emotional sources, and to comply with all the rules that we assert ourselves and fight this invisible enemy.

And as a result of fighting this virus, funding in the field of health care will also decrease, and those financial resources will be used to solve other problems at the macroeconomic level, which in time will bring us both economic and social stability.

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**Annex 1 Sources of financing the health care system in the Republic of Moldova at the current stage**

Source: Developed by the author according to source (Copăceanu, 2015).

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## INCREASING INVESTMENT IN RENEWABLE ENERGY SOURCES IN THE REPUBLIC OF MOLDOVA

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**Abstract.** In recent years, Moldova has faced an energy crisis, both in terms of energy resource prices and the possibility of energy supply. There is a significant need for the development of domestic energy sources. This primarily concerns renewable energy sources (RES). This article examines the generation of electric power from RES in the Republic of Moldova, analyzes the changes in dynamics, determines the proportion of the total generated electric power in the Republic of Moldova, as well as in relation to the total purchased electric power. Let's determine how this intersects with investments in the energy sector and overall investments in the Republic of Moldova. Let's analyze how investments in the energy sector are changing by types of ownership. Let's also identify how the growth of renewable energy production intersects with the prices of purchased electricity in Moldova as a whole and from renewable energy suppliers. Let's determine the share of renewable energy sources (RES) in the perspective of 2025 according to the government-established capacity for purchasing electric power at a fixed price. Let's identify the opportunities, forecasts, and risks for the development of the renewable energy sector. As a result, investments in renewable energy sources represent a promising direction for Moldova. This strategy will allow the country to reduce its dependence on imported electricity, ultimately leading to lower electricity prices for consumers. Moreover, it will significantly improve the environmental situation within the nation. The development of the renewable energy sector will also create opportunities for growth in related economic fields, generate additional employment opportunities, and contribute to an increase in the Gross Domestic Product (GDP).

**Key words:** electricity, renewable energy, investments, energy prices, industry.

JEL: Q42, Q43, Q47.

### Introduction

Moldova does not have its own fossil fuel reserves and imports 96% of the required fuel, spending significant financial resources on this. (Быкова Е.В., 2013)

In the production of electricity and heat, not the most modern technologies are used and, for various reasons, not the most economical operating modes of the equipment.

Energy can be considered the artery for most sectors of the economy, and without its development it is difficult to imagine the development of the entire country's economy.

In recent times, there has been an energy crisis in the world and in the region, as well as in Moldova, associated with rising energy prices, as well as the risks of a shortage of energy resources in Moldova. This is largely due to external factors, as well as the lack of funding for the energy sector from the state and economic agents. The development of energy technologies largely determines the rate of economic growth and its sectoral structure in the long term, affecting the value of relative and absolute production costs in the country. At the same time, economic growth is an important factor in the dynamics of energy demand. Just four decades ago, growth in energy consumption approximately equal to the growth in GDP production was considered not only normal, but also a natural element of development. This was largely due to the low cost of oil and other energy sources. The fundamental factors for changing the situation in recent decades have been a significant increase in relative energy prices, problems associated with nuclear energy, and the concern of many countries with energy security issues; finally, the need to preserve the planet's climate. High prices and energy policy factors turned on the traditional mechanism for solving problems - technological, i.e., efficiency factor on the consumption side and the method of energy production. (Григорьев Л.М. et al. 2013)

As a result of the complex, contradictory effects of demand and prices, humanity finds itself in a transformation of the entire world energy sector. Of course, the irreversibility of investments in long-term energy assets slows down all these processes, but the flow of inventions and commercially viable investments in new technologies is becoming abundantly clear.

With all the difficulties of the current situation in the world, world GDP, according to the IMF forecast, will grow by 3.2% in 2023, which also indicates a further increase in demand for energy. (Наталья Коровлева, 2022)

In the context of rising prices and demand for energy resources globally and also in the Republic of Moldova, there is a need to study the necessity of investing in Moldova's energy sector. Investments in the energy sector can significantly accelerate the development of a significant number of sectors of the national economy and lead to growth in the country's GDP.

Investments in the energy sector will lead to GDP growth directly as the formation of additional enterprises or production facilities, will lead to lower prices for energy resources due to increased competition among suppliers, will lead to a reduction in consumption due to technology, and this will make it possible to reduce the cost of manufactured products.

### **Research methodology**

In recent years, due to the risk of a shortage of electricity, as well as a complete cessation of supplies and, accordingly, rising prices for energy resources, there is an urgent need to increase electricity production in Moldova, primarily from renewable energy sources. To do this, we will study the production of electricity from renewable energy sources, changes in dynamics, determining the ratio to the total electricity produced in the Republic of Moldova, as well as in relation to the total purchased electricity. Let's determine the already commissioned renewable electricity capacities in

Moldova. We will also determine how this intersects with investments in the energy sector and overall investments in the Republic of Moldova. Let us determine how investments in the energy sector change by type of ownership.

### Research results

**Table 1. Amount of electricity produced from renewable energy sources in thousand kWh, excluding the waterworks in Costesti**

Type of RES	Amount of electricity produced, thousand. KWh						
	2016	2017	2018	2019	2020	2021	2022
Solar energy(photovoltaic)	1 311	1 509	1 457	1 437	3 275	7 764	30 297
Biogas	14 030	21 576	27 961	28 748	27 793	32 239	23 567
Wind energy	2 477	7 066	21 968	36 915	50 138	76 310	142 373
Hydroelectrics		38	279	330	147	239	96
<b>Total</b>	<b>17 818</b>	<b>30 189</b>	<b>51 665</b>	<b>67 430</b>	<b>81 353</b>	<b>116 552</b>	<b>196 333</b>

**Source:** prepared by authors based on data from [the](#) National Energy Regulatory Agency.

According to Table 1, we see an annual increase in electricity production from renewable energy sources. Wind energy takes the largest share in electricity production. In second place is solar energy. Wind in the total electricity produced amounted to 65.5% in 2021 and 72.5% in 2022, and solar 6.6% in 2021 and 15.4% in 2022. That is, the share of solar energy is growing due to the limited possibilities for installing wind turbines, as well as their significant cost. Solar installations are easier to install on buildings or structures.

**Table 2. Dynamics of growth of electricity produced from renewable energy sources in % excluding the waterworks in Costesti**

Type of RES	2017	2018	2019	2020	2021	2022
Solar energy(photovoltaic)	15,10%	-3,45%	-1,37%	127,91%	137,07%	290,22%
Biogas	53,78%	29,59%	2,81%	-3,32%	16,00%	-26,90%
Wind energy	185,26%	210,90%	68,04%	35,82%	52,20%	86,57%
Hydroelectrics		634,21%	18,28%	-55,45%	62,59%	-59,83%
<b>Total</b>	<b>69,43%</b>	<b>71,14%</b>	<b>30,51%</b>	<b>20,65%</b>	<b>43,27%</b>	<b>68,45%</b>

**Source:** prepared by authors based on data from [the](#) National Energy Regulatory Agency.

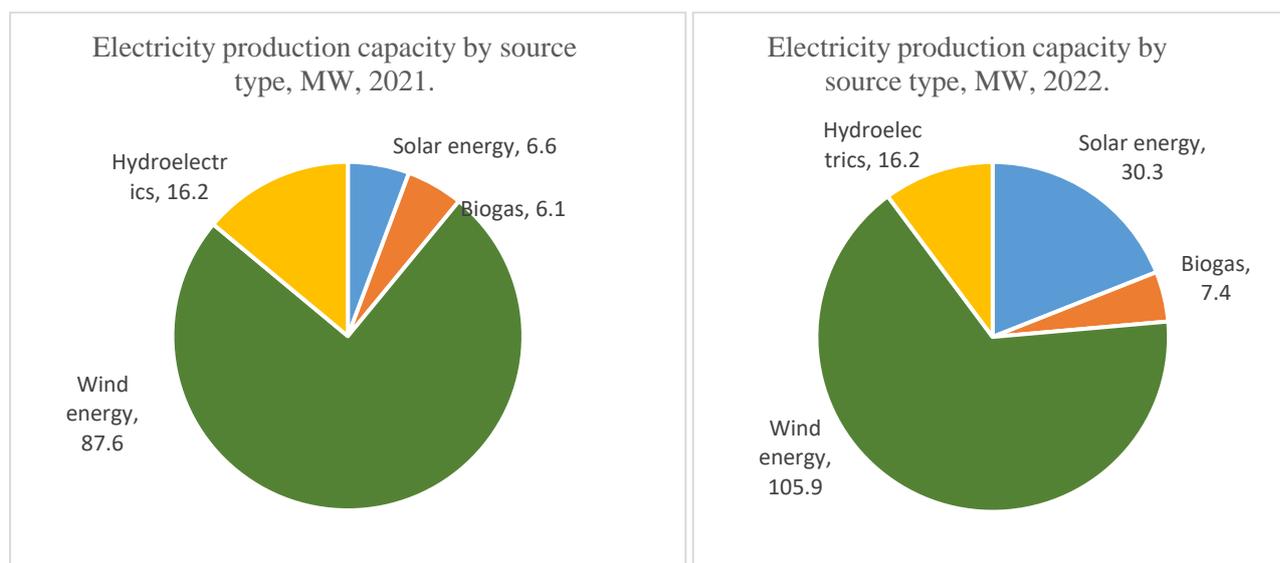
According to Table 2, we see that in the last two years there has been a significant increase in electricity production. For 2022 it amounted to 68.45%. The greatest growth was achieved by solar energy in 2022 compared to 2021 by 290.22%, and wind energy by 86.6%.

**Table 3. Installed capacity for electricity production from RES in MW**

Renewable Energy Capacity,MW"	2020	2021	2022
Solar energy	4,3	6,6	30,3
Biogas	6,1	6,1	7,4
Wind energy	44,1	87,6	105,9
Hydroelectrics	16,2	16,2	16,2
<b>Total</b>	<b>70,7</b>	<b>116,5</b>	<b>159,8</b>
<i>Growth in % compared to the previous year</i>		64,78%	37,17%

**Source:** prepared by authors based on data from [the](#) National Energy Regulatory Agency.

The presented table shows that the growth rate in increasing renewable energy capacities in 2022 is lower than in 2021. This is mainly reflected in Wind Energy, where the growth in 2021 was 98.6%, whereas in 2022, it was 20.9%. Biogas increased by 21.3% in 2022, while Solar Energy, which saw a 53.5% increase in 2021, experienced a remarkable surge of 359% in 2022. Which suggests that significant investment has been observed in solar energy production.



**Figure 1. Diagram of distribution of electricity production capacity by source type in MW for 2021 and 2022**

**Source:** prepared by authors based on data from [the](#) National Energy Regulatory Agency.

According to Figure 1, we see that the largest share in the production of electricity from renewable energy sources is Wind energy. So in 2021 it amounted to 87.6 MW or 75.2% of the total capacity, and in 2022 105.9 MW or 66.3%. Solar energy has significantly expanded its share from 6.6 MW or 5.7% in 2021 to 30.3 MW or 19% in 2022.

**Table 4. Electricity production in Moldova by generation source, million kWh**

Indicators	2018	2019	2020	2021	2022
<b>Electricity production total, million. kWh</b>	<b>804,2</b>	<b>801,1</b>	<b>851,4</b>	<b>984,7</b>	<b>851,1</b>
incl:CET Termoelectrica,CET-Nord	705,0	659,7	721,5	797,9	611,6
Waterworks Costesti	44	64	47	68	41
Solar energy(photovoltaic)	1,5	1,4	3,3	7,8	30,3
Biogas	28,0	28,7	27,8	32,2	23,6
Wind energy	22,0	36,9	50,1	76,3	142,4
Hydroelectrics	0,3	0,3	0,1	0,2	0,1
Other	3,5	9,5	1,8	2,7	1,6

**Source:** prepared by authors based on data from [the](#) National Energy Regulatory Agency.

According to Table 4, we observe that the maximum volume of electricity production in Moldova over the past five years was reached in 2021 and amounted to 984.7 million kWh. The growth was due to an increase in production from thermal power plants; compared to 2020, the increase in production from thermal power plants was 10.6%, then in 2022 the decrease was 23.3%. This was due to both repair work at the thermal power plant and increased gas prices.

**Table 5. Structure of electricity production in Moldova by generation sources, in%**

Indicators	2018	2019	2020	2021	2022
<b>Electricity production in %</b>	<b>100,00%</b>	<b>100,00%</b>	<b>100,00%</b>	<b>100,00%</b>	<b>100,00%</b>
incl:CET Termoelectrica,CET-Nord	87,67%	82,35%	84,74%	81,03%	71,86%
Waterworks Costesti	5,43%	8,04%	5,49%	6,85%	4,87%
Solar energy(photovoltaic)	0,19%	0,18%	0,38%	0,79%	3,56%
Biogas	3,49%	3,59%	3,26%	3,27%	2,78%
Wind energy	2,74%	4,61%	5,89%	7,75%	16,74%
Hydroelectrics	0,04%	0,04%	0,02%	0,02%	0,01%
Other	0,44%	1,18%	0,22%	0,28%	0,19%

**Source:** prepared by authors based on data from [the](#) National Energy Regulatory Agency.

Table 5 shows us that the share of thermal power plants in electricity production in Moldova, although it occupies the maximum value, is decreasing over the years from 87.7% in 2018 to 71.9% in 2022. At the same time, the share of renewable energy sources continuously grew from 12.3% in 2018 to 28.1% in 2022. Also, the largest share of renewable energy sources in production was wind energy, which increased from 2.74% in 2018 to 16.74% in 2022.

**Table 6. Share of renewable energy sources in the total volume of purchased electricity in the Republic of Moldova, in%**

Indicators	2018	2019	2020	2021	2022
Amount of purchased electricity, thousand kWh	4178,8	4301,9	4269,8	4591,7	4512,9
Waterworks Costesti	1,05%	1,50%	1,09%	1,47%	0,92%
Solar energy(photovoltaic)	0,04%	0,03%	0,08%	0,17%	0,67%
Biogas	0,67%	0,67%	0,65%	0,70%	0,52%
Wind energy	0,53%	0,86%	1,17%	1,66%	3,16%
Hydroelectrics	0,01%	0,01%	0,00%	0,01%	0,00%
<b>Total RES in the structure of purchased electricity</b>	<b>2,29%</b>	<b>3,07%</b>	<b>3,00%</b>	<b>4,01%</b>	<b>5,27%</b>

**Source:** prepared by authors based on data from [the](#) National Energy Regulatory Agency.

According to Table 6, we see that RES occupy an insignificant weight in the structure of purchased electricity. This weight has more than doubled over the past 5 years from 2.29% in 2018 to 5.27% in 2022, but its share is very small in the overall structure of electricity needed by Moldova. The growth rate averages 1% per year. If current growth continues, it will take 5 years to reach the target of 10% of total electricity consumption.

**Table 7. Average prices for purchased electricity in Moldova and from renewable energy sources**

Indicators	Unit	2020	2021	2022
Average price of purchased electricity	lei/kWh	0,97	1,04	1,73
Fixed purchase price from solar energy	lei/kWh	1,88	1,88	1,8-1,97
Fixed purchase price from wind energy	lei/kWh	1,55	1,55	1,59-1,84
The ratio of solar energy procurement to the average acquired	%	193,2%	180,6%	104% -114%
The ratio of wind energy purchases to the average position	%	159,3%	148,9%	92% -106%

**Source:** prepared by authors based on data from [the](#) National Energy Regulatory Agency.

Looking at Table 7, we see that the average price of purchased electricity increased significantly from 1.04 lei per kW in 2021 to 1.73 lei in 2022. This was due to the energy crisis in the region and the country, which ultimately led to the purchase at more high prices from different suppliers. The fixed

purchase price of solar and wind energy has not undergone significant changes. Wind power purchases are almost equal to the national average purchases.

**Table 8. Main indicators of investment activity, million lei**

Indicator name	2017	2018	2019	2020	2021	2022
<b>Investments in long-term tangible assets</b>	23 498,3	27 464,7	31 253,2	30 089,6	35 411,2	37 107,5
<i>Growth in % compared to the previous year</i>		16,88%	13,79%	-3,72%	17,69%	4,79%
<b>Incl. production and provision of electricity and heat, gas and hot water; air conditioning</b>	1 186,8	1 470,6	1 316,5	1 310,5	1 304,0	937,8
<i>Growth in % compared to the previous year</i>		23,91%	-10,48%	-0,46%	-0,49%	-28,08%

Source: prepared by authors based on data from [the](#) National Bureau of Statistics

The table shows that the growth rate of investments in long-term tangible assets is steadily falling from 16.9% in 2018 to (-3.7%) in 2020 and increased in 2021 by 17.7% and 4.8% in 2022.

For the production and provision of electricity, heat, as well as gas and hot water, the growth rate of investment decreases even more significantly from 23.91% in 2018 to (-28.08%) in 2022.

**Table 9. Main indicators of investment activity for the production and provision of electricity, heat, gas, and hot water, thousand lei**

Indicator name	2020	2021	2022	Growth 2022/2021 in %
<b>Production and supply of electricity and heat, gas and hot water; air conditioning</b>	1 310 500,0	1 304 049,2	937 809,0	-28,1%
<b>Incl. gas production; distribution of gaseous fuel through pipelines</b>	105 848,6	173 087,9	125 721,6	-27,4%
<b>Steam and conditioned air supply</b>	401 265,4	447 425,5	157 688,6	-64,8%
<b>Electricity production, transportation and distribution</b>	803 367,3	683 535,8	654 398,8	-4,3%
From which public property	458 817,7	399 311,7	343 655,5	-13,9%
Private property	28 721,4	25 613,8	65 765,7	156,8%
Foreign ownership	315 828,2	258 610,3	244 977,6	-5,3%

Source: prepared by authors based on data from [the](#) National Bureau of Statistics

As can be seen from the table, the largest drop was provided by the supply of steam and conditioned air - 64.8%

Production, transportation, and distribution of electricity in 2022 decreased by 4.3%.

The largest decrease was provided by public ownership 13.9%

At the same time, investments from the private sector increased by 156.8%. More than 2.5 times. At the same time, the share of the private sector in the production, transportation and distribution of

electricity is 10%. This share is not significant. Investments from the private sector are mainly investments in renewable energy sources.

## **Conclusions**

Investments are a crucial element of the economic development of a country. In this context, the economic policy of the Republic of Moldova for the medium and long terms should be oriented towards fostering investment growth and maintaining it at a high level. This is because investments determine the production capacities of the country in the future and contribute to its economic growth potential. In this regard, countries compete internationally for the influx of investments.

Having analyzed the information presented above, we observe that the production of electricity from renewable energy sources (RES) is actively developing, showing significant growth. However, the share in electricity production, and even more so in consumed electricity, is very modest. Consequently, there are risks of continued dependence on imported electricity and potential price fluctuations in the future.

The statement in the article "Хотите продавать зеленую энергию в сеть по гарантированной цене?" (Do you want to sell green energy to the grid at a guaranteed price?) indicates that the government has approved Resolution 401 dated December 8, 2021, concerning the approval of power limits, maximum power levels, and power categories in the field of electricity from renewable sources until 2025. For all technologies under the fixed tariff support scheme, a capacity limit of 235 MW has been approved.

Based on this, we conclude that by 2025 the capacity will increase by 1.47 times relative to the capacity in 2022. If we assume that electricity consumption remains at the current level, then the share of electricity produced from renewable sources will be just over 7.8%, which will also remain a very insignificant figure.

For many years, Moldova will continue to depend on electricity imports and the production from thermal power plants (TPPs), where the raw material for electricity production can significantly change depending on the market situation. We presume that the state inadequately invests in this sector and does not provide sufficient incentives for private investors. There are several constraints. The fixed tariff support scheme is limited in capacities, solar panels are mainly allowed on buildings and structures, wind power stations are restricted in installation locations, delivery methods, and connection to distribution networks. Biogas power stations require substantial financial investments, and the purchase tariffs from these power stations have not changed significantly. Meanwhile, the average electricity purchase price in the country has increased by more than 1.5 times.

Government support measures may include public-private partnerships, provision of government loans and guarantees, compensation for investment expenses, grant provision, tariff reductions, removal of bureaucratic barriers, simplification of administrative procedures for investors, tax relief, regulation, and commitment to purchasing generated capacities at fixed prices, streamlining investment procedures through the Internet, and support for e-commerce.

Nevertheless, all these constraints, increased delivery risks, and rising prices suggest that investments in the renewable energy sector are the most viable soon. In the existing conditions, experienced investors see new opportunities and promising directions for implementing investment projects.

To address issues related to economic growth, the adoption of new technologies, and ensuring production, a transformation of the state's investment policy is necessary. This transformation should be aimed at creating a favorable investment climate in Moldova. Such an approach will significantly increase the influx of investment resources into the economy and facilitate the realization of opportunities for economic growth.

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## WOMEN'S EMPOWERMENT PRINCIPLES: BENEFITS AND SUCCESS STORIES

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**Abstract:** Women empowerment (WEP) refers to the process of providing women with the necessary resources and opportunities to exercise their rights, participate in decision-making processes, and have control over their lives. Empowering women has become a significant issue globally, with many organizations and governments recognizing the importance of gender equality in sustainable development.

The purpose of this research is to provide an overview of the concept of women's empowerment principles, its evolution, and its importance in achieving sustainable development goals.

The WEPs provide companies with a holistic road map to address the challenges women face in the workplace and to promote gender equality across their value chains, in their community engagement.

Launched in 2010 by UN Women and UN Global Compact, the WEPs are informed by international labour and human rights standards and grounded in the recognition that businesses have a stake in, and a responsibility for, gender equality and women's empowerment. The seven Principles constitute a primary vehicle for corporate delivery on gender equality dimensions of the 2030 Agenda on Sustainable Development.

The investigative object consists in analysis of usage of WEPs by different companies globally, the benefits obtained by women in the work place and best practices to be applied by other companies. Drawing inspiration from successful companies worldwide that have implemented the WEPs can provide valuable examples for businesses in Moldova to become signatories of WEPs as well. These companies serve as role models, showcasing the positive impact that can be achieved through the adoption of WEPs in diverse contexts.

By examining the importance of WEPs and its applicability, this research aims to provide a comprehensive overview of the principles that can empower women economically and concludes with a reflection on the potential benefits of implementing these principles and their significant contribution to creating a more equitable society.

**Keywords:** Gender equality, WEPs, Business, Companies, Transparency

JEL Classification: A13, I38, J16, J88

### Introduction

Gender inequality is one of the largest economic and social costs to society. Women earn only one tenth of global income while they contribute two thirds of all working hours. Achieving gender

equality is a key factor in fostering economic growth, competitiveness and capacity of economies and businesses worldwide.

It has been estimated that if full gender equality were achieved now, it would increase growth in the global economy by US\$12 trillion by 2025. Yet according to the World Economic Forum in 2020, at the current rate of progress the gender gap in economic participation will take 267.7 years to close.

Women’s empowerment and gender equality are one of the core objectives also of the Republic of Moldova under the international commitments. Moldova has ratified or otherwise acceded to numerous international and regional treaties/agreements supporting the assurance of gender equality. Therefore, besides the national initiatives on developing and promoting women empowerment, Moldova shall develop and adjust its legal framework to create the grounding for assuring that women are not only not discriminated against but entitled and benefit of equal treatments and economic growth opportunities.

The strategic framework on ensuring gender equality and women empowerment in the Republic of Moldova has been made in a few stages, via legal framework (laws) and non-normative documents (policy documents). As regards the legal framework, the following stages were noticed as essential in reforming the women’s economic empowerment in Moldova:

Gender equality is reflected in other relevant laws and in numerous policies, strategies and action plans. However, challenges remain in implementation, including in areas related to women’s economic empowerment. Women spend 45 hours a week on homemaking– the equivalent of working a full-time job, with regular overtime.

The equal treatment of women and men, as well as women economic empowerment shall be properly implemented by all the stakeholders, including legal entities, irrespective whether public or private, and natural persons. The international studies show that the closing of economic gender gaps might be efficiently closed via the symbiosis of public policies/laws and business actions, as there is evidenced positive contribution of women’s empowerment and participation in the workforce, as for the company’s performance, as well as for the national economy.

#### **WEPs as innovation for gender equality**

One of the instruments that contribute positively to the engagement of the private sector in the promotion of gender equality and women’s empowerment are Women Empowerment Principles (WEPs). WEPs are a set of principles offering guidance to businesses on how to promote gender equality and women’s empowerment in the workplace, marketplace, and community.

Established by UN Women and UN Global Compact, the WEPs are informed by international labour and human rights standards and grounded in the recognition that businesses have a stake in, and a responsibility for, gender equality and women’s empowerment. WEPs are a primary vehicle for corporate delivery on gender equality dimensions of the 2030 agenda and the United Nations Sustainable Development Goals (weps.org). By joining the WEPs community, the CEO signals commitment to this agenda at the highest levels of the company and to work collaboratively in multistakeholder networks to foster business practices that empower women. These include equal pay for work of equal value, gender-responsive supply chain practices and zero tolerance against sexual harassment in the workplace, to assist all private sector employers and businesses to realize the business potential from improved gender equality. Currently, 8,498 business companies globally have committed to the WEPs community, according to official web site weps.org.

The WEPs encompasses seven principles, as follows:

- Principle 1: High-level corporate leadership;
- Principle 2: Fair treatment of all women and men at work without discrimination;
- Principle 3: Employee health, well-being, and safety;
- Principle 4: Education and training for career advancement;
- Principle 5: Enterprise development, supply chain and marketing practices;
- Principle 6: Community initiatives and advocacy;
- Principle 7: Measurement and reporting.

Businesses can contribute to gender equality and women’s empowerment in multiple ways. Beyond the basic responsibilities of respecting human rights, companies can choose from a menu of options to advance women’s empowerment within their workplaces, marketplaces, and communities. Once a company becomes a WEPs signatory, an action plan based on a gender gap analysis of the company is developed to ensure the gradual implementation of the seven principles that are the core of WEPs work. Companies have no legal obligation to implement the principles, and their work is fully voluntary. As a result, accomplishment of the WEPs is different for each organization.

In the Republic of Moldova this initiative started with the support of UN Women in partnership with ODA (former ODIMM) in 2015 through a large information campaign involving more than 250 local companies. A series of actions followed that were integrated into the government programs intended for the economic empowerment of women, such as the National Platform for Women in Moldova, PARE 1 + 1, Women in Business, Start Up for Young People.

According to the “Baseline Study on the Impact of the Women’s Empowerment Principles (WEPs) and gender equality and women empowerment for Businesses in Moldova”, realised in 2023 within a survey questionnaire completed by **141 companies**, less than 20% of the respondent companies had information about the WEPs. Most of the survey participants (96 %) are non-WEPs signatory companies. According to the companies’ responses, 60% of respondents work on gender equality and women empowerment initiatives. The respondent companies have certain motivation to join the WEPs. As maintained by their responses, Table 1 provides the most and least important motivators for the respondent companies to embrace WEPs:

**Table 1 Companies by motivation to join the WEPs**

Our contribution to SDGs	<b>31%</b>
A stronger corporate reputation	<b>31%</b>
An increase in the recruitment of and better retention of talented individuals	<b>30%</b>
Contributing to women’s empowerment will also help the economy	<b>30%</b>
Improved competitiveness on the market	<b>29%</b>
Our female employees are motivated and more productive	<b>28%</b>
An increase in interested investors who have substantial confidence in the company	<b>27%</b>
An improvement in internal communication, better commitment from colleagues and a promotion of a culture of shared values	<b>26%</b>
Attracting more female customers/clients	<b>26%</b>
Company’s increased access to capital/financing	<b>24%</b>
There is better retention of female staff	<b>23%</b>
Less violence and reducing company costs by addressing violence	<b>23%</b>

**Source:** “Baseline Study on the Impact of the Women’s Empowerment Principles (WEPs) and gender equality and women empowerment for Businesses in Moldova”, UN Women Moldova (2023)

The strongest motivators for the companies to join the WEPs were attributed to their contribution to SDGs (31%), a stronger corporate reputation (31%), an increase in the recruitment and better retention of talented individuals (30 %) and contributing to women’s empowerment will also help the national economy (30%).

The same study was realised in Georgia, in 2021, with the participation of 40 signatory companies, and according to the survey results the strongest motivator for the respondents to join the WEPs was attributed to the idea that “contributing to women’s empowerment will also help the economy”. The same criterion was named as the second largest benefit that companies gained from the WEPs. The largest benefit that 58% of companies received from the WEPs was related to “a stronger corporate reputation”. The positive effect that the WEPs work has had on female employee productivity was among the top three main motivators (63%) and actual benefits (48 %) indicated by the respondent companies (UN Women Georgia, 2021).

During the period 2018-2020, about 7,000 women employees from Georgia, received WEPs-related support, according to the respondent companies, as follows in the Table 2:

**Table 2 Number of women/employees who received WEPs-related support by different activities per year**

Women/employees	Number of companies	2018	2019	2020	Total
Women employees received professional development	13	15	1,191	1,089	2,295
Employees trained on gender equality issues	10	102	557	519	1,178
Women employees benefited from your company's other WEPs activities implemented	7	1	45	725	771
Employees completed the online course on the prevention of sexual harassment	11	184	184	281	649
Women employees engaged in workplace mentorship programme	9	4	386	214	604
Employees completed the online course "I Know Gender"	9	156	171	249	576
Women entrepreneurs/representatives of women's associations trained by your company	7	0	132	263	395
Women/girls received scholarships from the company	6	0	52	150	202
Women/girls received internships at the company	6	3	41	60	104
Women outside the company who benefited from your company's other WEPs activities implemented	5	0	30	43	73
Women/girls received grants from the company	4	0	0	70	70
External women mentees of your company	4	0	21	36	57
<b>Total</b>		<b>465</b>	<b>2,810</b>	<b>3,699</b>	<b>6,974</b>

**Source:** Baseline study on the impact of the women’s empowerment principles (weps) on businesses in Georgia, UN Women Georgia (2021)

Georgia has a similar historical context with Moldova, but has managed to achieve greater success in terms of women's economic empowerment. Businesses’ increased understanding of the importance of gender equality was evidenced by the increased number of WEPs companies in Georgia, growing

from 25 to 44 in 2019 and reaching almost 80 companies by October 2020, compared to Moldova, which currently has only 17 signatory companies, according to weps.org. The private sector has the potential to become a champion of the WEPs in Georgia. Those companies that understand the benefits of the WEPs demonstrate a full commitment to the implementation and further advancement of these principles.

### **WEPs implementation per principle: benefits and success stories**

#### ***Principle 1: Establish high-level corporate leadership for gender equality***

First principle aims to establish high-level corporate leadership for gender equality and provides the basis for the successful implementation of all seven principles. As per the WEPs: “Corporate leadership is a key and integral part of making gender equality and women’s empowerment a top strategic priority. It publicly signals the CEO’s and the executive team’s goals and targets for implementing the WEPs and how the seven Principles will become part of the corporate sustainability strategy, day-to-day operations, and organisational culture.

A good case implementation of this principle represents the georgian company **m2 Real Estate**, which joined the WEPs in 2016. Following the development of the company’s first WEPs Action Plan, the company increasingly started promoting women in male-dominated occupations as part of their strategy to fully utilize internal talent and contribute to the sustainability of the business. The change has been remarkable. While in 2016 only 20 per cent of site managers were women, as of December 2018, women constitute the absolute majority of site managers in residential complexes – a position that previously was considered a “job for a man”. In 2018, the company developed its second WEPs Action Plan for the period from 2018 to 2020 and celebrated achieving gender balance among its top management. The proportion of women in senior management increased from 20 per cent in 2016 to 50 per cent in 2018. (UN Women, 2021) Now, of the 10 top managerial positions, five are occupied by women. As a result of several internal changes in the company’s human resources policy and practices, more women have been promoted to other managerial positions as well.

#### ***Principle 2: Treat all women and men fairly at work – respect and support human rights and non-discrimination***

Principle 2 targets the treatment of all women and men fairly at work, as well as respect and support for human rights and non-discrimination. It commits businesses to treat all employees fairly, regardless of gender, and to respect and support human rights and non-discrimination. Signatories are encouraged to stand firmly against inequality, racism and discrimination and to ensure that the perspectives, skills and talents of women from diverse backgrounds with different abilities and identities are represented and valued in company initiatives, programmes and decision-making.

One of the case study for this principle is **Sandic Honey Group**, a moldovan company founded in 2019, which became WEPs signatory company in May 2022. Being a small, agricultural company, **Sandic Honey Group** makes great efforts for women empowerment and gender equality. Their main motivation of becoming a WEPs signatory is to show that women can also become successful, even in the management teams of the company, and that women can share the same positions as men. In this regard, the company has shared the responsibilities of both women and men equally, on every level of positions. Since the implementation of WEPs, the main priority is to ensure the balance

between professional and personal life for women, by providing flexible work arrangements when women with small children need it, paid sick leaves and days off on weekends, fully respecting the national legislation in force. One of the most successful policy implementations at Sandic Honey Group is equal pay for equal work (UN Women, 2023).

In Georgia, on the other hand, according to the survey realised in 40 Georgian companies, the vast majority of the companies offer both maternity leave (90%) and paternity leave (80%). In 95% of the companies, maternity leave is paid, while paternity leave is paid in 72 per cent. Other arrangements are utilized by fewer companies. For example, 16 per cent of respondents enable their female employees to take longer periods of leave or offer flexible working arrangements, while 14 per cent of companies give several days of paternity leave to their employees. These aspects reinforce the stereotypical role of women as the primary caregiver.

***Principle 3: Ensure the health, safety and well-being of all women and men workers***

This principle aims to ensure the health, safety and well-being of all women and men workers. As per the WEPs: “Employers play a key role in preserving and promoting the physical and emotional health, safety and wellbeing of their women and men employees. Sexual harassment and violence signify high costs to women in terms of lost earnings, missed promotions and overall wellbeing. Companies are impacted in the form of employee absenteeism and productivity losses.

**Crunchyroll SRL**, an American company that has also a representation in Moldova (crunchyroll.com), is not a WEPs signatory company but it is one of the companies that implements most of the gender equality policies and women’s empowerment work. Being an ICT company and applying group rules regarding their internal policies, Crunchyroll is constantly working on women’s equal rights and opportunities at their workplace. The most attractive policies that Crunchyroll applies, are the following:

- Trainings twice a year on sexual harassment, with the main focus for 2023 on organising trainings on many different topics for the wellbeing of their employees.
- Organising minimum 5 job interviews with women to achieve an equal participation.
- Competitive bonuses when mothers return to work and the social and medical insurance payments are covered by the company at a rate of 60% per year.
- All employees who have children up to 18 years old, benefit from additional medical assurance for their children.

**Crunchyroll** makes efforts to identify employees’ needs by regular feedback sessions, anonymous chat groups, separate groups for girls and annual reviews. The company also works on women’s empowerment by emphasising self-confidence and inclusion.

***Principle 4: Promote education, training, and professional development for women***

Providing education, training and professional development opportunities is not only important for the personal development of employees but also critical in empowering companies. Principle 4 calls on companies and organisations to invest in workplace policies and programmes that open avenues for women’s advancement at all levels and across all business areas. WEPs signatories are also encouraged to conduct training about the company’s gender equality policy and action plan, as well

as awareness- raising on sexual harassment, unconscious bias and other training that could help foster an inclusive workplace. Companies and organisations are urged to ensure women’s equal access to all company- supported education and training programmes, formal and informal networking and mentoring programmes. Businesses that offer better learning and skills development opportunities can enhance their competitiveness and attract talent.

The hotels **Mercure** and **ibis Styles Tbilisi Center** signed on to the WEPs in 2018. The company is committed to corporate values of equality between men and women, diversity in the workplace and sharing knowledge on solidarity and combating stereotypes. The company launched the internal project “RiiSE”, where the double “i” symbolizes men and women. In addition to gender equality, the RiiSE diversity concept also aims at encouraging the emergence of mixed teams in terms of generations and cultures. Other projects implemented by **Mercure** include the following: strategic leaders’ development training; implementation of Inclusion and Diversity Week; and the deployment of People Policy, an internal document based on principles of equality and diversity. Since March 2019, every employee has been introduced to and signed on to the policy. Recently, the company signed a Memorandum of Understanding with Atipfund Georgia (Agency for State Care and Assistance for the (Statutory) Victims of Human Trafficking) to arrange certified internships for women residing in shelters, aligned with Principle 4 of WEPs (UN Women Georgia, 2021).

***Principle 5: Implement enterprise development, supply chain and marketing practices that empower women***

Companies have a great opportunity to promote gender equality through their relationships with their suppliers, as well as through the values they promote in their marketing campaigns. Principle 5 calls on companies and organisations to require business partners, contractors, and suppliers to adopt the WEPs and to establish supplier diversity programmes that actively seek to expand business relationships with women owned enterprises. Signatories implementing Principle 5 should seek gender-sensitive solutions to women’s barriers to access financial products and services and systematically source their goods and services from other enterprises that align with the WEPs. Doing so does not mean that quality, efficiency, cost savings or value for money would be compromised.

Increasing women’s access to financial services remains a strong business opportunity. Globally, women are less likely than men to have access to financial institutions or have a bank account. While 65 per cent of men report having an account at a formal financial institution, only 58 per cent of women report the same. Not only does a lack of access limit these women’s economic potential, but it hampers the well-being of their families and communities as well. Research shows that small and medium-sized enterprises run by women are better at reinvesting profits in the business, investing in their families’ health and education, and strengthening local communities. **JSC MFO Crystal**, a financial inclusion organization, was one of the first companies that joined the WEPs movement in Georgia in 2016. It has been taking several steps to promote gender equality ever since. “There is more than enough evidence that promoting gender equality and women’s empowerment is not just the right thing to do, but it is also a smart business decision, and at **Crystal** we deeply believe in it,” notes CEO Ilia Revia (crystal.ge). Aligned with the implementation of Principle 5 and to support women’s access to finance, the company announced the issuance of Women’s Corporate Bonds worth GEL 15 million (more than USD 5 million) for the economic development of thousands of female customers, providing them with financial products and equal access to capital in order to grow their small businesses. So far, that meant developing special proposals for female entrepreneurs and reducing their credit service fees by 5 per cent. As a result, more than 2,300 women received loans

that amounted to a total of GEL 4.7 million (more than USD 1.5 million). **Crystal** has raised the bar on getting the best value from financial donations to women’s communities and achieving greater social impact. Through a partnership with the TASO Foundation, Crystal implemented three community projects: potable water was provided to 25 households in Tsageri Municipality; a medical ambulatory was opened in the village of Guliani in Lanchkhuti, Guria; and a public library in the village of Pipileti in Oni, Racha saw the light of day.

***Principle 6: Promote equality through community initiatives and advocacy***

Principle 6 encourages the promotion of equality through community initiatives and advocacy. As per the WEPs: “Companies are increasingly investing in community development programmes to make valuable, effective, and responsible contributions to gender equality and women’s empowerment. They are encouraged to actively engage and consult with women and girls on their views, needs and aspirations, and to ensure that their voices are heard.”<sup>64</sup> Companies have several opportunities to lead by example and contribute to women’s empowerment within the wider community.

**Starnet Digital City**, an IT consulting company, became a WEPs signatory company on 13 September 2022. For Starnet, it is extremely valuable to support such initiatives as WEPs implementation in Moldova, as they contribute to social development, especially since Starnet is also responsible for the companies that are Tracom’s residents (which is an industrial park that provides infrastructure development capabilities), Starnet having the status of a platform for the resident companies (starnet.md).

For Starnet, out of all WEPs, the easiest to implement was principle number 6 (Community initiatives and advocacy), because a specific feature for the company is to support other companies, especially those who are residents of Tracom, by organising trainings, meetings, where Starnet also involves and invites employees to express themselves regarding their needs, ideas and demands (UN Women Moldova, 2023).

***Principle 7: Measure and publicly report on progress to achieve gender equality***

Women’s Empowerment Principle 7 calls on companies to measure and publicly report on progress to achieve gender equality. This principle requests the companies to publish company policies, practices and progress for promoting gender equality, and to plan, measure and report annually on progress, both internally and externally, using gender disaggregated data. WEPs signatories are also encouraged to take the WEPs Gender Gap Analysis Tool to assess their company’s strategic approach to gender equality, identify gaps and opportunities for continuous improvement, benchmark against peers and industry standards, and set goals and targets.

**Mtavari Channel** is the first broadcaster in Georgia that has decided, with the help of the WEPs, to empower and sensitize both men and women producers, content developers and journalists on gender equality. The aim is to make quality programmes that systematically take gender into account (mtavari.ge).

Since joining the WEPs, the company has been very enthusiastic about revealing gender inequalities in the professional practice of staff both during production and in programming, with respect to the choice of content and people interviewed. Often, broadcasts are designed based on the premise that

the intended audience is uniform. But as audiences are diverse, programmes should therefore be responsive to their varying expectations. UN Women supported the company by advising on its internal policy documents, establishing preventive measures against sexual harassment and training staff in gender equality and women’s empowerment. During the COVID-19 lockdown in early 2020, the company wanted to contribute by addressing the increased threat of family-based violence. **Mtavari** produced and showed during primetime a PSA on violence against women, which included contact information for various support services available. After hiring women on operator and driver positions, **Mtavari** also initiated a campaign to promote gender equality by printing T-shirts featuring boys as journalists and girls as camera operators to break the stereotypes associated with the jobs appropriate for men and women. A new broadcast, “Her Story”, was also made to familiarize the audience with feminism and promote positive messages on women’s empowerment. Also, a major part of the broadcast “Other Nanuka” is devoted to women’s stories. **Mtavari Channel** dedicated its social network and morning broadcast to the new project “Toloba”, which was launched by three women, Sopho Liluashvili, Tamta Muradashvili and Teona Chemia. (UN Women Georgia, 2021). The aim of the project is to present strong women to the audience and to raise issues such as feminism, gender equality and women’s empowerment for public discussion.

## **Conclusions**

Any company, irrespective of size, can be successful in implementing the WEPs. There are no clear differentiating criteria regarding company engagement that are based on size. Success is very individual to each company and very much depends on company leadership (including the personalities of the leaders), overall intent and specific motivations. Taking an individual approach to companies, their structure and their motivating factors is important to ensure the full engagement of signatory companies

There are various benefits that the private sector gains by undertaking WEPs work. The top three benefits are: (1) a stronger corporate reputation; (2) a contribution to women’s empowerment that will also help the national economy; and (3) the positive effect that WEPs work has on female employee productivity.

Understanding an individual company’s level of knowledge regarding the WEPs is crucial at the initial stage. There are various reasons companies join the WEPs. Some companies fully understand the benefits of gender equality in their companies, while others join for publicity. Those companies that understand the benefits of the WEPs demonstrate a full commitment to the implementation and further advancement of these principles.

Over the past decade, the business case for gender equality has expanded and deepened. Genderdiverse workforces also help to attract talent and reduce turnover and can contribute to building trust with clients and consumers. On a macro level, achieving gender equality could add upwards of USD 12 trillion to the world’s economy. At the same time, we have seen increasing evidence highlighting the deeply entrenched and systemic barriers that women face in workplaces around the world, from violence and harassment to the unequal share of unpaid care and domestic work. In Moldova and Georgia, while corporate support for gender equality is strong, businesses have yet to introduce specific policies, measurable targets and robust accountability mechanisms to ensure WEPs progress and their continuity.

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## MANAGEMENT OF FINANCIAL RISKS IN THE ACTIVITIES OF THE ENTERPRISE

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**Abstract.** The relevance of the chosen topic lies in the need management for effective management of the financial risks of the enterprise. This management plays an important role and ensures the reliable achievement of the goals of the financial activities of the enterprise. The ability to effectively influence risks enables the enterprise to operate successfully, have financial stability, high competitiveness and stable profitability. This article discusses some aspects of managing the financial risks of an enterprise as an integral part of the business environment. The main goal in the management of financial risks is determined, the main classifications of financial risks are considered, as well as the structure of the mechanism for neutralizing financial risks.

**Key words:** financial risk, financial risk management, financial activity of an enterprise, diversification, financial risk management policy, risk neutralization.

JEL CLASSIFICATION: G32

### Introduction

Business is becoming more complex, the amount of available information is growing, markets are globalizing, and as a result, financial risk management is becoming one of the main factors in a company's development. It is obvious that in conditions of market instability, companies in the financial sector need a risk management system that ensures business protection, its dynamic development and increased investment attractiveness.

Financial risk management of an enterprise is a system of principles and methods of analysis, assessment of the risk situation, development and implementation of risky financial solutions that provide foresight and comprehensive assessment of various types of financial risks, neutralization of their possible negative financial consequences [4].

Financial risk management is carried out at the level of the entire enterprise, thereby covering all areas of activity, with the goal of ensuring financial stability and increasing the effectiveness of its activities.

Competent management of financial risks in a company allows you to ensure a more stable position of the enterprise in the market, achieve profit growth, attract new investments, reach a higher and more effective level of management, minimizing the consequences. [3]

The main goal of financial risk management is to ensure the successful functioning of an enterprise in conditions of risk and uncertainty. This means that even in the event of economic damage, the implementation of risk management measures should ensure the ability to continue operations, the stability and sustainability of the associated cash flows, maintaining the profitability and growth of the enterprise, as well as achieving other goals [11].

Financial risk is the probability of unexpected financial losses in a situation of uncertainty in the conditions of the financial activity of an enterprise. Based on well-researched sources, the following classification of financial risks by type has been identified (Figure 1):

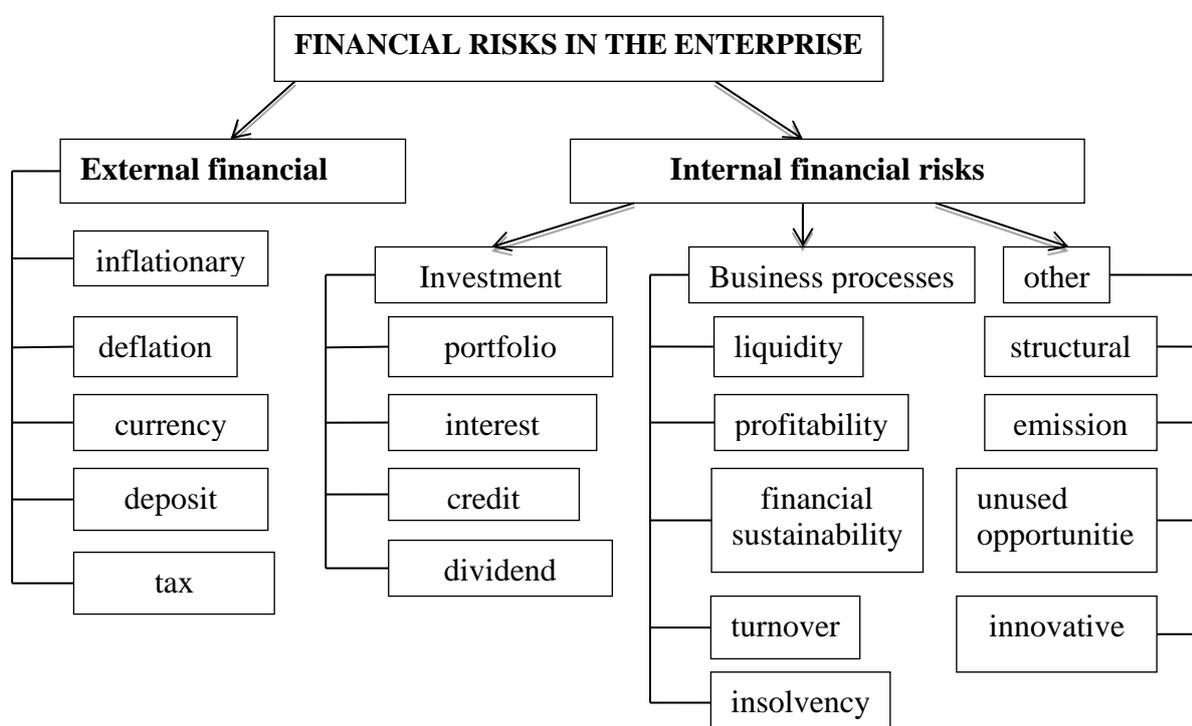


Figure 1. Classification of financial risks by type. [2]

Neutralization of the negative consequences of financial risks is one of the main directions of the strategy for ensuring the financial security of an enterprise. Such neutralization is carried out with the help of various financial mechanisms, which in the practice of strategic financial management are usually divided into internal and external.

In the system of methods for strategic management of an enterprise's financial risks, the main role belongs to the internal mechanisms of their neutralization. [6]

Internal mechanisms for neutralizing financial risks are a system of methods for minimizing their negative consequences, selected and implemented within the enterprise itself.

### The system of internal mechanisms for neutralizing the financial risks of the enterprise

The main objects of use of internal neutralization mechanisms are, as a rule, all types of acceptable financial risks, a significant part of the risks of the critical group, as well as uninsurable catastrophic risks if they are accepted by the enterprise due to objective necessity. In modern conditions, internal neutralization mechanisms cover the predominant part of the financial risks of an enterprise. [8]

The advantage of using internal mechanisms for neutralizing financial risks is the high degree of alternativeness of management decisions made, which, as a rule, do not depend on other business entities. They are based on the specific conditions for the financial activities of the enterprise and its financial capabilities, and make it possible to take into account to the greatest extent the influence of internal factors on the level of financial risks in the process of neutralizing their negative consequences.

The system of internal mechanisms for neutralizing the financial risks of an enterprise involves the use of the following main methods: (Figure 2)

**Risk avoidance.** This direction of neutralizing financial risks is the most radical. It consists in developing such internal measures that completely eliminate a specific type of financial risk. [7]

**Limiting risk concentration.** The mechanism for limiting the concentration of financial risks is usually used for those types of risks that go beyond their acceptable level, i.e. for financial transactions carried out in areas of critical or catastrophic risk. This limitation is implemented by establishing appropriate internal financial standards at the enterprise in the process of developing policies for implementing various aspects of financial activities.

**Hedging.** Hedging financial risks by carrying out appropriate transactions with industrial securities is a highly effective mechanism for reducing possible financial losses when a risk event occurs. However, it requires certain costs for paying commissions to brokers, options premiums, etc. However, the level of these costs is significantly lower than the level of costs for external insurance of financial risks. Various forms of hedging financial risks have already become widespread in the practice of domestic risk management. [7]

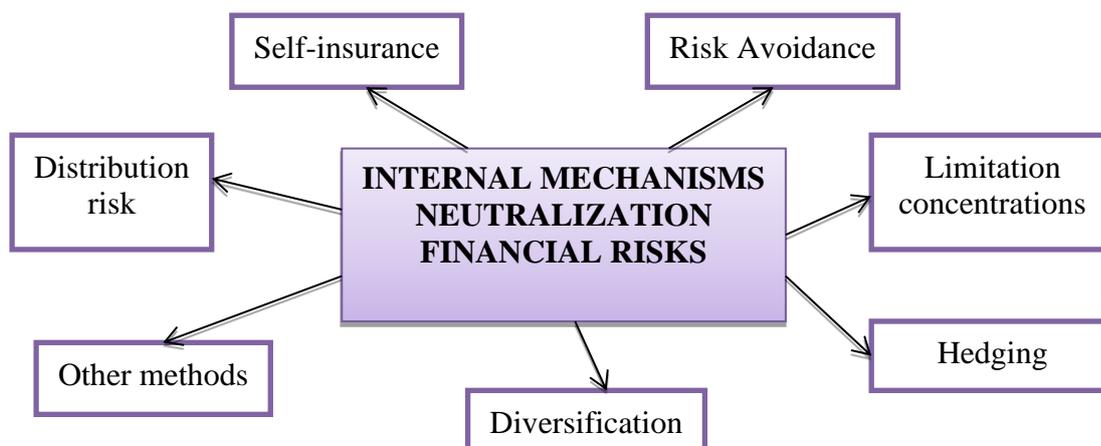


Figure 2. System of internal mechanisms for neutralizing the financial risks of an enterprise.

[7]

**Diversification.** The diversification mechanism is used, first of all, to neutralize the negative financial consequences of non-systematic (specific) types of risks. First of all, it allows you to minimize portfolio risks. The principle of operation of the diversification mechanism is based on the division of risks that prevent their concentration. [7]

The following areas can be used as the main forms of diversification of an enterprise's financial risks:

**Risk distribution.** The mechanism of this direction of neutralizing financial risks is based on their partial transfer (transfer) to partners in individual financial transactions. At the same time, the business partner transfers that part of the financial risks of the enterprise for which they have more opportunities to neutralize their negative consequences and have more effective methods of internal insurance protection.

**Self-insurance (internal insurance).** The mechanism of this direction of neutralizing financial risks is based on the enterprise reserving part of its financial resources, which allows it to overcome the negative financial consequences of those financial transactions for which these risks are not associated with the actions of counterparties.

**Other methods of internal neutralization of financial risks.** The main methods used by the enterprise include:

- ensuring the demand from the counterparty to a financial transaction of an additional level of risk premium;
- obtaining certain guarantees from counterparties;
- reducing the list of force majeure circumstances in contracts with counterparties;
- ensuring compensation for possible financial losses due to risks through the provided system of penalties. [7]

## **Conclusions**

With the help of financial risk management policies, neutralization measures are developed to eliminate the threat of risk and its adverse consequences associated with the implementation of various aspects of economic activity.

It should also be noted that the main way to minimize risk in a market economy is diversification. Diversification is a method of managing financial risks that involves distributing risks across different types of assets in order to reduce their concentration. Diversification is used to reduce the negative financial consequences of particular types of risks.

The use of special methods is largely determined the specifics of the company's activities and the market business situation.

An enterprise can minimize financial risks both by establishing and using internal financial standards in the process of developing a program for carrying out certain financial transactions or the financial

activities of the enterprise as a whole, and by using external insurance. Consequently, minimizing financial risks relates to the stages of production, distribution, exchange, and consumption. Without a mechanism for neutralizing financial risks, it is impossible to effectively ensure the continuity and efficiency of the process of producing material goods and maintaining an adequate standard of living for people.

The introduction of a mechanism for neutralizing financial risks can promptly prevent, avoid, and, if present, overcome the negative consequences of financial risks.

Thus, the problem of financial risk management is one of the key ones in the activities of the enterprise. It is associated with the possibility of losing a stable financial position of an enterprise in the process of activity and is an inevitable element of making any business decision. The financial risk management process will help the enterprise achieve profitability and profitability targets, as well as prevent wasteful use of resources.

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## **BUDGETARY AND FISCAL RELATIONSHIPS AS A SPECIFIC FIELD OF GOVERNMENT ACTIVITY**

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**Abstract:** The article aims to research the characteristics of the formation and development of budgetary and fiscal relationships as a specific field of government activity that has a significant impact on the national system of economic and financial security and on the process of sustainable development of state. The authors reflect the category of budgetary and fiscal relations as an institution with elements of public administration and regulation; the historical context of the emergence and development of budgetary and fiscal relations in the state; the characteristics of the absolute, differential and budgetary incidence methods of budgetary and fiscal relations; analysis of the components and objectives of budgetary and fiscal policy as well, the instruments of budgetary and fiscal administration in the context of financial risk management and ensuring the financial security of the state.

**Keywords:** financial field, budgetary - fiscal field, absolute incidence method, differential incidence method, budgetary incidence method, the institutional field of budgetary and fiscal relationships

**JEL Classification:** H30, H60, H20

### **Introduction**

The methodological basis of the research constituted the strategic directions for ensuring financial security; the main directions of the budgetary and fiscal policy of the state; the researches of classical, neoclassical and neoliberal economists, of the experts in the fields of economic and financial security, taxation and fiscal administration. All this allowed the systematization of areas and mechanisms for effective management of financial risks in the field of budgetary and fiscal relationships and the choice of effective policies for the sustainable development of national economies.

### **2. Specific field of government activity in budgetary and fiscal relationships**

The budgetary-fiscal field as an institution with elements of public administration and regulation has a social-economic and political base grounded theoretically and categorically in a wide range of scientific research. The historical background of the emergence and development of the field of budgetary and fiscal relations is determined by the secular practices of taxation and the development of budgetary relations in the state reflected in the works of the famous classics of economic science A. Smith, D. Ricardo, J.C.L. Simonde de Sismondi, J. S. Mill and many others.

In the theory of public finance, D. Brummerhoff reflects the impact of fiscal policy measures on the evolution of the budgetary field through different methods of analysis. Thus, for example, the impact of the income tax rate can be analyzed from a micro- or macro-economic point of view, selectively or continuously, in a short- or long-term perspective, or using absolute, differential or budgetary incidence methods . (see table 1) The incidence here refers to the impact of financial and political measures which, as a rule, reflect the process of social-economic redistribution. This refers to the changes that occurred as a result of the economic - financial and political measures compared to the situation without intervention. Thus, the analysis is constantly based on a comparison of the real state with a hypothetical state or two hypothetical states - development options (Brummerkhoff D., 2001, pp. 208-209).

**Table 1. General characteristics of absolute, differential and budget incidence methods**

<b>METHOD</b>	<b>METHODS OF APPLICATION / CHARACTERISTICS</b>
Absolute incidence method (or specific method)	It can be used in the analysis of isolated individual scenarios, for example, of changes in a separate budgetary-fiscal instrument (of a tax rate, etc.) or of a budgetary-fiscal indicator (of fiscal receipts, etc.). Depending on the fact that a change in the parameters of revenues or expenditures is taken into account, one speaks of the incidence of budgetary revenues or expenditures.
Differential incidence method	It can be applied in studying the effects of replacing (substituting) one financial and political instrument with another (for example, replacing tax A with tax B) under the conditions of a constant budget volume. The disadvantage of this method is manifested if a change in the structure of taxes changes the level and structure of prices, and the state cannot purchase goods in the same volume at the same level of expenses. Thus, the method can be used when any proportional tax is chosen as the basis of comparison.
The budget incidence method	It represents a simultaneous and balanced variation of revenues and expenses, which changes the volume of the budget. The incidence of tax increases always depends on how the additional revenue is spent. Because the revenue of a particular tax rarely has a targeted relationship with a particular expenditure, its use and impact may differ.

Source: developed by the author

The methods of absolute, differential and budgetary incidence presented by D. Brummerhoff in the 90s of the last century, represent an attempt to explain the impact of budgetary and fiscal policy measures on changes in revenues or budgetary expenditures using analytical tools and an analysis of financial risk management methods in the field of regulating budgetary and fiscal relations. Such problems remain the subject of contemporary research both nationally and internationally. In this context, the institutional field of budgetary and fiscal relations is characterized by goals, principles and levels of organization, forms and directions of implementation. (see table 2)

**Table 2. Types and characteristics of the objectives of the institutional field of budgetary and fiscal relations**

OBJECTIVE	GENERAL CHARACTERISTICS
Fiscal	It ensures the formation of budget revenues based on the redistribution of a part of the GDP to the budget system.
Economic	It ensures the effective involvement of the state in the regulation of the national economy, the maintenance of sustainable economic growth rates, the elimination of structural imbalances in social reproduction, the stimulation of investments and innovative development.
Social	It ensures social equity, alleviating the inequality of income levels of different social strata, thus contributing to the development of the material and intellectual potential of the population.
Ecologic	It provides conditions for the protection of the environment and the rational use of natural resources, the creation of a compensation mechanism for the use of natural resources and environmental pollution.
Investment	It creates, guarantees and ensures tax incentives for investors and other participants of investment relations, increasing the investment activity of the national economy.
Promotion of international cooperation	It provides conditions for the fulfillment of international financial obligations, contributes to the unification and harmonization of the fiscal and budgetary system in accordance with international requirements, strengthens economic ties with other countries.
Ensuring the sustainability of national social and economic security	It ensures the conditions for the implementation of measures to ensure economic security in order to prevent and counteract the complex and persistent threats of imbalance of the national budget system, it promotes the development of favorable budgetary and fiscal relations.

Source: based on D. Brummerhoff (2001)

The investment objectives, promoting international cooperation and ensuring national social-economic sustainability are not presented and analyzed in D. Brummerhoff's Theory of Public Finances, however, we believe that there are at least two reasons that require their highlighting in the context of the analysis of regulatory efficiency and financial risk management of the contemporary budgetary and fiscal fields:

- First of all, investment activity is currently considered as one of the mechanisms for implementing the strategy of ensuring the competitiveness of national economies in the context of the intensification of globalization and regionalization processes. At the same time, factors that negatively affect investment activity represent a threat to sustainable economic growth.
- Secondly, in each of the key areas of the budgetary - fiscal policy implemented in order to ensure the macroeconomic policy of ensuring the competitiveness of the national economy, sustainable development and increasing investment activity, budgetary and fiscal instruments are used (for example, new rules for the formation and execution of the budget, new budgetary and fiscal administration tools; changing the structure of the fiscal burden in society, etc.) that complete the system of instruments for ensuring national social and economic security.

In classical economic and financial theories, the content of the objectives of the field of budgetary and fiscal relations is largely determined by its form or model. Thus, for example, at the initial stages of the formation and development of public finance as a science, the types of fiscal policy

models that determined the objectives of the field of budgetary and fiscal relations were correlated with the size of the fiscal pressure (burden) on the economy. In this sense, we can distinguish the following types of models:

- ❖ Policy of maximum tax rates;
- ❖ The policy of minimum tax rates;
- ❖ The policy of reasonable tax rates.

The listed models found their foundation in the works of J. Keynes and A. Laffer. In his research, J. Keynes characterized the first type of model – *the policy of maximum tax rates*, determining as the basic objective of the field of budgetary and fiscal relations fiscal relations (Griffith T., 2017). In this context, the imperatives of the model represented by classical economic liberalism are the following: *a high fiscal burden on the economy and the population; the active intervention of the state in the development of the economy, including through budgetary investments; the low level of public expenditure for the maintenance and development of the social sphere.*

A. Laffer is considered to be the founder of the policy model of minimum taxation (taxation) rates, or rather, of the regulation policy of tax rates (Laffer A.B., 1981). This type of model is characterized by the lowest possible level of tax rates and, at the same time, takes into account the interests of the state and taxpayers, but the state reduces its spending on investments and social programs. Another interpretation of the policy of minimum tax rates - the policy of fiscal completeness - is associated with the focus of the national economy on the relocation of the jurisdiction of the top management of foreign economic agents, primarily transnational companies, and their transformation into their own tax residents (The Encyclopedia of Taxation & Tax Policy, 2005). In other words, the state seeks to receive additional tax revenues to the budget without increasing budget expenditures. This model is widely used in offshore countries.

The model of the policy of reasonable rates of taxation (taxation) is considered the most modern, widely applied in countries with a developed economy. The most important features of the policy are a balanced level of the tax burden at the same time as sufficient coverage of social expenditures. The policy of reasonable tax rates can be considered a combination of the elements of the first two policies presented previously and is characterized by a fairly balanced level of tax rates, which allows ensuring an advanced level of economic development while maintaining the significant volume of social expenditures. Such a policy is characteristic of a period of socially oriented economic growth, and the objectives of this policy are at the same time fiscal, economic and social (Perotti R., Strauch R., et.al., 1998. p.67). New types of budgetary and fiscal policy models are grounded in contemporary theories of taxation. Thus, corporate fiscal policy models are distinguished, effective, aggressive, adaptive, optimal, etc.

Based on the above, we can conclude that the modeling, elaboration and implementation of the budget-fiscal policy is closely related to the economic development scenarios and, consequently, to the development of the field of budgetary and fiscal relations.

In the field of budgetary and fiscal relations, depending on the purpose and the period of time for which the objectives and development goals are determined, the budgetary-fiscal policy can have a strategic or tactical character. The strategic aspects of the budget-fiscal policy cover a block of objectives and goals in the field of budgetary and fiscal relations on a large scale, for the long-term period, the tactical ones - achieving a certain stage of development of the field or improving its

individual elements. The strategic aspects of the budgetary - fiscal policy are based on the following principles (The Encyclopedia of Taxation & Tax Policy, 2005):

- *the continuity* of the main directions of the state policy adopted in the early periods and which require development in the future periods;
- *the adaptability* of the current economic policy of the state for a period of 5-10 years with the strategic directions of social and economic development;
- *competitiveness* with the economic policies promoted by the states of the world.

Moreover, in any of the periods, we consider that the budgetary - fiscal policy represents an important regulator of the institution of "state intervention" in the economy, which can be achieved through various methods: fiscal manipulation; revision of tax rates; establishing and canceling certain types of tax preferences; budgetary - fiscal maneuvers; transferring the tax burden from one category of taxpayers to others; interbudgetary redistribution of budget funds and others. Thus, in order to prevent the risk of the transformation of state regulation into a state intervention that harms economic development and social stability, when implementing budgetary and fiscal policy measures, the activity of state-authorized bodies must be based on the general, unanimously accepted principles of development socially and economically sustainable.

## **Conclusion**

The characteristics of the formation and development of budgetary and fiscal relations as a specific field of state activity are determined by the following aspects: firstly, by the specificity of the field of budgetary and fiscal relations as an institution with elements of public administration and regulation; secondly, by the historical premises of its emergence, conditioned by the development of fiscal theories and budgetary and fiscal relations in the state since its formation; thirdly, the choice of fiscal policy objectives and fiscal administration tools to ensure the sustainable development of the national economy.

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## ALTERNATIVE FINANCE: A MODERN ECONOMETRIC EXPLORATION INTO GLOBAL TRENDS AND INFLUENCES

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**Abstract.** In the wake of the 2007-2008 financial crisis, the global landscape experienced the burgeoning growth of the alternative finance sector, a countermeasure to stricter banking regulations. Drawing from 2020 data across 67 countries, this study delivers a meticulous econometric analysis to unravel the intricate determinants of this industry's growth. Utilizing a comprehensive model, the research delineates the associations between alternative financial instruments and critical socio-economic indicators. An ensuing reduced model accentuates these relationships, spotlighting the significant influence of the Financial Development Index and Economic Freedom. A comparison between the two models offers deep insights, emphasizing the industry's resilience and pivotal role in global financial inclusion, particularly evident during adversities like the COVID-19 pandemic. Ultimately, this research underscores the potential of the alternative finance sector while illuminating its interplay with broader economic metrics.

**Keywords:** alternative finance market, digital finance, econometric analysis

JEL Classification: G23, C51, O16.

### Introduction

The seismic aftermath of the 2007-2008 global financial meltdown forever changed the trajectory of the financial world. The resulting credit scarcity and economic slowdown paved the way for introspection and a pursuit for better financial frameworks. Among the significant responses was the Basel Committee's introduction of the Basel III standards in 2009, designed to bolster bank capital adequacy requirements. Such requirements inevitably made loans costlier and less accessible, especially for nascent technology ventures and innovative SMEs, both perceived as risky bets (Schueffel, 2016).

This challenging backdrop gave rise to the alternative finance industry, an unregulated economic sector, attracting initially venture capitalists and evolving to engage a more diverse set of micro-investors. With the world undergoing a digital revolution and a new phase of industrialization, businesses are continuously adapting to maintain a competitive edge. Amid this evolution, alternative finance has grown into an indispensable tool, facilitating funds for consumers and small to medium-sized enterprises, energizing local economies, and backing socially impactful projects (Haddad and Hornuf, 2019).

Enhanced by the ubiquity of the internet, AI and big data analytics, financial inclusion is becoming more of a reality, broadening access to affordable, convenient financial services (Claessens *et al.*,

2018). The alternative finance sector, though still a fraction of the vast lending landscape, is reshaping the capital interaction dynamics on a global scale. It promises numerous benefits like remote transaction capabilities, portfolio diversification, and lower transactional fees due to automation (Boot and Thakor, 2017).

As the global economy has grown more interconnected and digitalized, the market for alternative financing solutions has shown a consistent expansion trajectory. This expansion extends beyond traditional banking, with even established financial institutions tapping into these new avenues. Moreover, the world's current health and economic challenges, as seen during the COVID-19 pandemic, have further underscored the importance of digital financial services. The pandemic's restrictive nature catalysed interest in novel financial areas, particularly in the realms of cryptocurrency and digital assets.

### Exploration of the international alternative finance landscape

By 2020, the global alternative finance market achieved a valuation of \$114 billion USD (Figure 1). When delineating the global market shares, the United States and Canada were at the forefront with \$73.93 billion, trailed by the UK with \$12.64 billion, and the rest of Europe (excluding the UK) tallying at \$10.12 billion. It's imperative to reflect upon 2017 when the global market scaled to its zenith at \$419 billion. China remarkably accounted for 85% of global transactions during this period, relegating Europe to just 2.8%. China's leadership in the global online alternative finance market extended until 2018. However, due to indigenous market realignments and stringent regulatory reforms, its share diminished sharply to 1% by 2020. Notably, China's P2P lending ecosystem burgeoned from 2011 to 2015. Yet, shadows loomed as, in 2016, the China Banking Regulatory Commission unveiled that nearly 40% of these platforms were embroiled in scams. This revelation prompted regulatory rigidity, causing over half of these platforms to cease operations.

The global online alternative finance market, excluding China, displayed a persistent growth over the previous five years, with volumes escalating by 51% from \$44 billion in 2015 to \$91 billion in 2019. Mirroring this momentum, 2020, despite pandemic-induced headwinds, saw the global volume surging by an additional 24% year-on-year, touching \$113 billion.

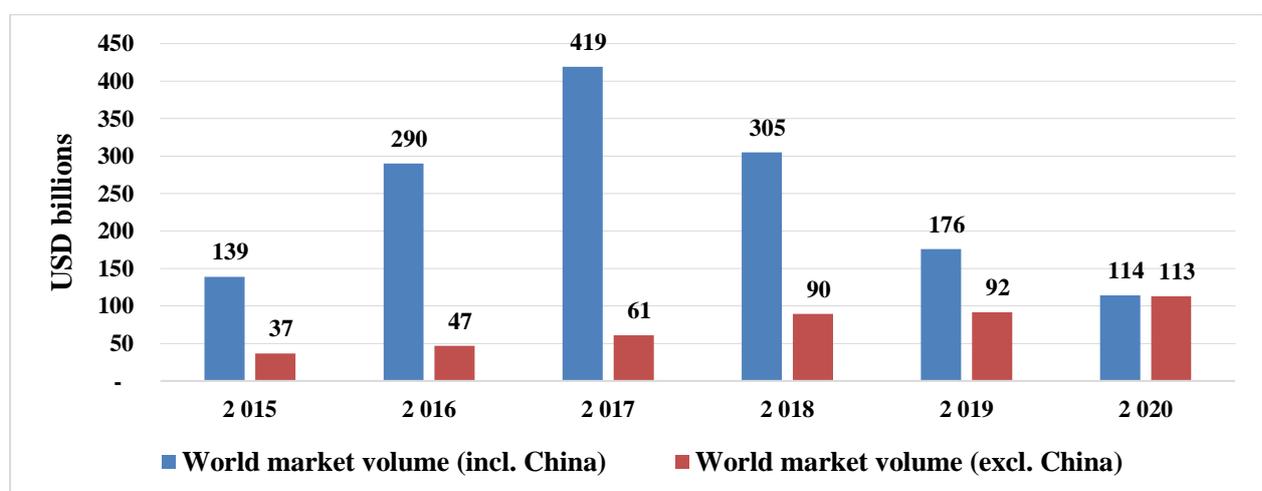


Figure 1 Global alternative finance market volume and growth, 2015-2020

Source: developed by the author based on (Ziegler *et al.*, 2021)

## **Econometric analysis of the factors driving the development of the market for alternative financial instruments**

In this chapter, we endeavor to uncover the intricate interrelationships between the market volume of alternative financial instruments and several pivotal socio-economic variables across a diverse range of nations.

### **Empirical framework, data, and methodology**

The research is anchored in an empirical investigation, with the analysis built on observed and measured phenomena derived from actual data. In this section, we delve deeper into the specifics of the data, highlighting the source, nature, and the methodology employed.

### ***Data description and source.***

The dataset is cross-sectional, encapsulating data from 67 diverse countries, offering an encompassing perspective on the global landscape of the alternative financial market for the year 2020 (latest data available). Each observation in the dataset represents a specific country, capturing a snapshot for that year, which allows for drawing meaningful patterns and insights across varying socio-economic frameworks.

-Alternative Financial Market Cap (*AFMcap*): Representing our dependent variable, it quantifies the market volume of alternative financial instruments *per capita* for each nation. This data was primarily extracted from the Global Financial Development Database, a comprehensive source managed by the World Bank.

- Financial Development Index (*FDI*): Capturing the intricacies of the financial ecosystems of nations by depicting the depth, access, and efficiency of financial institutions and markets. This metric was sourced from the International Financial Statistics provided by the International Monetary Fund.

- Global Innovation Index (*GII*): An index highlighting the innovation performance of nations, its data is the culmination of joint efforts by Cornell University, INSEAD, and the World Intellectual Property Organization.

- Economic Freedom Index (*ECF*): Serving as an indicator of the economic liberties exercised in nations, it's based on metrics like business freedom, trade freedom, and fiscal freedom, among others. The dataset for this was curated by the Heritage Foundation.

- Social Capital Index (*Social*): A reflection of the levels of social cohesion and mutual trust among the citizens of a nation. The data for this index was extracted from the World Values Survey.

### ***Methodological approach.***

For the sake of ensuring precision and capturing the nuanced relationships between variables, the data was log-transformed with the soep of mitigating potential heteroscedasticity, ensuring that the variance of the residuals remains consistent across levels of the independent variables. Moreover, the log transformation helps address non-linearity and captures exponential relationships more effectively.

The choice of variables wasn't arbitrary. Based on a careful review of existing literature, their presumed significance, and the availability of credible data, these variables were chosen. The intention was to craft a model that provides a panoramic view of the forces and factors shaping the market for alternative financial instruments across the 67 nations.

### **Econometric tools and software employed**

In order to derive meaningful interpretations and insights from the collected data, it was imperative to utilize advanced econometric tools and techniques. This section delves into the specific software packages and functions employed throughout the analysis.

### ***Software and packages.***

The mainstay of our analysis was the R programming environment, a powerful and robust tool for statistical computing and graphics. R's extensive library support and its ability to handle complex data structures make it an ideal choice for econometric research.

Specific R packages that were instrumental in our analysis include:

- *stats*: A core R package, it provided the fundamental functions to run linear regressions and ANOVA tests, vital to our full and reduced models' analyses.
- *lmtest*: This package facilitated various tests on linear regression models, helping in the diagnosis and refinement of our econometric models.
- *car*: Companion to Applied Regression, or `car`, offered additional diagnostic tools. Functions from this package were crucial in testing assumptions and identifying potential issues with the regression models.

### ***Functions and techniques:***

1. Linear Regression: At the heart of our analysis was the linear regression function. It allowed us to ascertain relationships between our dependent variable (*AFMcap*) and multiple independent variables, producing both the full and reduced models.
2. ANOVA: The Analysis of Variance technique was employed to compare the variance between our full and reduced models. It provided clarity on the significance of each model and its individual predictors.
3. AIC & BIC functions: The Akaike Information Criterion and the Bayesian Information Criterion functions were utilized to evaluate the relative quality of the models. By penalizing model complexity, they offer a more holistic gauge on the preferred model.
4. Residual Analysis: Residual plots and tests for normality were executed to ensure the assumptions of linear regression were met.

By utilizing a combination of these tools and functions in R, we were able to dissect the data, ensuring rigorous, reliable, and reproducible results. The choice of tools was guided by the specific needs of our research and the nature of the data, ensuring that the techniques employed provided maximum clarity and insight into the relationships between our chosen variables.

### **Comprehensive analysis of the full model**

The full econometric model was conceived to capture the depth and intricacy of the relationship between the volume of the market for alternative financial instruments (*AFMcap*) and the selected socio-economic indicators. This model can be succinctly represented as:

$$\log(AFMCAP) = \alpha + \beta * \log(FDI) + \gamma * \log(GII) + \delta * \log(ECF) + \zeta * \log(SOCIAL) + \varepsilon \quad (1)$$

Where:

- $\alpha$  is the intercept
- $\beta$ ,  $\gamma$ ,  $\delta$  and  $\zeta$  are the coefficients of the respective independent variables
- $\varepsilon$  represents the error term

Given the processed data (Table 1), the estimated equation based on the full model is:

$$AFMcap = -17.4064 + 1.1544(FDI) + 1.7192(GII) + 7.2318(ECF) + 1.0987(Social) \quad (2)$$

**Table 1 Full model analysis**

Residuals	Min	1Q	Median	3Q
	-1.19675	-0.50049	-0.00388	0.41218
Coefficients	Estimate	Std. Error	t value	Pr(>t)
Intercept	-17.4064	3.2258	-5.396	1.18e-06***
FDI	1.1544	0.5426	2.128	0.037411*
GII	1.7192	1.0962	1.568	0.121975
ECF	7.2318	1.8668	3.874	0.000264***
SOCIAL	1.0987	1.2391	0.887	0.378709
Residual std. error	0.5978 on 61 degrees of freedom			
Multiple R-squared	0.406			
Adjusted R-squared	0.3671			
F-statistic	10.42 on 4 and 61 DF			
p-value	1.685e-06			
Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1				

Source: calculations made by author using R software

Let's delve deeper into the significance and implications of these coefficients:

- *Intercept* (-17.4064): This value depicts the predicted volume of *AFMcap* when all other predictors are at zero. While this doesn't necessarily hold a contextual meaning due to the improbability of all predictors being zero, it serves as a baseline for our model.
- *FDI* (1.1544): The coefficient suggests that for every one unit increase in the Financial Development Index (FDI), the *AFMcap* is expected to increase by 1.1544 units, holding all else constant. This relationship is statistically significant at the 0.05 level.
- *GII* (1.7192): This coefficient indicates a positive relationship between the Global Innovation Index and *AFMcap*. For every unit increase in *GII*, *AFMcap* increases by about 1.7192 units. However, this association is not statistically significant at conventional levels.
- *ECF* (7.2318): Evidently the most influential predictor among the lot, every unit increase in the Economic Freedom Index (ECF) corresponds to a substantial 7.2318 units increase in *AFMcap*, with this being statistically significant at the 0.001 level.
- *Social* (1.0987): The coefficient indicates that for every unit increase in Social Capital Index, the *AFMcap* increases by 1.0987 units. Nonetheless, this variable's impact is not statistically significant in this full model framework.

The overall model fit, with an  $R^2$  of 0.406, indicates that the full model explains approximately 40.6% of the variance in *AFMcap*. While this is a moderate fit, the implications of each variable and their significance need to be viewed through the broader lens of the research context, as explored in subsequent sections.

Residual Standard Error: This is a measure of the variability of the residuals. It's 0.5978, which means that, on average, the predictions of the model are about 0.5978 units away from the actual values of AFMcap.

F-statistic: It tests the hypothesis that all regression coefficients are equal to zero, meaning no linear relationship exists between predictors and the dependent variable. The F-statistic is 10.42 with a very low p-value (1.685e-06), suggesting that at least one predictor variable is statistically significant.

To sum it up, FDI and ECF have a statistically significant effect on AFMcap at the 0.05 significance level. The variable ECF has the strongest effect. However, GII and Social are not statistically significant in this model.

### Introduction of the Reduced Model

In the pursuit of achieving a more parsimonious and possibly more predictive model, we introduced a reduced model that eliminates some of the variables from the full model. This streamlined model focuses on the most significant predictors based on statistical evidence and domain understanding. The reduced model can be expressed as:

$$\log(AFMCAP) = \alpha + \beta * \log(FDI) + \delta * \log(ECF) + \varepsilon \quad (3)$$

Where:

- $\alpha$  is the intercept.
- $\beta$  and  $\delta$  are the coefficients of the respective independent variables.
- $\varepsilon$  represents the error term.

Utilizing the gathered data, the equation derived from the reduced model is:

$$AFMcap = -16.0809 + 0.4311(FDI) + 9.1852(ECF) \quad (4)$$

Let's decipher the significance and meaning of these coefficients (Table 2):

**Table 2 Full model analysis**

Residuals	Min	1Q	Median	3Q
	-1.27254	-0.41597	-0.05811	0.40127
Coefficients	Estimate	Std. Error	t value	Pr(>t)
Intercept	-16.0809	2.9492	-5.453	8.83e-07***
FDI	0.4311	0.3889	1.109	0.272
ECF	9.1852	1.5692	5.854	1.88e-07***
Residual std. error	0.6054 on 63 degrees of freedom			
Multiple R-squared	0.3709			
Adjusted R-squared	0.3509			
F-statistic	18.57 on 2 and 63 DF			
p-value	4.568e-07			
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				

Source: calculations made by author using R software

- *Intercept* (-16.0809): This represents the expected value of *AFMcap* when both *FDI* and *ECF* are zero. As with the full model, this is more of a baseline value and might not have substantial practical implications.

- *FDI* (0.4311): For every one unit rise in the *FDI*, the *AFMcap* is expected to increase by 0.4311 units, keeping everything else constant. However, it's noteworthy that in this reduced model, the relationship is not statistically significant at traditional significance levels, showing a p-value of 0.272.

- *ECF* (9.1852): The coefficient for the *ECF* suggests a potent relationship. Each unit increase in *ECF* leads to an increase of 9.1852 units in *AFMcap*. This relationship remains statistically significant at the 0.001 level, just as it was in the full model.

The model's R-squared of 0.3709 suggests that around 37.09% of the variability in the *AFMcap* can be explained by the model. While this may not seem exceedingly high, it is reasonable for many real-world scenarios and stresses the importance of *ECF* in explaining *AFMcap*'s variance.

The F-statistic tests the overall significance of the model. A value of 18.57 at a very low p-value (4.568e-07) strongly rejects the null hypothesis that all coefficients (except the intercept) are equal to zero. This implies that the predictors used in the model are statistically relevant in forecasting the response variable, *AFMcap*.

In summary, the reduced model emphasizes the paramount importance *ECF* in determining the capitalization of the Alternative Finance Market. While the Financial Development Index is an integral facet of financial progression, in this model, it doesn't have a significant direct correlation with *AFMcap*.

### **Comparative Analysis: Full Model vs. Reduced Model**

The process of model selection often necessitates a comparison of various models to discern which among them provides the best explanatory power while balancing simplicity. In this section, we shall appose the Full Model against the Reduced Model to discern their relative merits and limitations.

In the Full Model, both *FDI* and *ECF* emerged as statistically significant predictors. *GII* and *Social*, despite being included, didn't manifest significant effects. On the contrary, in the Reduced Model, while *ECF* maintained its statistical importance, *FDI* lost some of its statistical significance, indicating that it might be influenced by the presence of other variables in the Full Model.

**Table 3 Model Fit and Predictive Power**

	Full Model	Reduced Model
<i>R</i> <sup>2</sup>	0.406	0.3709
Adjusted <i>R</i> <sup>2</sup>	0.3671	0.3509

Source: calculations made by author using R software

While the Full Model (Table 3) explains about 40.6% of the variance in *AFMcap*, the Reduced Model accounts for approximately 37.09%. The adjusted *R*<sup>2</sup> values, which account for the number of predictors, are quite close for both models. This implies that despite the Reduced Model having fewer predictors, its explanatory power isn't vastly diminished compared to the Full Model.

**Model Selection Criteria** (Table 4). The Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) are pivotal tools for model comparison. Typically, lower values suggest better-fitting models.

**Table 4 Model Selection Criteria**

	Full Model	Reduced Model
AIC	126.1857	125.9779
BIC	139.3237	134.7365

Source: calculations made by author using R software

The Reduced Model has slightly lower AIC and BIC values, suggesting it might be a more favorable model when considering model fit relative to complexity.

**ANOVA Comparison**. Using an ANOVA test, we compared the two models. The test rendered a p-value of 0.1734. This indicates that there isn't a statistically significant difference in the sum of squares between the two models, further underscoring the efficiency of the Reduced Model. The ANOVA test suggests that the reduced model, without the variables GII and Social, fits the data almost as well as the full model. Given this result and considering parsimony (i.e., simpler models are generally preferable when they perform similarly to more complex models), the reduced model seems like a reasonable choice.

### **Recommendations and forward path**

Having rigorously examined the Full Model and Reduced Model, it's evident that our quest to understand the driving forces behind the development of the market for alternative financial instruments is layered with complexity. Herein, we offer recommendations and suggest a potential path forward based on the findings.

#### *1. Embracing parsimony:*

Given the minimal difference in predictive power between the Full and Reduced Models and the principle of parsimony (Occam's razor) which promotes simplicity, it's advisable to adopt the Reduced Model for subsequent studies or applications. This decision is also bolstered by its more favorable AIC and BIC values.

#### *2. Re-assessing the role of FDI:*

In the Full Model, FDI was significant; however, its importance diminished in the Reduced Model. This suggests potential multicollinearity or the presence of confounding factors. Further research should be undertaken to delve deeper into this relationship and discern the true impact of FDI on the alternative financial market.

#### *3. Expanding the dataset:*

While our current study focuses on data from 67 countries for the year 2020, broadening the analyzed period to adopt a panel data approach spanning multiple years could provide a richer understanding and capture dynamic effects.

#### *4. Exploring other potential variables*

The non-significance of variables like 'GII' and 'Social' in the Full Model suggests that other unexplored variables might hold importance. Continuous exploration and model refinement are essential.

#### 5. Policy implications:

For policymakers and stakeholders in the alternative financial market, the prominence of ECF underscores the need to foster an environment conducive to entrepreneurial activities. Policies that ease access to capital for startups, facilitate technological advancements, and ensure a robust regulatory framework can further invigorate the growth of alternative financial instruments.

Our analysis of the determinants of the market for alternative financial instruments has paved the way for intriguing insights and raised new questions. While the Reduced Model emerges as a frontrunner, continuous refinement, and adaptation, rooted in both quantitative and qualitative paradigms, will be the cornerstone of future success in this realm.

### Conclusion

The exploration into the realms of alternative financial instruments offers invaluable insights. Both models are instrumental in delineating the underlying relationships, but the reduced model emerges slightly more pragmatic. As we progress, these empirical findings can form the bedrock for future research and policy considerations in the sphere of alternative finance.

The full model of our study in Chapter 2 underscored the interplay of pivotal socio-economic variables, with FDI, GII, ECF, and Social metrics taking center stage. Our findings resonate with the premise that alternative finance is not a standalone construct but one that's deeply intertwined with global economic and social paradigms.

Introduction of the reduced model, with a narrowed focus on FDI and ECF, reiterated that while many variables can influence a market, it is often a select few that drive the lion's share of the impact. While the full model offers breadth, capturing a wide array of influencing factors, the reduced model offers depth, zeroing in on the most potent drivers. This balance between breadth and depth is critical for both academia and industry, ensuring that decisions are both holistic and targeted.

Based on our empirical examination the alternative finance sector's potential is vast, but realizing it necessitates a calibrated approach. Policymakers and industry leaders would benefit from regular econometric analyses, ensuring that decisions are data-driven and cognizant of shifting global dynamics.

As we conclude our exploration, we're left with a profound appreciation of the complexity and promise of alternative finance. It stands as a beacon of modern financial ingenuity, and our study is a humble nod to its vast potential. The journey of understanding this sector is ongoing, and as more data unfolds, the narrative will only get richer.

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## ANALYSIS OF THE POLITICAL AND ECONOMIC FACTORS THAT INFLUENCE THE DECISION TO INTEGRATE THE GENDER DIMENSION IN THE BUDGET PROCESS IN THE REPUBLIC OF MOLDOVA

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**Abstract:** The Republic of Moldova does not yet have a comprehensive gender budgeting framework in force. The Republic of Moldova legislative and policy framework for gender equality is expressed in Law no. 5 of 09.02.2006 on ensuring equal opportunities between women and men. Moldova's Parliament and Ministry of Finances are responsible for its national budget cycle (planning and budgeting processes). Recently, the integration of the gender perspective was achieved in the Budget Circulars and the Methodological Set regarding the development, approval and amendment of the budget (Order of the Ministry of Finance no.209 from 2015), which was implemented for the 2022 budget.

It is well known that gender budgeting can be applied to any type of budget system at all levels of government, be it central government level or regional and local government levels. Examining the factors that underline introducing gender budgeting at central government level is important because budgetary decisions on both revenue and expenditure are made at this level. Effective implementation of gender budgeting requires enabling factors: political commitment, technical capacity, disaggregated data etc.

The purpose of this article is to examine the common elements needed to implement effective gender budgeting, as well as to answer how gender budgeting works in the Republic of Moldova.

**Keywords:** gender budgeting, public finance management reform, government, political and economic factors

JEL Classification: A13, E62, H61, H75, I18, I28, I38, J16, J88, O11

### Introduction

There is a growing interest among policymakers and academics in analyzing ways of mainstreaming gender in public policies. It is driven by the need to not only better understand the impact of gender on policymaking but to also identify the factors underlying the gender mainstreaming into the budgetary process (Flamini *et al*, 2023).

Gender budgeting arose from a feminist critique of the state and macroeconomic policy, and examines the initiatives to translate gender budgeting concepts into practice in public sector institutions. It draws on economic and diagnostic studies, to illustrate the possibility of shaping gender budgeting initiatives. Understanding the economy as gender sensitive, feminist economists explicitly recognize and identify the gendered power relations that underlie the various institutions, transactions, and relationships that make up the sphere of the economy (IMF, 2017b), and criticize economic instruments as being technologies of domination, technocratic exercises and technologies of exclusion (Marx). Starting from these reasonings, the IMF identifies at least five central criticisms that prevail in the feminist economic literature regarding the current neo-liberal macroeconomic framework (IMF, 2017).

With respect to economic participation of men and women, Republic of Moldova is characterized by considerable gender gaps, many of which are rather large in international comparison and closing only slowly (Generations and Gender Survey, 2022; Centrul Parteneriat pentru Dezvoltare, 2020, 2021; Centrul Parteneriat pentru Dezvoltare, UN Women, 2020a, 2020b, 2021; United Nations Moldova, 2021).

Gender responsive budgeting requires strong legal basis like being enshrined in the Constitution and other normative acts (see the Austrian Federal Constitution). In the Republic of Moldova legal framework in the field of equality between women and men is enabled by the Constitution of the Republic of Moldova, by the Law no.5 of 09.02.2006 regarding ensuring equal opportunities between women and men, by other normative acts, as well as by the international treaties to which the Republic of Moldova is party.

As the experience of developed countries show, a decision to embody gender responsive budgeting and gender impact assessment should be introduced at the central level as an integral element of a major budget reform. As at this stage in our country there is no gender responsive budgeting in place, but only fragmented efforts, it is more fruitful to identify challenges, obstacles and constraints that are encountered in the course of implementation. The paper focuses on the factors and the challenges and constraints rooted in the Moldovan approach to introduce gender responsive budgeting as a central element of a major budget reform.

## **Theoretical and methodological approaches regarding gender mainstreaming**

### **Enabling factors for gender budgeting**

Although in the Republic of Moldova greater attention is paid to the implementation of national and international commitments in the field of gender, however, no robust measures are taken to strengthen the capacities of central and local authorities in the use of gender-sensitive budgeting tools in the planning and budgetary, unlike the attempts to implement such initiatives by non-governmental actors and, to a small extent, at the level of local public authorities, which as a whole will contribute to the accountability of the Government regarding the commitments assumed in the field of gender equality gender. We note that these gaps are valid for the planning process carried out at all decision levels (Government, Ministry of Finance) and legislative authority (Parliament). The international practice, and especially the national one, demonstrates that interventions in the gender budgeting require the existence of a political will and the commitment, especially of the decision-makers from the institutions that participate in the budget process (Ministry of Finance, line ministries, Parliament). In international theory and practice, it is mentioned that, having the basic functions within the budget

process, the Parliament, the Government, the Ministry of Finance, the local public authorities can be invested with responsibilities related to gender-sensitive budgeting, which can vary depending on the context and which will be adjusted to the national specifics of the respective country. There is no single methodology for conducting a gender budget analysis. In retrospect, most gender budgeting initiatives in different regions of the world have focused on the expenditure side of the budget, predominantly in the social sectors. These are the areas where gender relevance is most obvious to policy makers. Key enabling factors that influence the decision to integrate the gender dimension in the budget process include:

- Political will and political leadership;
- High-level commitment of public administrative institutions;
- Improved technical capacity of Civil servants;
- Civil society involvement;
- Sex-disaggregated data (EIGE).

A more detailed list of practices that can incorporate a gender perspective are presented below (Table 1):

**Table 1 Key enabling factors for gender budgeting**

<b>Public Finances Management institutions and practices</b>	
Legal framework (Constitution, budget law, administrative guidelines)	Gender related provisions in public finance and budget legal framework
Gender budget statements	Policy decisions on gender related issues
Budget circular	Gender budget statements
Information systems and reporting	Gender Impact Assessments
Incorporation of gender perspective in the budget classification	Budget circular and instructions related to gender budgeting
Fiscal reports and budget documentation	Performance indicators with gender perspective
Performance budgeting (Program-based budgeting)	Publication of gender related performance indicators
Gender impact assessments	Existence and publication of fiscal data disaggregated by gender
Budget execution, monitoring and control	Budget classification according to gender perspective
Well-structured fiscal policies and public financial management	Budget execution reports, annual financial statement with data on gender-related expenditure and revenue
Gender-oriented approach throughout their budget cycle	Parliamentary control (ex ante and ex post)
Accountability and audit	Annual audit of the budget with gender related aspects
Organizational responsibilities for implementing gender budgeting	
Capacity building for effective gender budgeting systems	

Source: International Monetary Fund, 2017a.

### **Development Challenges**

The United Nations is committed to working with the Government of the Republic of Moldova to support the sustainable contribution to human rights and national development priorities and to further improve the living conditions of all people in the country, especially the most vulnerable and disadvantaged, in line with the Cooperation Framework Republic of Moldova - United Nations for

Sustainable Development (UNSDCF) for 2023-2027 (United Nations Moldova, 2023) that is compliant with the national priorities established in the Association Agreement with the EU signed in 2014, and the nationalized SDGs. Under Priority Area 1 “Just and Inclusive Institutions and Equal Opportunities for Human Development” of the UNSDCF the United Nations aims to ensure that “by 2027, institutions deliver human rights, evidence-based and gender-responsive services for all with the focus on those who are left behind”. Under the Output 1.2: “Regulatory and policy framework that is evidence based takes into account demographic trends, promotes gender responsive and human rights based social protection and equal access to basic services” (United Nations Moldova, 2023), UN agencies are making concerted efforts to increase women's, men's, and youth's capacity to participate in democratic governance.

According to the UNSDCF, gender equality needs to be further mainstreamed into central and local-level processes for budgetary planning, resulting in the country's limited progress towards achieving gender equality, as envisaged in the 2030 Agenda. Gender stereotypes and norms limit the participation of women and girls in decision-making and access to services, and continue to perpetrate discrimination and violence against them (United Nations Moldova, 2023).

The Republic of Moldova has visibly advanced on the path of increasing the representation of women in decision making in the recent years. The representation of women in the Parliament has considerably increased in the last decade achieving 40% in 2023. A woman was elected as President in 2020, while 2021 brought a woman in the position of prime minister.

As a result of an increased gender knowledge and awareness, women MPs from all political Factions launched in May 2023 the Platform of Women MPs (Women's Caucus) from the 11th legislature. The platform represents a new framework for cooperation and intra-institutional dialogue that will empower women MPs from the Republic of Moldova, belonging to both the majority and the parliamentary opposition, to find a common denominator for the consolidation and promotion of women's rights in the country (PNUD Moldova, 2022).

The Parliament has the powers to achieve a transformative change with regards to gender equality, to mainstream gender and human rights across its legislative, oversight and representation functions, so the institution takes into consideration particular needs of women and men, as well as marginalized and vulnerable groups, to leave no one behind along the reform pathway. The Parliament and its Women's Caucus played an important role in advancing the gender equality in the legislation. Here it is worth mentioning the adoption of the Law no.71 from 14.04.2016 introducing a 40% gender quota for political parties and for nominated ministers, 14-day paternity leave paid by the State, prohibition of the sexist language in mass-media and in advertisements, amendments to the Law no.196 from 28.07.2016 on preventing and fighting domestic violence; and amendments to the Law no.294 from 21.12.2007 on political parties. These provisions dramatically changed the gender balance in the elected bodies and ensure women make at least 40% in those. These advancements demonstrate that women MPs can achieve transformative changes on the gender equality agenda if they join the forces.

### **Legal provisions, institutional arrangements and procedure of implementation**

In order to understand the political and economic foundation that influences the decision to integrate gender dimension in the budget process, it is useful to look at the macro and micro levels of the policy-making and the public finance management reform.

Pursuant to Law no.5 of 09.02.2006 regarding ensuring equal opportunities between women and men, the principle of gender equality is to be integrated into policies and programs from all spheres and at all levels of adoption and decision-making in the Republic of Moldova. This Law has promoted awareness of the importance of gender mainstreaming by empowering the Government to (a) ensure the integration of the principle of equality between women and men into policies, strategies, programs, normative acts and financial investments, (b) approve the national plans and programs regarding equality between women and men, and monitoring their implementation, (c) submit periodically reports to the Parliament on the situation and activity in the field, in accordance to the legislation (Petroia, Zadnipru, 2022).

In accordance with that Law, the competence of the Parliament includes adopting the legislative framework that ensures equality between women and men in all fields, monitoring the implementation of the principle of equality between women and men in all directions and at all levels of state policy, as well as examining the reports of the Government and the People’s Advocate on the situation in the field, in accordance to the legislation.

The Strategy of Public Finance Management Development for the years 2023-2030 addresses gender equality in the public finance system. The Strategy acknowledges that public finance management systems frame how public resources are used, and there is a direct link between the use of public funds and the quality of people's lives. Since citizens are not a homogeneous group, taxation and spending impact women and men differently based on gender, age, disability, health, ethnicity and other factors that influence access to and benefits from resources and policies.

In accordance with these statements, the correlation of gender with public finance management includes how public finance management institutions, systems and processes take into account gender-differentiated needs, as well as the impact of fiscal policies and practices on men and women, boys and girls. Gender-sensitive public finance management can address specific gender needs and reduce gender gaps between sectors implying a redistributive power.

The Strategy acknowledges that given that the central focus of finance is on program budgeting, gender-sensitive budgeting plays an essential role in public finance management and is not only about financing explicit gender equality initiatives, but also involves analyzing fiscal policies and budget decisions to understand their intended and unintended impact on gender equality and use this information to design and implement more effective policies.

## **Gender mainstreaming in public policy in the Republic of Moldova**

### **Reform of the Public Finance Management in the Republic of Moldova**

Consolidation of the public finance management system is an objective of the Government. The reform of public finance management is a complex field, which in the Republic of Moldova is assumed by the Development Strategy of Public Finance Management for the years 2023-2030 (Government Decision no.71/2023).

This document contains a synthesis of ongoing reforms, by consolidating in a single document several dedicated policy actions and strategies in the process of implementation on several critical components of public finance management. The general objective of the Strategy is to ensure the increase of efficiency, performance and transparency of public finances and to contribute to the

fulfillment of the fundamental criteria for EU accession. The strategy focuses on seven important components of public finance management: i) macroeconomic analysis and the macro-budgetary framework; ii) development and planning of the public budget; iii) budget execution, accounting and reporting; iv) internal public financial control; v) fiscal and customs policies; vi) public procurement; vii) transparency of public finances. Combined with other challenges related to the deficiencies of management systems in the field of public administration, the integration of the gender approach in public policies is difficult. The gender component is not dominant in the reform of public finance management, but progress is being made in the more frequent use of the concept in the Strategy and other public policies. The goal of integrating the gender dimension in medium-term budget planning is already taking shape. In the budget development and planning component, it is mentioned that there are deficiencies in the budget formulation stage, which does not take gender discrepancies into account. It is found that the methodological guidelines issued by the Ministry of Finance and the budget circular of the units of the line ministries do not provide sufficient information on the impact of budget policies on gender equality and guidance on how to achieve them. Budget documentation does not include an overview of government policy priorities in support of improving gender equality, details of budget measures aimed at strengthening gender equality and analysis of the impact of budget policies on gender equality.

For these reasons, the Strategy proposes to focus in particular on the reform of the weak elements of the public finance management system, which undermine the maintenance of budgetary discipline, namely the poor quality of the evaluation of the economic, fiscal and social impact (including from the perspective of gender equality) of public policy proposals and the reduced link between policy priorities and the budgetary framework. Another weak element that undermines the strategic allocation of resources is the insufficiency of gender mainstreaming measures in the policies and budgets of public authorities. At the same time, the progress in the respective chapter is recorded. Thus, in recent years, some elements of gender-sensitive budgeting have been developed as part of the Strategy for ensuring equality between women and men in the Republic of Moldova for the years 2017-2021, approved by Government Decision no. 259/2017. This included a coherent approach and procedural reforms related to the identification of gender-sensitive indicators for budget programmes, the development of professional capacities of civil servants and the piloting of methodologies for gender mainstreaming in sectoral spending strategies. However, progress is lacking as it has not been well aligned with the Public Finances Management reform processes. It is planned that with the implementation of this Strategy, the gender dimension will be integrated following the findings of the 2021/2022 Public Expenditure and Financial Responsibility Performance Evaluation. The strategy establishes the following medium-term priority directions:

- Improving the capacities of budgetary authorities in establishing gender-sensitive performance indicators in correlation with policy priorities/strategic priorities, as well as in monitoring and reporting gender-sensitive performance indicators in the area of responsibility.
  
- In the field of intervention "budgetary planning", a medium-term priority direction aims to integrate the gender dimension in medium-term budgetary planning.
  
- In the field of intervention "internal audit", a medium-term priority direction aims at the development of a procedural framework for the application of modern work techniques in the field of internal audit, including the consideration of the gender equality dimension.

The previous Public Finances Management Strategy 2013-2022 did not incorporate any gender component (PEFA 2022).

### Gender mainstreaming in the budgetary process in the Republic of Moldova

An important element of gender mainstreaming strategy are public revenues and expenditures. The Republic of Moldova’s levels of government spending and taxes in percent of GDP are relatively high (Table 2). In 2022, Moldova registered a government expenditure ratio of 36.8 percent of GDP compared to EU average of 51.5 percent of GDP in 2021 (Eurostat, 2021). As various analyses of public policy documents suggest, public sector inefficiencies exist on all levels of government in the Republic of Moldova, which calls for efficiency-oriented public sector reform.

**Table 2 Dynamics of public financial expenditure of the budgetary system in the years 2017-2022**

Indicators	2017	2018	2019	2020	2021	2022
<b>Total expenditures of the National Public Budget, million lei</b>	54522.4	59608.9	65975.6	73274.9	82013.5	100374.2
<b>Share in GDP, %</b>	30.3	31	31.4	35.5	33.9	36.8

Source: developed by authors based on sources (Ministry of Finances, 2017, 2018, 2019, 2020, 2021, 2022)

Gender mainstreaming in the Republic of Moldova is on the rise, a trend dictated by the commitment of the Government to conduct reforms (Petroia, Zadnipru, 2022). There are a significant number of public policy documents that are gender sensitive and can be revised to allow for better approach to the rights of women and men (Petroia, Zadnipru, 2021). In the Republic of Moldova, the gender agenda is supported by UN Women, the World Bank and other international partners, which carry out various projects such as evaluation of the status of public finance management, applying the PEFA methodology. However, gender budgeting is a fragmented process in the Republic of Moldova, but the already existing fragments regarding gender-sensitive budgeting have the potential to be further advanced (Banca Mondială, 2022).

In order to follow the developments over time in the status of public finance management, PEFA Reports were produced in 2006, 2008, 2011, 2015 and 2022 (PEFA Reports). A PEFA Report evaluates the performance of public expenditures and financial responsibility based on the new methodological framework representing a diagnostic study of the management of public finances in the Republic of Moldova. It covers a wide range of topics in the core components of public finance management and provides the opportunity to assess progress over time through repeated assessments. The assessment of public expenditure and financial responsibility (CPRF 2021) in 2022 was the fifth exercise of this kind in the Republic of Moldova. The new elements of the 2021 assessment refer to the assessment of management both at the level locally (Cahul and Ungheni districts), as well as from a gender perspective at the national level.

In 2022, concurrently with the evaluation of the Public Expenditure and Financial Responsibility Performance Evaluation, the additional evaluation of gender-sensitive public financial management (GRPFM) was carried out (Public Expenditure and Financial Responsibility Performance Evaluation Report (CPRF) (Banca Mondială, 2022), and the assessment of public financial management sensitive to the gender dimension was included for the first time (Annex 7: Report on the assessment of public

financial management sensitive to the gender dimension 2021). Its purpose was to gather information on the extent to which the country's public financial management (PFM) system addresses the government's objectives in recognizing the different needs of men and women and different subgroups of these categories and promoting gender equality (Banca Mondială, 2022).

The Report found that the Republic of Moldova does not yet have a comprehensive gender budgeting framework in force (Banca Mondială, 2022). The Ministry of Finance received technical assistance for the integration of the gender perspective in the Budget Circulars and Order of the Ministry of Finance no. 209 regarding the approval of the Methodological Set regarding the development, approval and modification of the budget. This has been implemented for the 2022 budget (Banca Mondială, 2022).

Until recently lack of guidance through a circular budget results in the non-systematic presentation of the information integrated in the budget documentation and a mechanism to track gender-related expenditure was absent. The Ministry of Finance and line ministries do not keep systematic information on gender expenditures. The Ministry of Finance did not require gender information in the budget circular in the 2020 assessment year, but added a general requirement to include gender-sensitive information for the period 2022-2024, and lately 2024-2026. The requirement in budget circular for 2020-2024 recommended to budgetary authorities when reviewing program budgets, to include in the budget proposal information sensitive to the gender dimension, such as objectives, goals, performance indicators. Already in the budget circular for 2024-2026, requirements were more elaborate and specific: „when revising program budgets, the budgetary authorities, as appropriate, are to include in the budget proposal, information sensitive to the gender dimension, such as objectives, goals, performance indicators. The authorities/institutions responsible for the implementation of the Program for promoting and ensuring equality between women and men in the Republic of Moldova for the years 2023-2027, approved by Government Decision no.203/2023, are to include gender-sensitive information in the budget proposal, based on the objectives established in the Program” (Circulare bugetare ale Ministerului Finanțelor, 2022-2024, 2024-2026).

There is reform opportunity for mainstreaming a gender perspective in the process of revising the IT system and the chart of accounts, together with the pursuit of other expenditures (Banca Mondială, 2022).

At the moment, achievements were recorded in the following areas:

- Program-based budgets include a number of gender-sensitive indicators, whereby some ministries focus more on products than results.
- No centralized report on the gender dimension has been produced, although a number of reports and documents include gender-sensitive information (for example, the Interim Evaluation Report of the National Development Strategy "Moldova 2020", the SDG reporting, the report on international commitments).
- Some sector strategies include information on gender disparities, targets or performance indicators.
- Ex-ante gender impact assessments for new policies are an exception and mainly target donor assessments; guidelines have not been issued (Banca Mondială, 2022).

In 2022, the State Chancellery launched a methodological guide for the ex-ante and ex-post evaluation of public policies that does not include a gender impact assessment (Cancelaria de Stat, 2022). In

addition, Government Decision on planning, development, approval, implementation, monitoring and evaluation of public policy documents, no.386/2020 and the Methodological Guide on Integration of the Provisions of the National Development Strategy into planning documents and public policy documents at the national level, that ministries must consult for support during the planning process, do not contain prerequisites for gender mainstreaming.

On the positive side, in September 202, a Memorandum of Understanding for cooperation was concluded between the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) and the Ministry of Finance of the Republic of Moldova, for a period of three years. It aims to strengthen cooperation between the two institutions regarding the institutional and policy framework that supports the integration of gender-sensitive budgeting in the existing policy and budget planning processes. The parties will join forces in order to carry out several activities related to supporting the development of a gender-sensitive management of public finances in the Republic of Moldova and strengthening capacities the officials of the Ministry of Finance and other relevant ministries, in this regard, including the alignment of national legislation and policies with international norms and standards, as prescribed in the recommendations of international bodies in order to advance and implement gender-sensitive budgeting within the public finance management system of Moldova (Ministerul Finanțelor, 2023).

## **Conclusions**

Through given research we analyzed some of the factors that enable gender budgeting in the Republic of Moldova. In the recent years, the Parliament of the Republic of Moldova adopted important legislation that ensures the 40% gender quota in the political parties governing bodies, on the parties' candidates lists and in the Government Cabinet, and the gender placement provision imposing at least 4 candidates of either sex out of each 10 on the political parties' lists. These advancements demonstrate that transformative changes on the gender equality can be achieved.

In addition, a systematic overall evaluation and assessment of gender responsive budgeting result – based on comprehensive experience and a systematic evaluation framework was carried in 2022 with the help of the World Bank. And although gender budgeting reforms are not prioritized within the overall reform agenda, gender budgeting reform efforts can build on achievements in strengthening the Public Finance Management system (such as medium-term budgeting, expenditure review, public investment management) in the future.

In this sense, the Public Finances Management strategy represents a starting point for the integration of the gender perspective in the extensive public finance management reform agenda. The reform will focus in particular on the reviewing of the weak elements of the public finance management system, including from the perspective of gender equality of public policy proposals and the maintenance of budgetary discipline.

One of the objectives remains to strengthen the role of the public authorities in ensuring that interests of both men and women are reflected in the legislation through an inclusive, participatory and gender responsive law making and oversight process by enhancing capacities of staffers for boosting their role in executing the functions of the institutions.

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**SESSION VIII: CURRENT ISSUES OF  
UPGRADING NATIONAL LAW FROM  
THE PERSPECTIVE OF EU LEGAL  
FRAMEWORK**

## SCOPE OF INTERNATIONAL TREATIES TO AVOID DOUBLE TAXATION

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**Abstract:** *Purpose:* The conventions concluded by the Republic of Moldova on the notion of "person" do not include the element of society, replacing it with the notion of a legal entity. *Data:* However, the conventions concluded by the Republic of Moldova in the article that will refer to the general definitions (art. 3), will not even refer to the content of a legal person, as is done in the case of the Model Convention, when it refers to the notion of "society". *Methodology:* These distinctions do not have deviant interpretations, because the notion of "company" is defined by the Model Convention in the following way: "the term "company" designates any legal person or any entity that is considered for taxation purposes as a legal person". *Findings:* Therefore, in the broad sense of the concept of "legal person", used in the conventions concluded by the Republic of Moldova, only those legal persons that are taken into account "for the purpose of taxation" can be defined, i.e. legal persons that are subject to taxation with regard to taxes which are covered by the convention. In the case of legal entities, when it is a resident of both contracting states, it is considered resident in that contracting state where the effective management body is located. It is necessary to underline the fact that the international benefits of elimination of double taxation are offered only to subjects resident in one or both signatory states. A taxable subject who is not resident in one of these states will not be able to benefit from the provisions of the conventions.

**Keywords:** tax, double taxation, company, legal entity, tax convention.

JEL Classification: K3, K34

The scope of international double taxation treaties covers three different aspects: the taxes covered, the geographical area in which it has effect and the persons it covers. I propose to examine each of these areas in turn.

*A) Taxes covered by the Treaties.* In principle, the Convention applies to taxes on income and wealth levied in the Contracting States in accordance with the legal provisions. For example, the Agreement between the Government of the Republic of Moldova and the Government of the Russian Federation on the Avoidance of Double Taxation of Income and Property and the Prevention of Fiscal Evasion, in art. 2 para. 1 states that "This Agreement shall apply to taxes on income and property levied on behalf of the Contracting State, irrespective of the manner in which they are levied."

In some cases, although the Convention does not contain the above text, it does not exclude taxes levied at lower levels, as is clear from the list of taxes it covers, e.g. the case of the Romanian-German Convention, which in Art. 2, para. 3, lists the Romanian income and wealth taxes levied on both the state budgets and the budgets of the administrative-territorial units, respectively the German taxes that feed both the federal budget and the state and local budgets [1]."

The OECD Model Convention stipulates the following definition: "Taxes on income and wealth shall be deemed to be taxes on total income, total wealth or parts of income or wealth, including taxes on income from the alienation of movable or immovable property, and taxes on the increase in value [2]."

As we note, social security contributions or other social charges are not considered to be taxes on the total amount of wages and salaries, and are therefore not subject to the double taxation convention. The State does not levy contributions in its capacity as a public authority, but as an insurer, i.e. as a national organiser of social benefits. Therefore, only the State which provides social security protection to persons working in its territory has the right to levy contributions.

The next paragraph provides for the continued application of the Convention irrespective of subsequent changes in the system of taxes and duties of the signatory States. "The Agreement shall also apply to any identical or substantially similar taxes imposed by either Contracting State after the date of signature of this Agreement in addition to or in place of the existing taxes referred to in paragraph 3 of this Agreement. The competent authorities of the Contracting States shall inform each other of any significant changes in their tax legislation [3]." So in this case only one condition is laid down, namely that the taxes and charges introduced subsequently must be of the same or similar nature to those in force at the date of signature of the Convention. This provision is important because it prevents possible changes to the tax system in the two States.

*B) Geographical area.* The geographical area or territory subject to the provisions of a tax convention is usually that over which each contracting State exercises sovereignty. According to Article 3 of the Constitution [4] of the Republic of Moldova: "The territory of the Republic of Moldova is inalienable. The borders of the country are constituted by organic law, respecting the unanimously recognized principles and norms of international law."

According to Article 2 of the Law on the State Border of the Republic of Moldova [5] "The State border of the Republic of Moldova shall be established by the Parliament, respecting the principles and norms of international law and may be changed only by law." And Article 3 (1) states "The state border is established in treaties concluded by the Republic of Moldova with neighbouring states on the basis of the totals of the work of bilateral delimitation and demarcation commissions, and is marked on the ground with clearly visible border signs. The treaty on the demarcation and marking of the state border on the ground is to be ratified by the Parliament."

In international practice there are not a few situations where tax treaties concluded by certain States will not apply to territories dependent on these States, as these territories have fiscal autonomy [6].

*C) Persons concerned.* Tax treaties state that they "apply to persons who are residents of one or both of the Contracting States [7]." "This Convention applies to persons who are residents of one or both of the Contracting States [8]."

*Resident.* Unlike earlier drafts which were applicable to nationals of signatory states, the Model Treaty uses a broader term - resident. "This new orientation does not distinguish between taxable persons of different nationalities, it was considered appropriate in order to meet the requirements corresponding to the current stage of development of international financial relations [9]." The OECD Model Convention states [10]:

"1. For the purposes of this Convention, the term 'resident of a Contracting State' means any person who, under the laws of that State, is considered to be liable to tax therein according to his domicile, residence, place of management or any other criterion of a similar nature, and shall apply equally to that State and to all its political subdivisions or local authorities. However, this term does not include persons who are not considered as taxable persons in that State except in respect of income arising in that State or wealth arising in that State.

2. If, under the provisions of paragraph 1, an individual is a resident of both Contracting States, his situation shall be regulated as follows:

(a) such person shall be deemed to be a resident only of the State in which he has his permanent residence; if he has his permanent residence in State, he shall be deemed to be a resident only of the State with which he has links;

(b) if he is resident in the State with which he has the closest personal and economic ties (centre of vital interests);

c) if the State where that person has the centre of his vital interests does not can be determined, or if the person does not have a permanent home in any State, he shall be deemed to be resident only in the State where he is habitually resident regularly;

(d) if that person regularly resides in both States or if he does not regularly resides in either State, he shall be deemed to be a resident only of State whose nationality he possesses;

(e) if that person possesses the nationality of both States or if he is not if he or she is a national of both States, or if he or she is not a national of either State, the competent authorities of the States if the person concerned is of both States and is of both States, the competent authorities of the Contracting States shall settle the matter by mutual agreement.

3. If, in accordance with the provisions of paragraph 1, a person other than natural person is a resident of both Contracting States, he shall be deemed to be resident only in the State in which his place of effective management is situated".

Understanding and deciphering the meaning of "residence" is important in determining the scope of application of the conventions in resolving cases where double taxation arises as a result of double residence and, finally, in resolving cases where double taxation arises from the rules applied in the State of residence as opposed to those applied in the source State.

So, the authors of the treaties have to resolve two issues respectively:

- which person is considered a resident of one of the signatory states;
- how to deal with cases of dual residence.

Article 5(5) and (6) of the Tax Code of the Republic of Moldova defines both the concept of resident[11] and non-resident. It is considered resident:

(a) any natural person who meets one of the following requirements:

- has a permanent residence in the Republic of Moldova, including:
- he/she is in treatment or rest, or education, or travelling abroad;
- is a person holding a position of responsibility of the Republic of Moldova, working abroad;
- is in the Republic of Moldova for at least 183 days during the tax year;

b) any legal person or individual enterprise, or peasant (farmer) household, whose entrepreneurial activity is organized or managed in the Republic of Moldova or whose place of business is the Republic of Moldova.

Thus, for the purposes of the Agreement between the Republic of Moldova and the Republic of Hungary on the avoidance of double taxation and the prevention of fiscal evasion with respect to taxes on income and on property of 1 January 1997, the term "permanent establishment" means the permanent place of business through which the enterprise of a Contracting State carries on its entrepreneurial activity in the other Contracting State. Article 5(5)(b) of the Tax Code provides a similar definition.

- The expression "permanent establishment" means a fixed place of business through which the enterprise carries on all or part of its activities [12].

- The expression permanent establishment includes:

- a place of management; a branch; an office;
- plant; a workshop;
- facilities for prospecting for revenue;
- a mine, an oil or gas well, a quarry or any other place of extraction of natural resources;
- a warehouse or the like used for the supply of goods for the purpose of earning income;
- a construction site, a construction project, installation erection of plant or supervisory activities in connection therewith, but only when such site, project or activities last for a period of more than 12 months;
- the provision of services, including consultancy services, by an enterprise of a Contracting State, provided that such activity lasts, for the same or a related project, for a period or periods totalling more than 12 months.

The mere fact that an enterprise carries on business in another State through a broker, general commission agent or any other agent of independent status; the fact that a company which is a resident of a Contracting State controls or is controlled by a company which is a resident of the other State

(through a permanent establishment or otherwise) is not sufficient to make such companies a permanent establishment of the other [13].

Cases may often arise where the individual is a resident of several States (the case of conflicts of residence), in which case the solutions proposed by the conventions concluded in this area are as follows [14]:

(a) he will be deemed to be a resident of the Contracting State in which he has his permanent residence; if he has permanent residence in both Contracting States, he will be deemed to be a resident of the Contracting State with which his personal and economic ties are closer (centre of vital interests);

(b) if the Contracting State in which that person has the centre of his vital interests cannot be determined, or if he has no permanent residence in either Contracting State, he shall be deemed to be a resident of the Contracting State in which he is actually resident;

(c) if that person actually resides in both Contracting States or in neither of them, he shall be deemed to be a resident of the Contracting State of which he is a national;

d) if each Contracting State considers that person to be a national of itself or of neither of the States, then the competent authorities of the Contracting States shall settle the matter by mutual agreement.

A special situation may arise where the States signatory to the convention provide in their domestic legislation for the possibility of dual citizenship, in which case the tax conventions will include provisions on how to determine the status of the person in order to correctly apportion the right to tax [15].

In the case of a legal person, where it is a resident of both Contracting States, it shall be deemed to be a resident of the Contracting State in which its effective centre of management is situated.

Finally, it should be emphasised that the international benefits of the elimination of double taxation are available only to persons resident in one or both Contracting States. A taxable person who is not resident in one of these States will not be able to benefit from the provisions of the conventions.

Article 1 of the OECD Model Convention on the Avoidance of Double Taxation on Succession specifies that the term "resident" refers to an individual who at the time of death was domiciled in one or both of the contracting states.

The Conventions concluded by the Republic of Moldova, referring to the subjects they cover, also use the term "national person" to designate [16]:

- any natural person who is a national of a Contracting State;

- any legal person, company or association which has been granted this status in

under the law in force in the Contracting State.

Tax treaties must specify which is the "competent authority" to implement its provisions, to resolve disputes arising in the course of the treaty, to transmit information to which the contracting parties have committed themselves; in some countries the Ministry of Finance is the competent authority [17], while in others this responsibility is entrusted to another body.

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2. OECD Model Convention of 1977, Art.2, para. 2.
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4. Official Gazette No. 1 of 29 July 1994.
5. Law No. 108-XIII of 17.05.94 on the state border of the Republic of Moldova, published in the Official Monitor of the Republic of Moldova No. 12 of 03.11.
6. For example: New Caledonia, Guadeloupe, Martinique, Reunion, French Polynesia and other overseas territories of France.
7. Agreement between the Government of the Republic of Moldova and the Government of the Russian Federation on the avoidance of double taxation of income and property and the prevention of fiscal evasion, published in the official edition "International Treaties", 1999, volume 21, p.232.
8. Art. 1, OECD Model Convention.
9. See: C. Leicu, *Elimination of double taxation in customs-commercial relations*, Lumina Lex, Bucharest, 1995, p. 82.
10. Art. 4, OECD Model Convention.
11. Not all normative acts in the Republic of Moldova stipulate the same definition of the institution of resident. The Regulation on foreign exchange regulation on the territory of the Republic of Moldova defines residents in Art. 19:
  - A natural person who is continuously on the territory of the Republic of Moldova for one year or more.
  - Legal persons, including sole proprietorships and limited partnerships, which are located and registered in the Republic of Moldova, as well as permanent representative offices of such legal persons, sole proprietorships and limited partnerships, located abroad.
  - Subsidiaries registered in the Republic of Moldova of legal persons, sole proprietorships and limited partnerships established outside the Republic of Moldova.
12. It can be seen that in most of the conventions concluded by the Republic of Moldova the term permanent representation is used, while in those concluded by Romania the term permanent establishment is used to designate the same concept. See: Article 5 of the Convention between the Government of Romania and the Government of Ukraine for the avoidance of double taxation and the prevention of fiscal evasion with respect to taxes on income and capital, signed in Ismail on 29 March 1996.
13. See: Art. 5, points 6,7 of the Convention between the Government of Romania and the Government of Ukraine..., signed at Ismail on 29 March 1996.
14. See Article 4, paragraph 2, of the Agreement between the Government of the Republic of Moldova and the Government of the Russian Federation on the avoidance of double taxation of income and property and the prevention of fiscal evasion, signed in Moscow on 12 April 1996, published in the official edition "International Treaties", 1999, volume 21, page 232.
15. See: Article 4, paragraph 2, letter d, of the Convention between the Government of Romania and the Government of Ukraine ..., signed at Ismail on 29 March 1996, states that "if the person is a national (citizen) of both Contracting States or of neither of them, the competent authorities of the Contracting States shall settle the matter by mutual agreement."
16. Convention concluded between the Republic of Moldova and Russia, Art. 3 para. 1 lit. "f".
17. The Ministry of Finance is the competent authority in the Republic of Moldova, Ukraine, Russia, Romania, Japan, Belgium, Finland, Sweden, Spain, Egypt, etc.

## CRIMINOLOGICAL PERSPECTIVE OF THE PHENOMENON OF MONEY LAUNDERING IN SOUTHEAST EUROPE: THE CASE OF ROMANIA

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**Abstract:** The phenomenon of money laundering is currently present in the economy of the countries in Southeast Europe more than it has been viewed a few years ago. The acceleration of criminal phenomenon appears as a general feature for the entire criminality, but it seems to be more developed in the field of money laundering. It is obvious that, in certain circumstances, this kind of economic crime follows the transnational trend and becomes internationalized. This modus operandi is particularly viewed in the Southeast European countries, in which the perpetrators are looking for committing such crimes through establishing specific transnational crime schemes. The so-called "changing economy" after Pandemic crisis has had repercussions in several fields of society, one of them being connected to the economic facilities. In this unprecise context, the money laundering has become developed, despite the judicial authorities' involvement in adopting appropriate legal instruments in the field of fighting criminality, including the money laundering. The current paper focuses on analyzing the economic crimes, particular attention being paid on the money laundering in the area of Southeast Europe, with special target to the case of Romania. The paper approaches the causes, conditions and factors which produce the phenomenon of money laundering, from a conceptual perspective along with the jurisprudential approach, as well as the consequences of the phenomenon in a regional context. The research conducted on this topic has concluded that the phenomenon of money laundering is currently present in the Romanian business companies, which have expanded their connections to the European one being aggressive and producing unfortunate consequences for the entire economy of country. In this regard, it is very important to highlight some pertinent solutions to be taken into account by the legal authorities in order to enhance the legal framework in the matter of combatting the phenomenon of money laundering.

**Keywords:** money laundering, criminal phenomenon, criminal perspective, fighting criminality, economic crimes, economic criminal environment

JEL Classification: K14; K42

### Introduction

In the beginning of the 21<sup>st</sup> century, the criminal phenomena have reached a widespread dimension in the world. Some of them have preserved their classical and various forms already known by the law enforcement agencies. Nevertheless, beyond the common feature of these crimes, a new generation of criminality has been developed. In some circumstances, it is investigated by the judicial bodies, in criminal cases in which the crimes have been discovered, as well as by the theoreticians whose criminological research activities are usually interested in approaching the new forms of criminality, more complex and complicated ones. The economic crime is part of this criminality, which seems to be currently very present in the contemporary society. The interest is as huge as it is presented as a changeable issue in a changing world.

The issue of criminality in the economic field was in the criminologists' attention (Button *et al.*, 2023), who have been involved in conducting research on the topic of specific causes which

determine and develop the phenomenon of economic crimes, the various factors which influence it as well as the consequences produced both at the national and European level. Many unknown items have been discovered, on the one hand, and discussed in accordance with the new trend in the field of criminology (Piątkowska *et al.*, 2022), on the other hand. Moreover, investigating the economic crimes have created a special occasion for them to find solutions on how to prevent and combat this phenomenon. One of the interesting issues in the field of economic crime leads to the cases of money laundering. It is a phenomenon existed at the European level, and particularly in the area of Southeast Europe. In this context, Romania is not an exception and, for this reason, the phenomenon of money laundering presents a particular interest for criminological research.

According to the above-stated remarks, the current topic is analysed from the point of view of the new trends of the phenomenon of money laundering developed in the contemporary society (Koster, 2020) of the states in Southeast Europe, with a special attention to the case of Romania. In this matter, it is really a challenge for the science of criminology to understand and answer to the question on how this country has implemented the legal instruments in order to adapt the home legislation to the European one in the field of preventing and combating the crimes of money laundering. The phenomenon seems to be involved not just at the national level, but many crimes schemes have been discovered by the law enforcement agencies which make the criminologists focus their attention on the phenomenon at the macro-social level.

Taking into account the issues presented, the current paper is devoted to the topic of money laundering, the phenomenon being analysed from the perspective of the criminological research and its perspectives in the context of the current development of criminality in the economic field. For this reason, some pertinent aims have been outlined, as the following.

- Researching the specific context of the economic criminality which generates the crimes of money laundering
- Highlighting specific *modus operandi* used by the criminal groups in their activity of committing this kind of crimes
- Analysing the European context of the phenomenon of money laundering in purpose to understand its connection to different criminal environments
- Gathering appropriate solutions which should improve the legal mechanism of combating the crimes of money laundering
- Analysing the efforts made by the Romanian authorities in the field of discovering cases of money laundering and strengthening capacities of fighting criminality

In purpose to achieve these goals, the paper has been carried out through a qualitative research activity, described by a conceptual design which characterises significant part of criminological research. It takes into account the narrative theory of criminology, along with the case-law examination of the criminal decisions pronounced by the courts of law in Romania, in those criminal cases solved on the topic of money laundering. Such a theory is as necessary as many cases have been investigated by the judicial bodies in Romania or are still in the judgment phase of criminal proceedings in that country. Moreover, it is well-known how the jurisprudence in criminal matters is full of criminal decisions pronounced in the field of money laundering.

The results gathered during the research activity conducted on the current topic are thoroughly presented in the following sections. They emphasize the manner in which the phenomenon of money laundering is approached under a comprehensive criminological perspective.

## **Theoretical Perspectives of the Money Laundering in a European Context**

### **European Anti-Money Laundering Directives**

The origin of the European Directives on Anti-Money Laundering policy has a long history with particular causes and circumstances, which make the European authorities react and adopt a legal framework in this matter. Speaking about its evolutive process, which presents a real interest for the criminological research, it is appreciated that a possible starting point could begin with Council Directive of 1991 on prevention of the use of the financial system for the purpose of money laundering (Council Directive 91/308/EEC). It continues with Directive of 2005 on the prevention of the use of the financial system for the purpose of money laundering and terrorist financing (Directive 2005/60/EC). In this context, it is relevant the European authorities' involvement and their challenges in the matter of money laundering connected to terrorist financing (Mitsilegas *et al.*, 2016), taking into consideration that the issues of money laundering and terrorist financing are frequently committed at the international level, as it is stipulated even in its preamble.

It is obvious that increasing terrorist attacks in the entire world, including the cases produced in Europe, such as Spain, Germany and Belgium (Kaunert *et al.*, 2020), have made the European authorities rethink about the source of its financial infrastructure. It is also of high importance the *modus operandi* in the pre-financing process, in which certain organized crime groups are involved. The threat is as high as the European facilities in the matter of free circulation of goods and capitals could favor the terrorist groups. Moreover, the officials of Brussels have decided to implement an efficient legal tool of fighting criminality in the field of money laundering, implicitly in those cases of financing terrorism. In this regard, it has been pointed out that "In order to facilitate their criminal activities, money launderers and terrorist financiers could try to take advantage of the freedom of capital movements and the freedom to supply financial services which the integrated financial area entails, if certain coordinating measures are not adopted at Community level" (Directive 2005/60/EC). It is viewed as an important instrument of reducing the risk of developing money laundering through avoiding the European facilities by the terrorist groups. Actually, in the beginning of Anti-Money Laundering process, by definition, the phenomenon of money laundering has been characterized by trafficking in drug (Morgan *et al.*, 2023), many cases being discovered and several organized crime groups being disintegrated as well. The legal doctrine has associated the issue of money laundering with the illegal actions taken in public procurement contracts and corruption (Yeh, 2022). Nevertheless, the situation seems to be changed in the near past, when its definition has been extended to more than the drug or corruption issues.

From this perspective, a few years ago, a new trend in stating a right definition on financing terrorism linked to money laundering has been registered. It is based on an ample area of crimes, which report the suspicious banking transactions and a strengthened international cooperation in the field of anti-money laundering. The Council Framework Decision of 2001 on money laundering, the identification, tracing, freezing, seizing and confiscation of instrumentalities and the proceeds of crime (Council Framework Decision 2001/500/JHA) is also of high importance for the current study and its analysis. Although it is not based on historical research results, the study on money laundering provides certain points of view on the relevant European legislative framework, which particularly refers to these directives, including their contents. The European authorities have established that the definition of money laundering should imperatively be connected to the serious crimes due to the features which characterize the phenomenon itself. For this reason, the connection of the issue of money laundering with the serious crimes appears, in this context, as an imperative one.

The European Union has created a series of legal instruments to be implemented by the Member States in order to avoid such transactions which cover the crimes of money laundering (Costa, 2008). According to Directive of 2005, it is proved that the use of cash is more vulnerable to the phenomenon of money laundering, especially in those transactions which exceed the amount of 15.000 Euros. Thus, the Directive requires Member States to proceed in registering both natural persons and legal entities which use the cash in their professional transactions of goods over this limit. The requirement focuses on transactions having as object the precious stones and metals, artefacts, as well as other high-value goods, which are in cash transacted. On the one hand, the main purpose of this requirement is to ensure monitoring of compliance with the current Directive. On the other hand, the Member States have to implement the Directive along with the principle of monitoring on risk factors, in cases in which the home entities proceed to commercialize goods with high risk regarding the money laundering and terrorism financing. Moreover, taking into account their home situations, the Member States are entitled to adopt more serious and efficient rules in order to avoid the risk of suspicious cash transactions.

### **The Current Legislative Status on Anti-Money Laundering**

Analyzing the issues of money laundering from a European perspective, it should be emphasized that the legislative framework regarding the Anti-Money Laundering in the European Union is the main aim of the EU Parliament, in order to be implemented by the Member States, as part of their home legislation. Moreover, speaking about the current legislative status in the matter of money laundering and combatting this phenomenon, it should be pointed out that the role of the European authorities is that of assuring a comprehensive legal framework in the field of preventing and combating money laundering. In order to analyze pertinently the results registered in this matter, one question should be asked: Is there a legal framework enough to control those forms of money laundering? To such question, the answer is also a very difficult one, because of many reasons. First of all, the analysis is primarily involved in the field of business, linked to the persons who develop professional relations with politicians or civil servants who occur in high positions of public functions. Secondly, it is obvious that these relations lead to the corruption crimes, especially in some countries, where this phenomenon is widespread within the most important areas of business. This situation is usually happened in the financial area of the private companies, which are "victims" of significant reputational risks or any other kinds of legal risks.

The effective efforts made at the European level in purpose to combat the corruption phenomenon need more attention in accordance with the *de facto* situation, as well as to apply more concrete measures and rules of circumspections in relation with public persons, politicians, and civil servants. This is because, during the last decades, the real situation seems to be changed in an aggravated manner and no previous directive have complied with its main scope. In practice, it is obvious that the current form of Anti-Money Laundering framework gives the EU authorities reliance on its efficient role in combating phenomenon (Bergström, 2018). For this reason, they tried to find best solutions in order to harmonize the EU legislation on money laundering with other relevant areas, such as corruption and terrorist financing.

The current legal framework in the field of anti-money laundering is featured by Directive of 2018, also known as the 5th AML Directive (Directive EU 2018/843). Indeed, after issuing Directive of 2015 (Directive EU 2015/849; Prenti *et al.*, 2021), the European authorities have made efforts in order to enhance the legal framework through adopting a newer directive and implementing it in the EU Member States (Souto, 2020). In this context, the AML Directive of 2018 has been adopted

which, from its preamble, recognizes that the Directive of 2015 ”constitutes the main legal instrument in the prevention of the use of the Union financial system for the purposes of money laundering and terrorist financing. That Directive, (...), sets out an efficient and comprehensive legal framework for addressing the collection of money or property for terrorist purposes by requiring Member States to identify, understand and mitigate the risks related to money laundering and terrorist financing”.

Despite the European Union’s involvement into the fight against money laundering and countering the financing of terrorism, its main activity has been initiated other legislative solutions. The EU’s 6 AML Directive is a draft legislation package which defines, among other things, to harmonize the definition of “predicate crime”. In fact, the current Directive is looking for understanding what the money laundering offence particularly constitutes. On this way, the European Union is assuring that any misinterpretation of this issue is avoid by the Member States. In a preliminary context of this legislative framework, it particularly refers to the cybercrime (Covolo, 2020) and environmental crimes and therefore the national legal framework becomes a real guarantee for the activity of preventing money laundering. Such guarantee is confirmed by the implementation of these crimes into the judicial criminal systems, as a consequence of their provision into the home criminal legislation. It covers a large area of preventing measures, such as electronic money and payments, cross-border credit transfers, financial supervision, combating terrorism and capital outflow. Last but not least, its role is to repeal the Directive 2015/849.

## **Romania’s Experience on Anti-Money Laundering**

### **Preliminary Analysis on Anti-Money Laundering**

The national authorities of the Member States have implemented the European Union’s policy on Anti-Money Laundering, as described in the AML Directives. In this regard, one of the most important actions was to establish financial units which should be able to prevent and combat the cases of money laundering and terrorist financing. Their main duty is also to gain information and share it with other units from all Member States, within a comprehensive and coherent environment, on the one hand, and with the support of the European cooperation of other institutions also involved in fighting these phenomena (Dujovski *et al.*, 2019), on the other hand. They primarily refer to the European Public Prosecutor’s Office, Anti-Money Laundering Agency, Europol, and Eurojust, but the non-EU institutions are also part of this agreement (Grignon *et al.*, 2021). The access to information is very difficult to be achieved in cases of money-laundering (Siena, 2022), especially referring to the issues of transnational involvement of the organized crime groups (Rechi, 2022; van Duyne, 2003). Their facilities seem to be more developed and, in a criminal context, widespread over the entire world. Certain pertinent solutions came from the above-stated institutions, which are interested in providing useful information to the Member States, whose national law enforcement agencies have firstly to discover such illegal activities and then send them to judicial bodies in order to solve them legally, based on pertinent and conclusive evidence. The threat covers the links of the money laundering to other serious crimes, which involve drug trafficking (Haliti, 2021), murders (Jovanović *et al.*, 2021) or other forms of serious crimes (Remeikienė *et al.*, 2022). It is thus a challenge for the law enforcement agencies to discover and investigate the cases of complex money laundering crimes.

In the area of Southeast Europe, Romania is the EU Member State which has implemented the European policy on anti-money laundering as an imperative requirement came from the Brussels authorities. This geographical area shows particular circumstances in strengthening capacities of the

organized crime groups to work connected within a criminal context. This means that several times they work in close collaboration each other in order to gather huge amount of illegal money, which should then be laundered in such a manner to appear as legal proceeds of crimes. This criminal context is provided by criminal networks linked to transnational environment (Teichmann, 2021). Such a very dangerous phenomenon, also considered as a supranational one (Piątkowska *et al.*, 2022), is thus a result of the serious crimes committed in Southeast Europe, in countries which involve Spain (Magherescu, 2022), Italy, Cyprus, as well as other countries which exceed this area. Moreover, speaking the transnational side of the phenomenon of money laundering, Romania is a very attractive destination for these kinds of crimes, due to its geographical position, being situated in the confluence of the East of Europe with the West part of the continent.

### **The Current Legislative Status on Anti-Money Laundering**

The Romanian authorities have equally been involved in creating an appropriate legal framework in the matter of fighting money-laundering, on the one hand, and other phenomena which deal with this one, as financing of terrorism is, on the other hand. Equally, this country has been confronted with serious cases of money laundering and, in order to diminish the phenomenon as much as possible, the home legislative framework has immediately been harmonized with the European one. This situation was possible due to Romania's status as a Member State of the European Union. Generally speaking, it should be emphasized that the Romanian authorities have to implement the European legislation into the home framework. Otherwise, no contrary legislation should be adopted by the home legislative bodies which would be unapproved by the European institutions. The same is true in cases of money laundering.

The legislation on combating money laundering in Romania is provided by Law no. 129 of 11 July 2019, which assures the domestic legal framework regarding the fight against the phenomenon of money laundering and terrorism financing. It contains duties regulated for the official institutions including the judicial bodies, entitled to carry out investigation in those cases of, or connected to the issues of money laundering. The unit of financial information is covered by the National Office of Preventing and Combating the Money Laundering, as the authorities which coordinates the evaluation the risk of money laundering and terrorism financing at the national level. The Office's activity is coordinated with the European ones in the field of evaluating risk, working in close cooperation with similar institutions from other EU Member States, on the one hand, and with European Commission, European Public Prosecutor's Office, and Anti-Money Laundering Agency, on the other hand. In order to achieve the main scope of preventing and combating the money laundering, the Office carries out evaluations on the risk factors regarding the development of the crimes of money laundering and, where appropriate, implements efficient solutions to diminish the phenomenon through using anti-money laundering instruments.

The legislation of Romania has strengthened the capacity of assessing terminology in the field of money laundering and its additional items, through using the new European legislative framework. One of the main focuses was the issue of "money laundering" itself, which has been defined as the crime of changing and transferring goods by a person who knows that they proceed from committing other crimes, in order to hide or dissemble their illegal origin, on the one hand, or help another perpetrator to avoid criminal prosecution, judgment or even execution of punishment, on the other hand.

**Table 1 Substantive analysis of the crime of money laundering**

Criminal actions	Proceeds of crime	Means of criminal conduct
Hiding	Origin	Gathering
Dissembling	Setting	Holding
Misleading	Disposition	Using
Persuasion	Circulation	Producing
Evasion	Property	Rejecting

**Source:** own work

The Table 1 provides the typology of the crime of money laundering, analyzed from several perspectives. Speaking about the substantive analysis of the crime of money laundering, the criminal actions provided in these cases are those of hiding, dissembling and misleading, combined with persuasive solutions and evasion in corporate context. At the same time, discussing from the perspective of the proceeds of crime, they cover the state of origin, setting, disposition, circulation and property of these goods under the 'umbrella' of protecting the proceeds of crime. Moreover, another issue deals with the action of gathering, holding, using, producing and even rejecting goods by a person who knows their illegal origin. In fact, they could be more extensive to other activities.

On the other side, from a criminological analysis, the crime of money laundering seems to be more comprehensive provided by criminologists in their research studies (Piątkowska *et al.*, 2022), who appreciated it as a corporate crime (Lynch *et al.*, 2004) and which deals with the corporate crime theories (Kennedy, 2020). They have been involved in highlighting its particular features in accordance with the entire criminal behavior meets in this field. In this matter, it has been pointed out that "The money-laundering phenomenon is often acknowledged as a type of "serious and organised crime" yet has traditionally been described as a complicated three-stage process, involving the "placement, layering and integration" of criminal proceeds" (Gilmour, 2023).

**Table 2 Criminological analysis of the crime of money laundering**

Criminal behavior	Risk factors	Consequences of crime
Organization	Financial	Terrorism financing
Links	International	Illicit funds
Diversification	Transnational	Developing criminality
Financing	Terrorism	Critical context
Avoiding	Deviation	Economic deficit

**Source:** own work

In Table 2, it is established the similitudes existed in the criminological approach of money laundering, viewed as a macro-phenomenon. The criminal behavior is characterized, in this context, by a series of circumstances focused on the issue of organized crime, linked to the criminal content, with diversified evolution, which works in a financial flow through avoiding legal framework. The risk factors which influence the criminological analysis are the result of the risk factors applied in circumstantial manner. They refer to financial transactions, international or transnational level, working with terrorism instruments through deviation from the abnormal routes. Hence, the consequences of these crimes cover a large nexus of terrorism financing, illicit funds, developing criminality in a critical context for the economic deficit of country.

Why Romania is so attractive in the area of money laundering? The answer is very easy to be understood by all individuals who are working in the field of business. First of all, it should be stated that the migration of business was viewed during the last decades as a natural unusual phenomenon, happened from this country to other EU Member States, although the criminal conduct of the persons involved has been committed in a transnational manner. Secondly, the situation regarding the business activities in Romania was a transitory one, during a period of several years, after the 90's, while this country was away from the European rules, authorities and policies. Actually, these ones have been implemented after 2007, when Romania become a member of the European Union. Even in this context, the European policy on anti-money laundering was implemented after a long time period in which the business companies have thriven within an uncertain legislative framework. Approaching the risk factors on developing the money laundering is, by law (Law no. 129 of 2019), referring to the following issues:

- Establishing the fields of analyzing the risk factors in the matter of money laundering
- Establishing the administrative duties for attenuating the risk of developing phenomenon
- Carrying out the duties in the matter of adopting solutions on verifying the risk factors
- Carrying out evaluations regarding the risk factors provided by the national rules

In this regard, the exponential system of assessing the risk factors is usually set up in accordance with the objectives of the legislative provisions adopted in the matter of fighting money laundering. Moreover, the judicial bodies have always plaid a significant role in the activity of fighting this phenomenon.

### **Case-Law Solutions on Money Laundering**

The judicial bodies' involvement in the process of fighting criminality is a substantial one. The same is true in the field of combating money laundering by means of the judiciary. For this reason, analyzing the legal framework on anti-money laundering, without the appropriate judicial solutions came from the jurisprudence, would be unseasonable. The jurisprudence in the field of money laundering could be analyzed in two directions. One of them deals with the cases of money laundering free of other linked crimes, while other ones with the complex criminal cases of money laundering, also connected to terrorism financing, organized crime, corruption (Levi, 2021; HCCJ-Dec. pen. no. 232/A/2023) or other forms of serious crimes. The practice in this matter is very abundant of case-law solutions provided by the courts of law. They are mainly looking for submitting legal decisions, made in accordance with the evidence gathered by them during the judgment, on the one hand, and other judicial bodies, as investigative ones, on the other hands.

One of the serious actions committed by perpetrators is that of frauds with the European or national funds gathered by the Romanian officials in order to finance the public projects (HCCJ-Dec. pen. no. 232/A/2023). They inevitable lead to corruption crimes, in which more than two perpetrators are involved. It is really a crime scheme organized and managed by one or many persons, usually working in the ministries' departments. In this regard, the court of law should imperatively discover and establish the real *modus operandi* in which the criminal actions have been committed, as well as the circumstances in which the crimes of money laundering have been committed. At the same time, it is important to know if other crimes are connected to money laundering and committed in complex environment, as concurrent crimes, possible associated to corruption. The court of first instance has provided, based on the evidence administered, that, there were verifications made by the civil servants before transferring the amount of money to contracting beneficiary, justified by the local

administrative units (HCCJ-Dec. pen. no. 232/A/2023).

Analyzing the case-law presented from the point of view of the procedure of transferring money to beneficiary, it has been emphasized that “noticing procedure was established through internal order and provided that any document should be signed by the appropriate person from the specialty direction, by the director of such direction or by its deputy director, noticed by the financial and legal directions, in accordance with the type of document” (HCCJ-Dec. pen. no. 232/A/2023). In fact, all documents which supposed the operations of transferring funds, were finally signed by the minister himself or by an appropriate person, mandated by this one. Moreover, after verifying the admissibility conditions, including the local verifications, a financial control has been carried out by a qualified team delegated, which issued recommendations to be taken into account for the final decision. Consequently, in missing this legal way of obtaining approvals, the factual element of crimes is proved, as an essential one. Contrary to the statements declared by defendants, the legal procedure was deliberately avoided by the officials from ministry, and was not based on the possibility of prioritizing the transfer of funds, both required and justified from the local administrative units. Speaking about the nexus money laundering – corruption, the court of law frequently opined that the public officials usually receive bribery in order to carry out an activity which by law is in their duties. The judicial bodies have thus proved that the requirement of bribery is usually followed by receiving bribery by such officials (HCCJ-Dec. pen. no. 232/A/2023).

Equally, the crime of money laundering is associated to the crime of tax evasion, especially in continuous manner (HCCJ-Dec. pen. no. 479/RC/2022), in those criminal cases which involve legal entities or natural persons working in private area of business. In the matter of fact, the perpetrators set up more than two business companies, in purpose to transfer money, on the one hand, and hide or dissemble the illicit origin of money, on the other hand (HCCJ-Dec. pen. no. 534/RC/2022). Moreover, there are agreements between perpetrators which firstly suppose the action of gathering illegal money from diverse activities, and secondly transferring such illegal money from a business company to another one, in order for the judicial bodies to lose the money trail. In this matter, the business companies play a significant role and are both in the financial and judicial authorities’ attention which should order appropriate procedural activities in order to gather evidence to prove the criminal activities of defendants. Such evidence consists in financial documents and fiscal orders, illegal stamps, banking cards and contracts. They are completed by the files with PIN codes, receipts of ATM cash processing, banking papers of bank accounts and passwords, PIN codes of different banks, used in transferring bank operations through online banking system (HCCJ-Dec. pen. no. 534/RC/2022).

From a technical perspective, the criminal activities of perpetrators are sometimes very difficult to be proved by the judicial bodies, because of the fact that they are usually committed by means of cyber-criminality (Zakaria, 2023; Hunton, 2011) and this criminal environment is primarily characterized by behavioral differentiation (Touzeau, 2017). Thus, the criminal activities of money laundering involve many perpetrators, many business companies, circular illegal operations and last, but not least, a huge amount of money to be gathered and divided among perpetrators. Nevertheless, once the cyber evidence was gathered by means of electronic data (McKay *et al.*, 2023), then the procedure of proving the criminal activity is very easy to be achieved.

A specific criminal action is also met in relation to the crime of constituting an organized crime group (HCCJ-Dec. pen. no. 577/RC/2022), whose leaders coordinate and manage the entire criminal activity based on the criminal conduct which characterizes the issue of serious crime. In this matter, the

organized crime groups are looking for gathering huge amount of illegal money under the umbrella of the politicians or civil servants they work in close collaboration with (HCCJ-Dec. pen. no. 297/RC/2022). Regarding the crime of money laundering, the court of law has noticed that there is no doubt on the illegal circulation of money among the companies involved, with the help of defendants, the circumstances resulting both from their and witnesses statements', as well as the evidence gathered from documents attached to the indictment act. It is remarkable that the first instance has correctly stated, based on the evidence administered, that the defendant committed the crime of money laundering. By *modus operandi*, he transferred illegal money to a company, under a criminal scheme, knowing that they are resulted from a criminal activity of corruption, in order to dissemble the illegal origin of the money (HCCJ-Dec. pen. no. 297/RC/2022). However, the defendant has ignored the incriminating evidence, submitted by the prosecution. The defendant's main argument was to submit the idea that there is no crime of money laundering, but the crime of tax evasion, or that the main element of the crime of money laundering – the predicate crime – is missing.

Indeed, the crime of money laundering is an autonomous crime, consequence of another crime which produces the illegal money, which should be laundered by the perpetrators. In fact, there is a conditional relation between the predicate crime and the money laundering, as the court of law has stated, based on the contracts signed by the defendants, the banking transfer documents, operations carried out within an illegal circuit, which characterizes the criminal activity. It should be pointed out that, taking into account the complex criminal environment, there is no confusion between the predicate crime (which produces the illegal money) and the money laundering itself, so that the defendants cannot misunderstand the object of crime with the product of crime. From a criminological perspective, there are differences between the source of money and trading goods, particularly their origin, and between the predicate crime and the crime of money laundering as well.

## **Conclusion**

The evolutive process of the crimes of money laundering in Southeast Europe and in particular in Romania has been analyzed from the criminological points of view, one of them being structured around the idea of multi-directed actions of the phenomenon. In the end of the research activity conducted on this topic, some conclusive remarks have been expressed. The results gathered on this way lead to pertinent conclusions regarding the typology of the crime of money laundering, the development of the phenomenon in Southeast Europe, as well as the involvement of the Romanian law enforcement agencies in the field of preventing and combatting phenomenon.

The criminological perspective of the crimes of money laundering is a key factor in the process of apprehension of illegal phenomena connected within a comprehensive context. They firstly deal with the terrorism financing, which in fact means the action of providing illegal funds gathered from illegal activities, knowing that they will be used in terrorist attacks or in purpose to support a terrorist entity. The practical information stipulated by law on anti-money laundering, although unexhaustive regulated, should be considered a useful basis for consulting additional issues in a macro-environment.

The European context provides Member States with precise legal framework in the matter of fighting money laundering, which is considered as a serious threat for the contemporary society, not only at the European level, but at the local level as well. The joint effort has been strengthened by the European authorities and its Member States in order to diminish the phenomenon of money

laundering in the last period of time as much as possible. For this reason, the long series of Directives on Anti-money Laundering show the real danger in the framework of illegal activities connected to the serious and organized crime and terrorist attacks, which have been committed both in Europe and in the United States of America during the years.

In this context, the Romanian authorities, both legislative and judiciary, have been involved in harmonizing the European legislation with the domestic one, on the one hand, and solving those criminal cases of money laundering or linked to these ones, on the other hand. The joint effort has been made with the same purpose of finding appropriate solutions to disintegrate the organized crime groups which are involved in criminal activities of money laundering and possible connected to the issues of terrorist financing. It is obvious that the phenomenon of money laundering is, at the moment, viewed in a serious and rapid acceleration especially in the area of Southeast Europe. This is happened because of many reasons. One of these refers to the unstable tools of managing economy of the countries which still suffer because of the political interferences in the public authorities' duties. The experience of the Eastern European countries could be understood from the perspective of the unlawful regional context of which, in fact, exceeds one country's territorial borders. Although there are influences each other, the perpetrators do still respect their own *modus operandi* of committing money laundering.

Taken into account that the Pandemic has meant a stooping period in the activity of organized crime groups involved in money laundering, it could be considered that the phenomenon has been silenced during the crisis period, but accelerated subsequently, once the economy has progressively been picked up again. About the Romanian business companies, the situation seems to be just a little solved, in the context of the judicial bodies' efficient activity in the field of combating this scourge. Nevertheless, despite this intense involvement in fighting money laundering, the phenomenon still continues to be present in the economy and produces consequences in this matter. Some pertinent solutions could be achieved from the law enforcement agencies, on the one hand, and from the European authorities, working in close cooperation with the local ones, on the other hand.

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## THEORETICAL DEBATES ON THE RESOLUTION OF LEGAL REPORTS AND REGULATIONS IN ENVIRONMENTAL LAW

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### Abstract:

**Aim:** The environmental issues are becoming an increasingly addressed issues nowadays. Thus, the legislators in various legislative acts impose new and new regulations with a nature of environmental protection, it becomes difficult to identify whether, being incorporated in the text of a certain law, a certain legal norm, belongs to environmental law or, it is a norm that belongs to the field which in substance represents the regulatory object of this law. In other words, it is often quite difficult to determine the boundary of environmental law regulations, especially since the norms of this branch are not always compactly found in environmental legislative acts.

**Methodology:** It must be recognized that the legal mechanisms for environmental protection change their appearance over time, becoming much more aggressive and relentless. They are often used without taking into consideration certain traditional rules and presumptions that often do not ensure effective protection of the environment. In such cases, it is necessary to understand that the regulatory mechanisms for environmental protection are a component of environmental law, even if they are based in other legislative acts and even if they are very similar to the mechanisms used in the regulation of other categories of legal relations

**Findings:** The lack of a clear procedure means that the environmental legislation remains unenforced. Although in other countries the problem of environmental protection has been raised to a much more important level, including the fact that objective and joint liability is established for damage caused to the environment

**Keywords:** environmental law, regulatory mechanisms and methods, contraventional law, liability.

JEL Classification: K 1; K 10; K 15

### Introduction

From the very beginning, it was quite difficult to get recognition of the existence of such a branch of law as environmental law. Even today, some specialists in traditional matters claim that environmental law is nothing more than a sub-branch of administrative law.

Although at the moment such approaches are already extremely rare, the claims regarding whether the institutions that are meant to ensure the protection of the environment belong in integrity only to environmental law or to other branches of law are still actual, anyway.

We could exemplify with the approach to the question regarding the ecological expertise. Some authors claim that this is an institution exclusively of environmental law, others argue that this is an institution of administrative law, but which is also applied in order to achieve the objectives of environmental protection.

As a result of the proclamation of independence and sovereignty, the Republic of Moldova stepped

on a path of development towards building a state of law, and, along with this, accepted a series of principles related to ensuring a safe living environment for people. This dictated the need to change the entire legislation of the country. The first changes in these areas occurred in The Land Code, and one of major importance was the adoption of the Law on the Protection of the Environment, which is still in force until now. The Soviet laws were replaced by qualitatively new laws, which regulated the use and protection of water, subsoil, forest resources, air, etc. Also, new laws, which did not exist in the Soviet period, were adopted, such as the Law on Ecological Expertise and Environmental Impact Assessment, The Law on Payment for Environmental Pollution, and other departmental normative acts related to environmental protection.

The European Union (EU) Environmental Law is a complex legal enterprise that has expanded EU legal imagination into three areas. First, there has been an evolution of legal thinking in relation to both positive and negative harmonization of the internal market, as environmental problems have required the reconfiguring and restructuring of markets. Second, when implementing The EU environmental law in Member States, the courts have had to interpret novel legal obligations in directives such as the Environmental Impact Assessment Directive and the Habitats Directive, as well as evolving thinking about direct effect and national procedural autonomy. Finally, EU environmental law has evolved legal thinking in relation to governance and in particular the framing of regulatory objects and the accountability of institutions. One of the biggest tasks to be solved was to bring these documents in accordance with the general principles of law and international treaties and conventions.

### **Purpose / Stating a Problem**

We must mention from the start that the method of regulating a branch of law is determined by the need to legislate certain categories of relationships in relation to the most effective mechanism for achieving the goal of legislating these relationships. The method of environmental law regulation is related to the needs of regulating the relations of use, conservation, development and protection of environmental components. As it is argued in specialized literature, the way the state acts on the social relations of environmental protection indicates the method of authoritarianism.<sup>8</sup>

This fact dictates the priority need to establish mandatory norms in environmental law. The application of such regulatory methods is conditioned by the importance of the environmental problem, as well as due to the fact that this is a major issue of public interest. As a result, environmental law methods are public law regulation methods.<sup>9</sup>

However, claiming "purity" in the application of public law methods in solving environmental problems would be a fatal mistake.

Another segment in which such approaches are current, is that of reparative liability for environmental damage. Some scientists consider that reparative liability is a civil one, others argue that we are facing a liability distinct from environmental law.

Since the emergence of environmental law as a branch of law and until now, there are still discussions around the issue of whether environmental law is a branch of law, or it is a "collection" of legal norms from different branches of law, and as a result, environmental law, can only be seen as a legal

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<sup>8</sup> Codul funciar, nr. 828-XII din 25.12.91, republicat: Monitorul Oficial nr.107/817 din 04.09.2001;

<sup>9</sup> E. Lupan, Dreptul mediului, ed. «Lumina Lex», București, 1996, vol. I;

discipline. The supporters of this opinion base their opinion on the fact that from the very beginning, the legal norms that protected nature belonged either to administrative law, or to civil law, or to criminal or contraventional law. More than that, even today, in order to achieve the goals of environmental protection, the regulations of legal responsibility are used, as well as other legal methods of these branches of law.

### **Debatable Approaches**

It is necessary to mention that although the relations related to the use of environmental components, having as object natural resources, can refer to the object of civil law, and therefore can be civil relations. This is explained by the fact that the expression with a broad meaning "the use of environmental components" is related to the problem of property rights, usufruct rights, servitude rights, pledge rights, etc. But with regard to environmental law, we have as the object of environmental law relations a specific right, namely "rational use ". The establishment of this specific right resides in the fact that achieving a protection of environmental factors, without a regulation of a rational use of environmental behaviors, cannot provide us with the achievement of the general goal of environmental law

Another segment in which such approaches are debatable, is that of reparative liability for environmental damage. Some consider that reparative liability is a civil one, others argue that we are facing a liability distinct from environmental law.

In any case, discussions on such topics do not stop even up to the present moment, and the set of arguments that researchers make do not always have a beneficial effect on the regulatory field. That being said, since scholars do not have a single opinion, neither does the legislator have a definite position on how and what to regulate.

Another aspect of the question would be to examine the unequal position of the parties in legal relationships. Even if in the multitude of environmental law relationships there are also categories of relationships, which apparently are of private law, such as contractual ones related to the lease of natural resources, however their private law character is broken by the rules that assume the possibility of revocation of the lease contract only on grounds of public interest, a fact that distorts the status of a legal relationship based on the equal position of the parties, a relationship proper to private law. Another example also refers to the fact that if in private law relationships the injured party can voluntarily waive compensation, the perpetrator in this case being exonerated from liability, then in environmental law the option of exoneration from damage is excluded.

It is clear that the protection, regeneration and development measures of the environmental components cannot give a result, without a regulation of the correct (rational) use of the environmental components. In this sense, the regulation of a use of the environmental components represents the area of civil law, and the regulation of a rational use of environmental components represents the area of environmental law. Starting from this, we consider that in environmental law, a new set of rules is taking shape, different from the civil ones, even if they complement them, namely with the rules regarding the rational use of environmental components.

### **Setting Mandatory Norms in Environmental Law**

The idea from which we start is that in order to solve a specific problem for human society, such as

the problem of environmental protection, which is a vital problem<sup>10</sup>, it also requires the application of specific rules. These rules do not always have a social foundation. This is because natural phenomena occur independently of human will and that any human intervention in the environment inevitably leads to changes. Therefore, the procedures used to solve these problems must include a spectrum that ensures the achievement of this goal, regardless of the fact of which field they belong to - either public law or private law. They must be the most categorical, drastic and even exclusive, so that in the end they exclude intervention or totally remove the danger or consequences of negative influences on the environment.

It is also undeniable that environmental law is not only a branch of domestic law, but also has an international significance.<sup>11</sup> Even the rules that regulate the use and protection of environmental components cannot be reconciled with the rules of international law. This is largely due to the fact that environmental phenomena "do not know" and "do not obey" state borders.

This is because, in our opinion, environmental law is characterized by the presence of its distinct regulatory object, which are the ratios of rational use, protection, conservation and development of the environmental components.<sup>12</sup> In this sense, the need to ensure a rational use and protection of environmental factors dictates the realization of a combination of regulatory methods present in several branches of law. Environmental law is entitled to take up these methods, provided that their application provides efficiency and results. Therefore, the institutional framework will be composed of its own elements, but also of "the borrowed" ones, but adapted to the needs of environmental protection. Examples can be The Institution of Ecological Expertise, The Institution of Responsibility for Environmental Law,<sup>13</sup> etc.

However, when we "choose" the procedures for regulating environmental relations, we must take into account the fact that "people easily accept collective measures for environmental protection, but easily ignore measures that require individual discipline and personal efforts"<sup>14</sup>. That is why the measures that the legislator adopts at a certain stage, as a rule, are consistent with the level of intellectual development of society. Thus, when from the rostrum of the country's parliament, notes of derision will be heard regarding the importance of examining some draft laws related to the protection of natural environmental elements, so far, internal environmental law will be characterized by an increased tolerance for polluting acts. Whereas on the contrary, when the level of society's perception regarding environmental issues will be more advanced, the less will be the legislative tolerance for polluting acts.

Environmental law reports have a complex character. It is incorrect to deny the fact that in achieving the goals of use, conservation, development and protection of the environment, the use of all methods that can achieve the most efficient goal of legal stability in this sense is required. It is necessary to understand that the major goal of protecting the environment can also be achieved by means of administrative, criminal, contravention law, as well as by other means of law. In this sense, we must recognize that they are entitled to use all possible means to achieve the major goal of protecting the environment for present and future generations. It is important to note, however, that the norms of

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<sup>10</sup> E. Lupan, I. Trofimov, «Răspunderea de dreptul mediului», «Fiat Justiția» nr. 1, Cluj-Napoca 1998;

<sup>11</sup> Gh. Beleiu, *Drept civil român. Introducere în dreptul civil. Subiectele dreptului civil*, București, 1998;

<sup>12</sup> M. Duțu, *Dreptul mediului*, Editura economică, București, 1996;

<sup>13</sup> I. Gheorghe, „Drepturile Fundamentale și Protecția Mediului”, București 1998;

<sup>14</sup> I. Trofimov, G. Ardelean, A. Crețu, *Dreptul mediului*, ed. Editura Bons Offices, Chișinău, 2015;

other branches of law, which directly regulate some environmental law relationships, do not form the category of environmental law norms, but only complete or ensure the achievement the rules of environmental law. For example, if we refer to the regime of taxes applied for the use of natural resources, we find that the established taxes, as a rule, do not take into account the expenses for the regeneration of environmental factors. Therefore, both the tax for the use of environmental components, and the payment for environmental pollution, even if perceived before the moment of pollution, represents in perspective a way of responsibility for environmental damage, which should be understood as an element that must include the value of works and efforts for environmental regeneration. More than that, this should not be seen as a source of income to the budget, liable to be used according to the needs of the state, but only directed - for the regeneration of the environmental components.

Therefore, even if at first glance the criminal liability pursues the purpose of protecting the environment, it can only be engaged in the general prevention phase, and not at all in the certain regulation of environmental relations. Thus, the relations of environmental law appear as some complex relations, because they sometimes start as legislative relations-civil law (property rights over natural resources), administrative law (concession and management of natural resources), criminal law (bearing criminal penalties for environmental pollution), etc.

The researchers in the field, whose task is to propose and argue the necessity of imposing extraordinary measures to protect the environment, have had huge contribution to the realization of "intolerance". This is often done by "taking over" some institutions from other branches of law.

Many times the proposed solutions have been so extraordinary, that they are initially perceived by the majority as utopian. For example, in some specialized sources it is proposed to recognize religious norms as a source of environmental law. In this sense, it is argued that religious traditions around the world provide a basis for the right to the environment. Representatives of Buddhism, Christianity, Hinduism, Islam, Jainism, Judaism, Zoroastrianism and other religions, that belong to the Alliance of Religions and Conservation, a non-profit organization, found in religious traditions a common basis for land management. Thus, in ancient Buddhist chronicles dating from the third century BCE, they recount a sermon on Buddhism in which the son of Emperor Asoka of India asserted that "birds of the sky and animals have the same right to live and move in any part of the country. Another rule says that the Earth belongs to humans and all living things, and you are only the guardian of the Earth."<sup>15</sup>

Thus, the complexity and dynamics of social relations often imposes the need to regulate one and the same category of relations through the legal norms of different branches of law. This is also necessary starting from the fact that the branch of environmental law is a new one, and the appearance of new categories of legal relations, qualitatively new, makes it necessary to place them in the space of all other relations. Often this creates the wrong impression of a synthesis branch.

As for example, we could refer to the fact that in environmental law relations, property rights, already considerably worn out over time, create additional reasons to thin out, when it comes to acquisitions (protected areas), use (easements and constructions) or disposition. Although the administrative legislation indicates that the allocation of land for use or alienation is the exclusive competence of local councils or the Government, however, when discussing land, a big question mark appears – “are

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<sup>15</sup> M. Cotorobai, P. Zamfi, V. Ursu, “Dreptul funciar”, Chişinău, 2001;

we facing an environmental law report or do we have a civil law relationship, whether we are facing a legal administrative law relationship? <sup>16</sup>

### **Shortcomings in the Environmental Law of The Republic of Moldova**

Although the environmental legislation of the Republic of Moldova has experienced a fairly significant development, we must recognize the existence of a series of shortcomings, some of which have an essential character. Thus, at the stage of drafting and adoption of draft laws, the preparation of the text of new laws often has place without being terminologically coordinated with the text of other categories of laws, especially those related to the civil and commercial domain. Thus, in the text of legislative acts in the field of environmental law, inappropriate terms are often used or with content that is not understood and not explained by the text of the law. For example, some laws use the term "lease", although according to its content it is necessary to use the term "location", considering that the purpose of the transmission of the natural objective is not an agricultural one. The text of the law that regulates the use regime can be subject to criticism, considering that it establishes an uncertainty, which was actually removed in the text of the old law - the Water Code, namely the one that refers to the "aquatic objective". Another shortcoming of the environmental legislation is the "chronic" absence in the legal texts of the procedure for ensuring the rights and obligations established by the law, as well as the consequences of not complying with them. Namely, the lack of a clear procedure means that the environmental legislation remains unenforced. Although in other countries the problem of environmental protection has been raised to a much more important level, including the fact that objective and joint liability<sup>17</sup> is established for damage caused to the environment. More than that, the idea of recognizing the right of every citizen to action is put forward regarding the repair of the damage caused to the environment, regardless of whether or not personal damage was caused to him.

### **Conclusions and proposals**

In the context of the above-mentioned, we find that the basic task of the legal science of environmental law is to reveal the criteria for identifying the categories of legal relations under environmental law, in order to delimit them from other categories of legal relations, a fact that produces effect both on the identification of environmental law relations from the multitude of legal relations of other similar branches of law, as well as ensuring the correct application of the legislation in force. According to Professor Prieur, the recognition of the general interest related to the environment has its effects on the control of legality and the emergence of a public service for the environment aimed at ensuring an ecological public order.

For the reasons stated above, often in the practice of environmental law reports, different situations arise in which we are faced with the task of identifying whether a certain legal report, which has as its object environmental elements, is part of the category of environmental reports or, as the case may be it is one of administrative, civil law, labor law, etc.

The solution regarding the identification of the nature of legal relationship, can be identified

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<sup>16</sup> I. Trofimov, «Răspunderea ecologică - concepție contemporană», «Legea și viața» nr. 11, Chișinău, 1997;

<sup>17</sup> M. PRIEUR, 2019, DROIT INTERNATIONAL ET COMPARÉ DE L'ENVIRONNEMENT, Formation à distance, Campus Numérique "ENVIDROIT" TRONC COMMUN COURS n°5 LES PRINCIPES GÉNÉRAUX DU DROIT DE L'ENVIRONNEMENT;

specifically through the lens of the legal mechanisms used, but also in relation to the purpose of the regulations. In this way, if we identify the fact that a specific rule aims to ensure the management of public affairs, such as the realization of an order for the adoption of decisions in a certain concrete field, then these reports are of an administrative nature, and therefore the legal norm is one of administrative law. However, if the norm in question aims to ensure the protection of an environmental factor, even if it incorporates apparently mechanisms of administrative law, then the report in question is a report of environmental law, and the legal norm is attributed to environmental law.

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## HARMONIZATION OF MOLDOVA'S LAW ON COMPETITION WITH EU DIRECTIVES: IMPLICATIONS AND CHALLENGES

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**Abstract:** The Republic of Moldova has recently embarked on a pivotal legislative journey to refine its Law on Competition. This initiative, taken a decade after the law's inception, primarily aims at harmonizing with corresponding EU directives to foster a more competitive market landscape. This research seeks to critically analyze the main facets of these proposed amendments. Key areas of focus include the revision of thresholds for economic concentration notifications, modifications in the determination of dominant market positions, and the introduction of globally-oriented terms like "total global turnover" for precise fine calculations. Additionally, while these reforms intend to create a market founded on transparency and predictability, certain provisions have sparked reservations among business associations. They highlight potential implications of swiftly aligning certain EU provisions with national legislation and the conceivable repercussions on the business milieu. The study aims to dissect these concerns, providing an analytical overview of the challenges and implications the proposed changes might bring to the Moldovan economic framework.

**Keywords:** Moldova, Law on Competition, EU directives, market competition, legislative amendments, economic concentration

JEL Classification: K21, K33, F15

### Introduction

The modernization of competition law represents a cardinal pillar in fostering economic growth, safeguarding consumer interests, and promoting innovation and entrepreneurship. This article meticulously scrutinizes the transformative amendments introduced in the Republic of Moldova's competition legal framework, as embodied in Law no. 199 din 25-07-2023 on amending the law on competition. This pivotal legislation heralds a new epoch in Republic Moldova's commitment to aligning its competition policies and regulations with contemporary global standards, particularly those of the European Union (EU). A systematic exploration of these legislative advancements reveals an ambitious attempt to bolster the efficacy of competition regulation mechanisms, enhance transparency, and ensure adherence to principles that champion fair competition.

Anchored in comprehensive legal analysis, this discourse aims to unveil the nuanced contours of the amended legislation, discerning its key provisions, innovations, and strategic alignments with EU directives. The discourse will navigate through the intricacies of enhanced institutional powers, refined economic concentration regulations, stricter anti-cartel measures, and the assimilation of

technological advancements within procedural realms. It will also entail a comparative exploration, drawing parallels and distinctions between Moldovan reforms and EU competition law directives and practices, thus unveiling the implications and challenges emanating from such harmonization efforts.

In a bid to provide a holistic perspective, this article will also delve into the anticipatory impacts of these amendments on market competition within Moldova, encapsulating insights on stakeholder perspectives and responses. Conclusively, the article will synthesize the key findings and project forward trajectories, envisaging the potential landscapes and implications of Moldova’s evolved competition law framework on the broader economic vista.

### **PRE-AMENDMENT JURISPRUDENTIAL TERRAIN: A Legal Cartography**

Before engaging in a critical analysis of the recent legislative amendments, it is imperative to meticulously map the jurisprudential terrain as shaped by Law No. 183 of July 11, 2012, on Competition. This pivotal statute crystallized the fundamental doctrines and regulatory scaffolds that delineated the contours of market competition in the Republic of Moldova, marking a monumental cornerstone in the architectural integrity of the nation’s competition law jurisprudence.

The statutory tapestry of Law No. 183 was meticulously woven with a vision to cultivate a competitive ambiance, marked by the hallmarks of fairness, efficacy, and transparent integrity. It bore the legislative intent to curtail anti-competitive practices, enhance consumer welfare, and inaugurate an economic ecosystem flourishing under the aegis of equitable legal norms. The legal provisions within this statute were meticulously articulated, emanating clear directives regarding various critical dimensions such as economic concentrations, the ascendancy in market positions, and the proscription of monopolistic practices and unfair competition.

#### *A. Economic Concentrations:*

The Law on Competition exemplified legislative acumen in the articulation of provisions that proactively supervised, regulated, and when essential, inaugurated interventions in substantial economic amalgamations to forestall the perversion of competitive integrity. It illuminated the thresholds and criteria that invoked obligatory notifications and concomitant evaluations by the custodians of competition regulations.

#### *B. Dominant Market Positions:*

The legislative wisdom was prominently manifested in the law’s strategic focus on forestalling the exploitation inherent in the abuse of dominant market echelons. It ushered in a legal architecture that meticulously defined market dominance and established juridical boundaries, restraining entities from leveraging dominant positions to the detriment of consumer interests or competitive vitality.

#### *C. Monopolistic Practices and Unfair Competition:*

The legislation emanated robust legal resiliency by meticulously delineating the precincts of acceptable commercial conduct, instituting legal recourse and punitive frameworks to dissuade enterprises from indulging in practices inimical to the ethos of competition and consumer well-being.

*D. Regulatory Oversight and Enforcement:*

The Law No. 183 on Competition was emblematic of a refined approach towards regulatory enforcement, clarifying the demarcation of authoritative responsibilities and prerogatives vested in the competition arbiters, and inaugurating structured protocols for the investigative and adjudicative processes, as well as for the promulgation of sanctions in instances of statutory infringements.

This reflective exploration of the antecedent legislative framework furnishes a foundational bedrock that facilitates a profound appreciation of the intrinsic motivations and the consequential significance emblematic of the new legal formulations introduced by Law No. 199 of July 25, 2023. It substantiates a nuanced comprehension of the legislative evolution, perceptibly demarcating the continuities and transitional shifts in legal philosophies, policy orientations, and regulatory stratagems pivotal to the progressive trajectory of Moldova’s competition law paradigm.

**ANALYZING THE EVOLUTION: LEGISLATIVE MODIFICATIONS EXPLORED**

The legislation marks a significant milestone in the evolution of competition law within the Republic of Moldova. Built upon comprehensive considerations and deliberative strategies, the revised law is an epitome of the country’s enhanced commitment to fostering a competitive, transparent, and consumer-oriented market landscape.

a. Key Provisions and Innovations:

- *Increased Powers to the Competition Council:* A notable innovation is the empowerment of the Competition Council, providing it with increased authority to protect fair competition, emphasizing a stronger institutional role in safeguarding competitive integrity.
- *Stricter Anti-Cartel Measures:* A decisive stride has been made towards inhibiting anti-competitive agreements. An explicit prohibition is now imposed on exceptions for anticompetitive agreements manifested through cartel agreements.
- *Refined Economic Concentration Regulations:* A meticulous approach has been adopted in the law towards regulating economic concentrations. Amendments propose an enhancement in the total turnover amount that enterprises involved in operations must achieve cumulatively.
- *Enhanced Fine Structures:* The amendments herald a transformation in the sanctioning of violations. The maximum threshold for fines has been increased, echoing the provisions established in EU legislation.

b. Alignment with EU Directives:

- *Harmonization and Adaptation:* The law embodies harmony with EU standards, especially with respect to sanctions and the administrative appeal process. This alignment with EU directives illustrates a synergistic adoption of international best practices.
- *Operational Independence:* A significant stride has been made towards ensuring the operational independence of the competition authority, safeguarding it from potential external or political interferences that could compromise impartiality.

- *Streamlined Appeal Processes:* Innovations include the streamlining of legal processes involved in the contestation of administrative acts, ensuring more efficient and expeditious legal proceedings.
- *Enhanced Cooperation:* Provisions have been enhanced to facilitate better cooperation between the Competition Council and other competition authorities, especially within EU member states.

c. Futuristic and Technological Adaptations:

- *Technological Incorporation:* Embracing technological advancements, provisions for remote hearings through electronic devices, teleconferencing, or videoconferencing have been incorporated.
- *Increased Transparency and Collaboration:* The amendments underscore a commitment towards increased transparency and collaboration, fostering a conducive environment for inter-authority cooperation and public consultation.

Law No. 199 from 25-07-2023 manifests as a transformative legislation, delineated with profound clarity, precision, and a vision for fostering a competitive market landscape that resonates with integrity, consumer welfare, and harmonization with international standards and best practices. Its provisions echo a strategic foresight, adaptable dynamism, and a robust alignment with the foundational ethos of competitive fairness and consumer-centric considerations.

## **UNPACKING THE REVISED LEGAL FRAMEWORK**

Navigating through the labyrinth of legislative amendments requires a precise analytical lens, ensuring that each nuance is meticulously unpacked and critically evaluated.

a. Critical Evaluation of New Provisions:

- *Enhanced Powers of the Competition Council:* The decision to augment the powers of the Competition Council elucidates a strengthened institutional approach towards safeguarding market competition. However, this enhancement mandates a corresponding increase in accountability and transparency mechanisms to ensure a balanced exercise of power.
- *Stringent Anti-Cartel Measures:* The unequivocal prohibition against exceptions for anti-competitive agreements manifested through cartels signifies a resolute stance against market malpractices. It enshrines a legal intolerance towards practices that undermine market integrity and consumer welfare.
- *Revamped Economic Concentration Regulations:* The modifications pertaining to the regulation of economic concentrations seem meticulously crafted to nurture a balanced market ecosystem, preventing disproportionate accumulation of market power. However, constant evaluation is essential to ascertain that these regulations do not inadvertently stifle market innovation and entrepreneurship.

b. Interpretative Insights and Legal Analysis:

- *Alignment with EU Directives:* The law's alignment with EU directives illustrates an intentional harmonization with global best practices. It fosters a legislative environment conducive to international cooperation and facilitative of a more universally resonant legal framework.
- *Operational Independence of Authorities:* The amendments seem to emphasize securing operational independence, minimizing vulnerabilities to external or political interferences. This likely aims to enshrine a culture of impartiality and objectivity within the competition regulatory framework.
- *Technological Adaptation:* The law's openness to incorporating technological advancements, such as provisions for remote hearings, symbolizes a modernized legal approach, resonating with contemporary needs and global advancements.

The law appears carefully calibrated to nurture a harmonized, fair, and consumer-centric market environment, echoing with global resonances and modern adaptabilities. However, continuous assessment and adaptive responsiveness are essential to ensure that the legislation perpetually aligns with the evolving market realities and international best practices.

## **HARMONIZATION WITH EU DIRECTIVES: A STRATEGIC PERSPECTIVE**

### **Comparative Analysis: Republic of Moldova and European Union**

In dissecting the strategic harmonization of Moldovan competition law with EU directives, a meticulous comparative analysis becomes imperative. One must delve into the specific statutes, regulatory frameworks, and overarching philosophies guiding competition law in both jurisdictions to discern the nuances and trajectories of legal evolution.

- ✓ *Anti-Competitive Agreements and Cartels:*
  - **EU Directives:** EU competition law, particularly encapsulated in Articles 101 and 102 of the Treaty on the Functioning of the European Union (TFEU), profoundly focuses on prohibiting anti-competitive agreements, cartels, and abusive behavior by companies in a dominant position.
  - **Moldovan Law:** The recent amendments express a robust stance against cartels and anti-competitive agreements, aligning with the EU's emphasis on rooting out practices detrimental to market competition and consumer interests. A comprehensive overview and analysis of the recent amendments in Moldova's competition law are available for review in a detailed article published by Realitatea.md (Realitatea.md, 2023)
- ✓ *Regulation of Economic Concentrations:*
  - **EU Directives:** The EU's Merger Regulation underscores a comprehensive framework that scrutinizes mergers and acquisitions that may significantly impede effective competition. Montag's discourse on the substantive tests in EC merger regulations offers significant insights crucial for understanding the evolution and application of these regulations (Montag, 2002).
  - **Moldovan Law:** With modifications fostering nuanced regulations on economic concentrations, Moldova's legal architecture begins to resonate with the EU's meticulous approach towards maintaining market diversity and preventing monopolistic dominances.

### **Implications of harmonization with EU standards: an analytical exploration**

In a landscape influenced by globalization and regional partnerships, Moldova’s strategic alignment with European Union (EU) competition standards marks a crucial legislative transformation. This initiative aims to bolster Moldova’s global legal standing, enhancing prospects for foreign investment and deeper multilateral collaborations.

Central to this alignment is the enhancement of legal clarity and consistency. Adhering to EU directives, Moldova cultivates a legal climate characterized by transparency, predictability, and standardized interpretations of competition laws, thereby fostering a resilient and dependable business environment in line with international norms.

Additionally, consumer protection is emphasized, reflecting the robust frameworks of the EU. This alignment aims to bolster defenses against unfair market practices, ensuring a higher degree of consumer welfare through enhanced legal safeguards.

However, this path to harmonization brings inherent challenges, requiring careful adaptation of EU directives to resonate with Moldova’s specific socio-economic dynamics. The alignment must transcend mere legal transposition, embodying a genuine harmonization that integrates international norms with domestic relevance and applicability.

For deeper insights into the intricacies of EU influences on competition laws, the scholarly contributions of Jones and Sufrin provide valuable perspectives, offering enriched understanding and context (Jones & Sufrin, 2019).

Ultimately, this harmonization symbolizes a thoughtful progression, inviting opportunities for international collaboration and legal fortification. However, it also calls for ongoing evaluation and refinement to ensure that the integrated standards maintain their relevance and effectiveness within Moldova’s unique legal and economic landscapes.

## **CHALLENGES AND IMPLICATIONS**

### **A. Anticipated Impact on Market Competition**

The reinterpretation of competition laws manifests an array of intricate complexities that deeply permeate market structures, competitive dynamics, and a multitude of stakeholder interests. Analyzing these subtle nuances is quintessential for understanding the potential ramifications on the landscape of market competition.

- **Market Accessibility and Fair Competition:**

In alignment with global norms such as the Sherman Act in the United States and Articles 101 and 102 of the Treaty on the Functioning of the European Union (TFEU), Moldova’s revised competition

law seems to underscore a concerted emphasis on prohibiting anti-competitive behaviors, thereby nurturing the essence of market accessibility and fairness (European Union, n.d.).

- **Dynamic Competition and Innovation:**

Eminent scholars like Eleanor M. Fox have articulated a distinct correlation between the realms of competition law and the flourishing of dynamic, innovative marketplaces (Fox, 2023). Moldova's legal recalibrations ostensibly aspire to kindle a spark of innovation, mitigating the monopolistic inclinations of dominant market incumbents that potentially stifle competitive vibrancy and the sprouting of innovative startups and Small and Medium Enterprises (SMEs).

## **B. Stakeholder perspectives and responses**

- **Business Community:**

Authorities in the field, such as Herbert Hovenkamp, emphasize the salience of striking a delicate equilibrium between the enforcement of robust antitrust stipulations and the nurturing of a fertile ground conducive to business innovation and proliferation (Hovenkamp, 2017). In this context, the business community may discern the legislative modifications as a paradigm of enhanced regulatory oversight, compelling a strategic reevaluation and realignment of operational methodologies to seamlessly dovetail with the emergent legal contours. Comprehensive elucidations regarding antitrust procedural nuances are comprehensively delineated in the formal repositories of the European Commission (European Commission, 2023).

- **Consumer Advocacy:**

The recent legal amendments in Moldova's competition law manifest a reflective adaptation of contemporary global best practices, resonating with the principled advocacy championed by luminary institutions and individuals such as Beuc and Robert H. Lande, who have steadfastly propagated consumer welfare paradigms within the intricate tapestry of competition law (Beuc, 2015; Lande, 2008). These global insights into consumer protection and market fairness have been discerningly appropriated within the Moldovan legal context, fostering a legislative environment more attuned to the mitigation of anti-competitive market manipulations and the prioritization of consumer interests.

Moldova's recent reforms signal a shift towards aligning its legislative mechanisms with European Union standards and global best practices, emphasizing a consumer-focused approach. This transformation underscores Moldova's dedication to promoting a fair competitive environment that nurtures consumer welfare, demonstrating a thoughtful appreciation of the extensive economic impacts of competition law and policies.

- **Legal and Academic Community:**

Respected jurists and academic scholars, like Richard Whish and David Bailey, who have bestowed seminal contributions to the scholarship of competition law, are poised to proffer incisive analytical

critiques, evaluations, and interpretational guidance pertaining to the nuances of the legal amendments (Whish & Bailey, 2018).

Navigating the legislative amendments requires consistent engagement with international best practices, scholarly insights, and various stakeholder perspectives. This amalgamation of diverse insights enhances the competition law’s robustness and adaptability, ensuring its alignment with current market justice, innovation, and consumer welfare standards.

## **CONCLUSIONS AND FUTURE DIRECTIONS**

Our investigative journey into Moldova’s amended competition law unfolds a meticulously crafted pathway towards fostering robust, dynamic, and equitable competitive practices within the market. The comprehensive review unravels a refined regulatory architecture, adeptly harmonized with the prevailing EU directives, demonstrating a steadfast commitment to nurturing an environment ripe for business innovation and consumer welfare.

The revised statutes resoundingly amplify the emphasis on eradicating anti-competitive practices, such as cartels and abusive dominance. This recalibration is emblematic of an alignment with international legal benchmarks, ensuring the upholding of fair competition as a cardinal principle.

A discernible synchronization with EU competition norms is evident in the amendments, illustrating a strategic enhancement in Moldova’s legal apparatus. This alignment heralds a nuanced integration with the European market principles, embodying shared regulatory philosophies and practices.

Endowed with augmented authorities, the Competition Council is better equipped to safeguard market competitiveness, ensuring the integrity of various market segments is meticulously maintained. The legal refurbishments are poised to rejuvenate the market dynamics, curtailing monopolistic tendencies and fostering an environment that is conducive to innovation and entrepreneurial vigor. The evolutionary trajectory of Moldova’s competition law opens avenues for enhanced integration and cooperative synergies with European markets, bolstered by aligned regulatory principles and frameworks.

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## REFLECTIONS ON THE IDENTITY CRISIS OF THE JUDICIAL SYSTEM

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**Abstract:** Identity is the concept by which a system defines itself. A system outlines identity when it is able to identify values as *jus cogens*, perpetually strictly respected, able to remain determined, vertical and independent in the context of social antagonisms, able to form authentic and indisputable leaders, able to generate and promote collective will. Identity, as a subjective and tonic conviction of the unity and continuity of the system, gives it strength and stability. Opposite, the identity crisis, generating a state of conflicting tension within the system, but also in relation to other systems, leads to vulnerability and obstructs rationality. This article will address the identity crisis faced by the judicial system of the Republic of Moldova today.

**Keywords:** identity, judicial system, identity crisis, rule of law, reform.

JEL Classification: **K10, K40**

### Introduction

The identity crisis of the judicial system is a complex issue specific to each country or jurisdiction, which arises when there is tension between the values, functions, and societal expectations regarding justice and the reality in which the courts operate.

In particular, the judicial system of the Republic of Moldova is currently facing a severe identity crisis, becoming highly vulnerable to irrationalism. Populist politics, in its tendency to establish authoritarianism, fiercely struggles to take control of the judicial system, discrediting its role as the guardian of the rule of law, attempting to replace justice with flawed models such as surveillance, repression, and communication (defamation, demagoguery, fake news, etc.).

This study aims to clarify the concept of the judicial system's identity crisis, identify the causes and consequences of this crisis, and formulate solutions to strengthen the independence of the judicial system.

The primary concern from the perspective of international standards is that any regulatory intervention in the field of justice should not be used by political actors or government officials as a means to control the activities of judges. The main point of discussion revolves around safeguarding the independence of the judiciary by ensuring that no institution interferes with access to a fair trial provided by an impartial court. Additionally, any norm that holds judges accountable must be proportionate and should not interfere in any way with the judge's decision-making process in individual cases.

## The Identity Crisis of the Judicial System: Conceptual Approaches

*Identity* is the definition that a system formulates about itself.

A system establishes its identity when it identifies values as *jus cogens* and adheres to them strictly and perpetually, without allowing exceptions, when it remains resolute, identical to itself, despite changes in the value system, and when it produces indisputable leaders, true idea generators, and promoters.

*The identity of the judicial system* is shaped by the characteristics, functions, and attributes that define this system within a specific society or jurisdiction. The identity of the judicial system can vary from one country to another and is influenced by numerous factors, such as the promotion of the principles of the rule of law, judicial independence, access to justice, the efficiency and accessibility of judicial procedures, the level of transparency in judicial decision-making, the accountability of judges, legal culture, and so on.

Judicial independence is a constitutional principle and a defining feature of the rule of law, closely related to the separation and balance of powers within a state. It serves as a fundamental safeguard against abuses of power. Judicial independence can only be ensured when all those involved are committed to supporting the institutions of democracy. This requirement demands both the institutional independence of the justice system and the individual independence of judges. Without the independence of judges, authentic justice cannot be administered. A well-functioning justice system is essential for good governance, the reduction of corruption, economic growth, the efficient delivery of public services, and the protection of fundamental human rights and freedoms.

Transparency in the procedures for the appointment, evaluation, and management of judges' performance is crucial for the independence of the entire judicial system. Professional evaluations of judges should not be used to undermine their independence. Emphasis is placed on the fairness and transparency of the procedures, the application of clear and uniform criteria for professional evaluation, and a well-founded rationale for decisions. Ensuring a balance between the independence and accountability of judges is imperative. Sanctions against judges should be reserved for cases of serious alleged professional misconduct that discredit the judicial system. There is a strong emphasis on an effective and transparent practice of disciplining judges, free from influences or interference with a judge's duty to administer justice. Furthermore, litigants expect judges to conduct themselves fairly and impartially, with these qualities permeating the entire work conducted by all personnel directly or indirectly involved in the administration of justice. It is crucial that the judicial process remains uncompromised due to the behavior of judges or other members of the court staff, which could damage the reputation of the judiciary.

The identity of the judicial system is crucial for maintaining public trust in the justice system and its proper functioning within a democratic society and the rule of law.

The inability of the system to establish its own identity leads to an *identity crisis*, a concept introduced in 1968 by the German-American researcher Erik Erikson (Erikson, E.H., 1968). In essence, an identity crisis is a state of conflict and tension, both with one's own self and with the world around them.

*The causes of the judicial system's identity crisis* are varied and complex, such as: excessive politicization, when the judiciary is subjected to undue political influences, such as the appointment or promotion of judges based on political affiliations; lack of resources, when the judicial system doesn't receive sufficient financial or human resources to perform its functions properly, leading to delays in proceedings and the inability to provide efficient justice; corruption, which can erode public trust in the integrity of the judicial system and create an identity crisis among honest judges who are fighting against corruption; frequent legislative changes and major reforms that can create uncertainty among judges about how they should fulfill their roles and apply the laws; public and media pressure that can affect the independence of judges and raise questions about their objectivity in decision-making; differences in values and expectations between the public, on one hand, and the practices of the judicial system, on the other.

Among these, excessive politicization, combined with the "eternal" system reform, most significantly affects the identity of the judicial system and leads to undermining the fundamental principles of democracy and compromising the rule of law.

*Excessive politicization* is a situation in which political power exerts influence or control over the judicial system in a manner that undermines its independence, objectivity, and integrity. The methods of political control over the judiciary can be quite diverse, such as: direct nomination and appointment of judges by political actors to influence the composition of the courts in their favor; exerting political pressure on judges to obtain decisions that serve their interests; individual interference in the conduct of trials and the adoption of judicial decisions; legislative changes to limit or expand the authority of judges based on political interests; lack of transparency in the processes of appointing judges, decision-making, and managing the judicial system, among others. Political control of the judiciary leads to the vulnerability of the system to political influences, erosion of public trust in the judicial system, and the violation of individual rights and freedoms.

In its essence, judicial system reform is a process that brings about significant changes in the structure, functioning, and culture of the judicial system to enhance independence, efficiency, and the fairness of justice. Judicial system reform is a complex and often long-term process, but it is essential for upholding the rule of law and ensuring equitable justice in society. Reforms can have various objectives, such as strengthening judicial independence, combating corruption, ensuring efficiency and access to justice, increasing transparency and accountability, developing professional skills, and safeguarding fundamental rights, among others. It is crucial for reforms to be carefully planned, taking into account the needs, context, and potential reactions of those affected. Successful implementation of reforms requires commitment from governments, justice professionals, and civil society. Indeed, excessive reform, when implemented rapidly or aggressively, can be counterproductive, significantly disrupting the judicial system or provoking substantial resistance from those affected by the reform.

### **The Judicial System of the Republic of Moldova: "Eternal" Reform**

The judicial system of the Republic of Moldova has had a challenging historical journey, marked by a pendulum swing between the remnants of Soviet traditions and the new systemic challenges of the era. The Constitution of the Republic of Moldova in 1994 initiated the long series of reforms in the administration and organization of justice in the newly-formed state.

Between 1994-1996, the constitutional provisions were developed through a package of framework laws, such as Law No. 514 of July 6, 1995, *regarding the judicial organization*, Law No. 544 of July 20, 1995, *on the status of judges*, Law No. 789 of March 26, 1996, *regarding the Supreme Court of Justice*, Law No. 947 of July 19, 1996, *on the Superior Council of Magistracy*, and so on.

Law No. 76 of April 21, 2016, *regarding the reorganization of the judicial courts*, restructures the judicial system. Starting from August 27, 1996, the new judicial system began to function, composed of the Supreme Court of Justice, the Court of Appeal, tribunals (5), sector and municipal courts (48), the Economic District Court, the Economic Court of the Republic of Moldova, and the Military Court.

Between the years 2001-2005, a reform program was developed, which was, in essence, regressive, substantially increasing executive control over the judiciary. In 2002, the levels of judicial courts were reduced from four to three, and the tribunals were liquidated. In 2003, the rules regulating the activities of the judicial system were modified.

In 2005, a new reform was adopted, which essentially reversed the regressive measures that came before. It strengthened the independence and modified the composition of the Superior Council of Magistracy while limiting the role of the country's President in the procedure for appointing judges.

Between the years 2011-2017, a new reform of the justice sector was launched, this time as an integral part of the EU-Moldova Association Agreement agenda (AAEURM, 2014). The reform strategy (Law No. 23/2011) aimed to strengthen the independence, accountability, efficiency, and transparency of the judicial system. Measures included the random allocation of cases, hiring assistants for each judge, increasing the salaries of judges and court staff. This was followed by the adoption of two significant laws, Law No. 154 of July 5, 2012, *on the selection, performance evaluation, and career of judges*, and Law No. 178 of July 25, 2014, *on the disciplinary responsibility of judges*.

Starting from January 1, 2017, the judicial court system in the Republic of Moldova underwent a new reorganization with the aim of ensuring the quality of the judicial process, the efficiency of the judicial system, the equitable distribution of tasks among the courts, the efficient use of public funds, and creating conditions for the specialization of judges. As a result, the previous 44 first-instance courts were merged to create 15 new judicial courts. Currently, these courts are composed of central and secondary seats. According to the *Law on the Reorganization of Judicial Courts* (Law No. 76/2016), the unification will be carried out gradually until December 31, 2027, as the conditions are created for them according to the plan approved by Parliament. It is worth noting that as of September 2023, only one court out of the 15 newly formed ones (Ungheni Court) has completed the merger process and has a single seat. The probability of completing the reform within the specified timeframe is extremely low.

In September 2020, the Moldovan government approved a draft law for amending the Moldovan Constitution (Decision No. 730/2020). This amendment was aimed at strengthening the judicial system, fortifying the constitutional legal framework for ensuring the stability and immovability of judges' mandates, and guaranteeing the independence of the judiciary. The initiative was part

of the National Action Plan for the Implementation of the EU-Moldova Association Agreement for the period 2017-2019.

One year later, the Moldovan Parliament passed the *Law for Amending the Constitution of the Republic of Moldova* (Law No. 120/2021). The law aimed to amend articles 116, 121, 122, and 123 of the Moldovan Constitution by removing the term of 5 years for the appointment of judges and establishes a provision granting the President of Moldova the right to reject a candidate proposed by the Superior Council of Magistracy only once. Another amendment pertains to the appointment of judges to the Supreme Court of Justice, similar to judges in appellate courts and courts, by the President of Moldova upon the proposal of the Superior Council of Magistracy, and the removal of the requirement for judges to have at least 10 years of work experience in the position of a judge. The law stipulates that judges hold only functional immunity under the law. The composition of the Superior Council of Magistracy is altered, comprising 12 members: six judges elected by the General Assembly of Judges, representing all levels of judicial courts, and six individuals with a high professional reputation and personal integrity, with experience in the field of law or in other relevant areas, who do not serve in the legislative, executive, or judicial branches of power and are not politically affiliated. Members of the Superior Council of Magistracy are elected or appointed for a term of 6 years, with no possibility of holding two mandates.

In March 2022, the Parliament of the Republic of Moldova adopted the *Law on certain measures related to the selection of candidates for the position of member in the self-administration bodies of judges and prosecutors* (Law No. 26/2022), which imposed the condition that only candidates who pass the evaluation of ethical and financial integrity can participate in the elections for the position of member in the Superior Council of Magistracy. The adoption of this law resulted in the blocking of elections for new members to the Superior Council of Magistracy.

Going beyond the scope of the current study, it's worth noting that national law places emphasis on integrity through the verification of assets and interests of actors in the judiciary by the National Integrity Authority, which is an independent public authority specialized in ensuring integrity in the exercise of public functions or functions of public office and preventing corruption through the control of assets and personal interests, and overseeing compliance with the legal framework related to conflicts of interest, incompatibilities, restrictions, and limitations (Law No. 132/2016).

Furthermore, by Law No. 246 of July 29, 2022, the mandates of former members of the Superior Council of Magistracy were extended. As a result, a Council member continues to exercise their duties even after their mandate has expired, until the new member who is to replace them takes over (Law No. 246/2022, Art. III(6)). This regulation, in our view, is unconstitutional, as the Constitution of the Republic of Moldova expressly states: "Members of the Superior Council of Magistracy are elected or appointed for a term of 6 years [4 years, in the previous version], without the possibility of holding two mandates" (The Constitution of the Republic of Moldova, 1994, Art. 122(5)), and it does not provide for the possibility of extension.

Law No. 26/2022 established the "Pre-Vetting" procedure, which is an integrity assessment of candidates for the positions of members of the Superior Council of Magistracy and the Superior Council of Prosecutors, as well as candidates for membership in their specialized bodies. The evaluation is carried out by a Commission composed of 6 members appointed by Parliament, with

3 members being citizens of the Republic of Moldova and 3 members being foreign citizens proposed by development partners. No judges or prosecutors are part of this commission. The members of the commission can request information from all state bodies regarding the candidates and their relatives. The commission has the authority to investigate any aspect of the candidate's private or professional life and determine their ethical and financial integrity. The criteria for assessing integrity are left to the discretion of the commission members. According to Law No. 26/2022, the Pre-Vetting Commission was supposed to conclude its evaluation of candidates for positions in the judicial administration bodies by December 31, 2022. This was not achieved, and by Law No. 354/2022, the term of the Pre-Vetting Commission's activity was extended until June 30, 2023 (Law No. 354/2022, Art. I(6)), leading to a further postponement of the elections for the position of a member in the Superior Council of Magistracy. The decision of non-promotion in the evaluation serves as a basis for disqualifying the candidate from the elections to the council. Moreover, the candidate's challenge to the decision does not suspend the elections for a position in the respective council, and the General Assembly is obliged to elect council members from among those selected by the Pre-Vetting Commission.

Meanwhile, by Law No. 252/2023, the term of activity of the Pre-Vetting Commission has been repeatedly extended. The commission will continue its activity until the examination of appeals filed against its decisions is completed (Law No. 352/2023, Art. 22(11)).

The experience of pre-vetting is a controversial one. Although the law on assessing candidates for membership in the Superior Council of Magistracy and in the Superior Council of Prosecutors was consulted with the relevant stakeholders, it was only partially accepted by the Venice Commission, which provided relevant recommendations on its implementation. It is evident that the implementation of the law is flawed, starting with the appointment of Pre-Vetting Commission members, the secrecy of the secretariat's composition, the application of double standards, differing criteria for assessing candidates in similar situations, and extending to the reasoning behind the Pre-Vetting Commission's decisions. The Commission decided to exclude 23 of the 28 candidates, effectively limiting the choice of the electorate and influencing the composition of the judicial section of the Council. Although the Supreme Court later quashed the Commission's decisions, this judgment has not been properly implemented so far. It is regrettable that the pre-vetting exercise has failed and has discredited the government's stated intentions of "cleansing" the judicial system. Essentially, pre-vetting serves as a political filter to identify the "loyal", while preventing the "independent" individuals from running for leadership positions in the judiciary.

As a result, although the Law Amending the Constitution of the Republic of Moldova came into force on April 1, 2022, its implementation has suffered serious deficiencies. In particular, the Superior Council of Magistracy still lacks its full constitutional composition as of today. Out of the 12 members, only 9 are present. It is noteworthy that the presence of one member from the ranks of judges was ensured by Law No. 246/2022. Furthermore, the term of office for this particular judge's membership in the Superior Council of Magistracy expired on December 1, 2021 (Decision No. 5/2017). We consider this presence to be abusive and unconstitutional.

In March 2023, the parliamentary majority adopted Law No. 64/2023, launching a new multidimensional reform of the Supreme Court of Justice. The governing party further intends to conduct a process of vetting of the private and financial circumstances of all judges of the Supreme

Court, the Court of Appeal and presidents and vice-presidents in the District Courts (Law No. 65/2023, Law No. 252/2023).

Indeed, international standards make it clear that the security of judicial office during its term and the immovability of judges are integral parts of the guarantees of judicial independence (UDIJ, 1983; UNBPIJ, 1985; Council of Europe, 2010a; Council of Europe, 2010b; Council of Europe, 2010c; Council of Europe, 2014b; JGSJI, 2002; OSCE/ODHIR, 2010).

When planning the organization and functioning of the judicial system, the legislative and executive branches should refrain from adopting measures that could endanger the security of the tenure of judges or their immovability and thus constitute an interference with judicial independence.

The principle of the security of tenure for judges also applies when circumstances seemingly dictate the necessity of replacing a significant number of judges or require the implementation of radical assessment measures to improve the integrity and quality of the judicial system.

However, in such cases, it is necessary to establish a strict set of safeguards to provide protection for judges who diligently perform their duties. Applying measures to purify the judicial system without considering international standards for a fair trial or the fundamental principles of judicial independence will, on the contrary, undermine rather than strengthen the judicial system.

We note that currently in the Republic of Moldova, there is a parliamentary majority from a single party in the Parliament. This comfort has led to the disregard of the Venice Commission's recommendations, which emphasize that for an extraordinary external evaluation of national judges, there needs to be a broad consensus in society on this matter, involving the affected judges, parliamentary and non-parliamentary opposition, and civil society. In the absence of such a consensus, the Government of the Republic of Moldova insisted that the extraordinary assessment of judges take place based on an organic law, which is adopted with the vote of the elected majority of deputies. Public consultations were simulated, and critical opinions were not reflected in the final text of the law. Furthermore, the introduction of these vetting procedures takes place against the background of constant attacks, abuse and threats directed by politicians and the media against judges and the judiciary as a body. The political nature from the outset of this judicial reform compromises its stated purpose. The public perception is that it seeks the political screening of judges and the political subordination of the judiciary system.

Summary of the evolution of the judicial system in the Republic of Moldova since independence clearly demonstrates a state of "eternal reform". These reforms have deprived the judicial system of stability and legal security. We have witnessed a significant number of "major" system reforms over a relatively short period of about 30 years, without these reforms yielding tangible progress. Any reform requires time to produce results. Some reforms have taken the form of counter-reforms, undoing previous changes, regressing significantly the state of affairs in the field. Some changes have significantly diminished the constitutional guarantees of judicial independence, leading to the weakening and vulnerability of the system to external influences. At times, reforms overlapped with going ones, a new reform was initiated without completing the one already in progress. The speed and manner of implementing reforms, as well as the large number of legal framework modifications, speak to the flawed quality of the reform concepts and processes themselves.

For example, as of September 2023, the *Law on Judicial Organization* had been amended 49 times; the *Law on the Status of Judges* - 76 times; the *Law on the Superior Council of Magistracy* - 44 times; the *Law on the Selection, Performance Evaluation, and Career of Judges* - 6 times, subsequently repealed by the *Law on the Selection and Performance Evaluation of Judges* (Law No. 147/2023), which has already been amended by Law No. 200 of July 31, 2023; the *Law on Disciplinary Responsibility of Judges* - 11 times. Furthermore, none of these reforms has undergone a post-factum institutional evaluation. We're not even discussing the existence of any form of accountability for the adoption of flawed reforms or their poor implementation.

### **The Identity Crisis of the Judicial System: Consequences and Solutions**

*The consequences of the judicial system's identity crisis* can be significant and may impact both the judiciary itself and society as a whole. To avoid or manage the consequences of such a crisis, it is essential for authorities, judges, and civil society to collaborate in promoting the independence, integrity, and effectiveness of the judicial system.

*Erosion of the Rule of law*, or in other words, the gradual weakening or undermining of the three constitutive elements of the rule of law: legality, democracy, and human rights, entails the disregard of the exercise of public power by the control of the law. The Rule of law requires that the main powers - executive, legislative, and judicial - should be separate. An essential requirement of the rule of law is the presence of an impartial and independent justice system. Judges must decide according to the law and only on the basis of the law, impartially and free from external pressures. On the other hand, judges must adhere to codes of integrity and professional conduct and be accountable for rendering judgments fairly.

The rule of law demands that laws are applied strictly and visibly, respected by those in power, and protected from those in power. Fundamentally, the rule of law is a premise of mutual trust. Widespread disregard for the law generates distrust and indifference towards the justice system. An independent justice system plays an important role in ensuring the congruence between applicable rules and actual behaviour.

*The decline in public trust* can undermine the authority of the judiciary and compromise the adherence to laws and judicial decisions. Independence, impartiality, and integrity of judges are the prerequisites for building trust among citizens in the judicial system. A society that trusts its judicial system, the effectiveness of the rule of law, and the application of the principle that all are equal before the law is a strong and prosperous society. Unfortunately, Moldovan society does not enjoy the comfort of such trust. However, the actual state of the Moldovan judiciary, as reflected in official reports from various authoritative bodies, is critical. It's already a cliché to say that Moldovans don't have trust in the judiciary. According to the latest Public Opinion Barometer (BOP, 2023), 72.5% of respondents do not have trust in the judiciary. This is an alarming figure. Behind the numbers and perceptions are facts. In recent years, the justice system has seen setbacks in key indicators related to the independence and quality of judicial acts, such as human rights violations, selective justice, double standards application, and more.

When the judiciary system is weakened or in crisis, there's a risk that *justice won't be applied fairly*. Equal treatment is a value that characterizes the rule of law. If authorities and judges apply the law correctly, they can't treat people who are identical under the law differently. They can't treat an individual or a group differently because of prejudices, corruption, or bad intentions. The

rule of law is fundamentally based, in part, on a sense of fairness, which dictates that similar cases should be treated similarly. Otherwise, citizens may perceive that there are twelve different units of measurement for the law for various groups or individuals, which can lead to dissatisfaction and social tensions.

*Delayed justice is denied justice*, and a crisis of identity within the judicial system can lead to delays in proceedings and the inability to provide swift and fair justice. It is of great importance that the duration of cases is not excessively long and that they are resolved within a reasonable timeframe. Delayed justice, in turn, can generate social tensions and protests among citizens, including in the streets, to demand reforms or to express their frustrations regarding how justice is administered.

The crisis of identity within the judicial system, leading to an imbalance of power among governmental branches, poses a *risk to political stability*. It is unacceptable for the political sphere to act arbitrarily, as in a dictatorship. The exercise of governmental power should be in accordance with the law, as the law facilitates a stable and predictable environment. As policy-makers, politicians should not favour the idea of having the freedom to act as they please, but should advocate to be, entirely, constrained by the law. It is extremely important for politicians to publicly acknowledge and respect the independence and impartiality of the judiciary. *Oppositum*, any form of interference in the judiciary's activities can lead to its failure. Political pressures on the judiciary can erode public trust in the system. As a result, citizens may protest or lose confidence in political institutions. This context can lead to political instability as political parties may become polarized, conflicts between government authorities may arise, or public dialogue can become challenging. Maintaining political stability can only be ensured by restoring trust in the judicial system.

*Resolving the crisis of identity within the judicial system* can be a lengthy and complex process, but it is crucial for upholding the rule of law and restoring public trust in the judiciary. To implement the necessary reforms, it's essential for all stakeholders to collaborate. The process often involves a combination of legislative, structural, and cultural measures aimed at: creating robust mechanisms to protect the independence of the judiciary from political or external influences; evaluating and revising judicial procedures; ensuring transparency in judicial processes; developing accountability mechanisms for judges; on-going training and professional development of judges; international cooperation; fostering a culture of integrity.

In the circumstances where the judicial system of the Republic of Moldova is facing a severe identity crisis, reflected in the extremely low level of public credibility, generated by its lack of independence, fairness, and integrity, reforming the system has become imperative. The political agenda in Moldova has included the objective of identifying feasible and urgent solutions to the issues within the justice system. It is noteworthy that since its independence, the Republic of Moldova has been continuously reforming the justice sector, with most of these reforms being compromised and deeply politicized.

*In mens legis*, the principles of liberal democracy limit any intrusion into the judicial system. The democratic vocabulary includes constitutional barriers and strong rhetoric against actions that might violate the "separation of powers" or "judicial independence". Any reform targeting the judicial system must strictly adhere to the principles of the rule of law.

We argue that the rebuilding or, more so, self-reconstruction of the system through the identification and implementation of comprehensive and transparent solutions is crucial to increase the trust of litigants in the judicial courts and the act of justice itself. Additionally, restoring the noble image of judges can be achieved through strengthening the independence and accountability of the judicial system, with a crucial role assigned to the Superior Council of Magistracy.

The Constitution of the Republic of Moldova establishes the role of the Superior Council of Magistracy as a guarantor of the independence of the judiciary. As an integral part of the judicial authority, the Superior Council of Magistracy is vested with essential decision-making powers by law, aiming to ensure the organization, functioning, and guarantee of the judiciary's independence to achieve equitable justice. In its role as the "executive" of the judicial system, the Superior Council of Magistracy, in its authentic form, is tasked with maintaining a balance between protecting the authority of the judicial power and upholding the constitutional rights of judges. Charged with protecting the independence of the judiciary and ensuring its efficiency and quality, while possessing definitive competencies within the judicial system, the Superior Council of Magistracy can and should shield the judiciary from any interference, influence, pressure, or threats. It should also ensure that all those involved in the justice process are engaged in upholding professional principles directly and unequivocally. Thus, situated in a pivotal position for the entire judicial system, the Superior Council of Magistracy bears primary and direct responsibility for the state of the judiciary.

Rebuilding requires willpower, time, and consistency, as well as rational and responsible behaviour. Today, more than ever, it is time to move beyond the reductive view of justice, highly politicized and polarized preferences, and make way for a constructive and pragmatic approach.

## **Conclusion**

Identity is the definition a system develops about itself.

A system that is incapable of identifying values as *jus cogens*, strictly perpetually respected, unable to remain determined, upright, and independent in the context of social antagonisms, unable to create authentic and undisputed leaders (not those inflated by NGOs or secretariats), unable to generate and promote collective will, is a system without identity.

Inevitably, a system in a state of "eternal reform" and subject to political whims is bereft of identity, doomed to be replaced by erroneous models.

But what populist politics has not grasped is that, in the end, on that inevitable day, which will surely come, it will find its own beheading at the hands of the servant who, overnight, becomes the executioner! Why? Because the subject cannot do without the master!

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## BUDGET BALANCE WITHIN THE CONSTITUTIONAL FRAMEWORK OF THE MEMBER STATES OF THE EUROPEAN UNION

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**Abstract:** The constitutional regulation of the budgetary balance requirements, from the lack of numerical fiscal rules to the institutional constraints regarding the rationalization of decision-making processes and budgetary procedures within the European Union, varies in different member states. It depends on the economic situation and the economic context both nationally and internationally. Classical constitutionalism aims at the established limits of political power through the supreme norms of the constitution, it becomes insufficient for the establishment of legal norms to limit economic excesses.

The constitutional norms set further limits, a fact that sets limits to the budget decision-making process and public spending. The economic requirement of the budget balance is taken over at the constitutional level in the EU member states, it is applied through the internal legal regulation based on the constitutional norms according to the European legislation. In the perspective of the accession of the Republic of Moldova to the EU, the legislation of the Union cannot be implemented immediately in the national constitutional framework, especially the budgetary one. The European regulatory package required member states to form institutions modelled after the Fiscal Council in Germany, specialized in formulating macroeconomic forecasts and monitoring compliance with the budget balance established by the European Union, coordinated by the European Fiscal Board, mandated to independently evaluate the implementation of the Stability and Growth Pact.

**Keywords:** constitutional framework, budget, budget balance, constitutional regulation, constitutionalism, european legislation

JEL Classification: K10, K15, K23, K33, O52

### Introduction

"The leading role in the system of regulating the state economy, creating a favorable financial environment for the rapid development of market relations, ensuring economic balance in the economy belongs to the budget." [8] Budgetary balance is a principle in the field of legislation, including constitutional ones, which compels the competent public authorities to prepare and adopt the state budget by establishing a balance of revenues and expenses, which is desired to be identical. The lack of identity status or balance determines the nomination of the budget as **deficit**, when the expenses are higher in relation to the income, or surplus, when the income is already higher in relation to the **expenditure**. The draft budgets are drawn up and later adopted using the controlled deficit character. According to the theory of classical finance, the concept of budget balance represents the total coverage of expenses made in each budget year from the acquired revenues, focusing on the development and adoption of balanced budgets and the subsequent maintenance of the balance between revenues and expenses during the budget year. In the opinion of economic researchers "At the initial stage of perfecting the budget system, the annuality and the balance of the budget were

inextricably linked, resulting in a stable balance in the parameters of the preparation of the annual budget". [7]

The aspect of the budgetary balance was mentioned by the authors by the fact that over the years because " the budgetary policy defines the conception and actions of the state regarding public revenues and expenditures, the means of mobilizing the receipts, the types and sizes of expenditures through which it is possible to directly intervene in the case of instability, or for recovery. The macroeconomic stabilization of the country was ensured with the help of a balanced fiscal and budgetary policy, promoted by the state." [9]

The normative bases of the creation of the state economy, the improvement of the favorable financial system for the development of market relations, ensuring the economic balance in the economy belong to the national budget. "The budget is a direct link of market relations and at the same time an important instrument for the implementation of state policy." [14, p.668]

### **The budgetary balance in the normative framework of the European Union**

This rule of the controlled deficit is consolidated in the community space by the Treaty on stability, coordination and governance within the Economic and Monetary Union (popularly known as the Fiscal Pact)[1], which obliges the member states to a global budget deficit of 3%. According to the preamble to this treaty "the need to facilitate the adoption of measures in the framework of the procedure applicable to the excessive deficits of the European Union with regard to the member states whose currency is the euro and whose expected or actual public deficit exceeds the level of 3% of the gross domestic product , at the same time considerably strengthening the objective of the respective procedure, namely that of encouraging and, if necessary, obliging a member state to reduce the deficit that could be identified;" The preamble also identified the budget balance and based on the rule that establishes the importance of the budget balance within the European Union by "the need for governments to maintain solid and sustainable public finances and to prevent the evolution of the public administration deficit to an excessive level is of vital importance for guaranteeing the stability of the euro area as a whole and that, therefore, it is necessary to introduce specific rules, including a "balanced budget rule" and an automatic mechanism for carrying out the necessary corrective actions;" [1]

Budgetary discipline, based on the above, is manifested in the budgetary economic system based on the budget balance. This balance can be achieved at the organizational level by establishing for the public authorities some limits, either decisional for the moment of drawing up or executing the budget, or economic for the limitation of periodic economic actions taken from the market economy and implemented in a budget already adopted for a calendar year .

The current legal situations within state formations have established clear economic ceilings, designated as "golden rules".

Being not only an economic, but also a monetary Union of 27 states, for the coordination of budgetary matters in the European Union, a legal organization is established according to its evolution. The legal organization in the budgetary field is established by means of this budgetary balance. The legal character of the budgetary balance was established by the Stability and Growth Pact of 1997, which for the formation of the economic and monetary union was introduced as part of the third stage. After the introduction of the single currency, the European Union states implemented the Pact to guarantee

the maintenance of healthy public finances. The pact was formed within the European Union on the basis of a European Council Resolution [2], Regulation of the same institution [3], five other European Union regulations adopted in 2011, a directive, the fiscal pact of 2012 and two subsequent regulations of 2013. Being not only an economic, but also a monetary Union of 27 states, for the coordination of budgetary matters in the European Union, a legal organization is established according to its evolution. The legal organization in the budgetary field is established by means of this budgetary balance. The legal character of the budgetary balance was established by the Stability and Growth Pact of 1997, which for the formation of the economic and monetary union was introduced as part of the third stage. After the introduction of the single currency, the European Union states implemented the Pact to guarantee the maintenance of healthy public finances. The pact was formed within the European Union on the basis of a European Council Resolution [2], Regulation of the same institution [3], five other European Union regulations adopted in 2011, a directive, the fiscal pact of 2012 and two subsequent regulations of 2013.

The fiscal pact entered into force on January 1st, 2013 for the consolidation of fiscal discipline in the euro area, through the "balanced budget" rule and the automatic correction of the mechanism. The fiscal pact concluded between 25 states established in the European Union the golden rule known among economists, necessary to be included as a legal norm in the national system at the constitutional level.

The principle of budget balance at the initial stage was seen as a total balance, but according to some authors, "over time, a number of states gave up applying the principle of budget balance in practice, elaborating and presenting deficit budgets to the parliament for approval." [7] The golden rule consists in the rigid formation of a balanced budget, where the budget deficit cannot exceed the limit of 0.5% of the Gross Domestic Product (GDP). The lifeline of this golden rule for states is the situation if the public debt is below 60% of GDP, when the budget deficit can go up to 1%.

### **The constitutional framework of budgetary balance in the member states of the European Union**

The constitutionalist I. Guceac, analyzing the economic system as a trend specific to contemporary constitutionalism, noted that "Constitutions formulate certain requirements regarding the content of the budget law. It must respond to the principles of fullness, moderation, durability, balance." [13, p. 23]

Constitutions as fundamental laws must multilaterally regulate all stages of the process of adoption in parliament of the state budget law and ending with the procedure of its confirmation. Along with this, only some constitutions regulate the nominated stages more broadly. The rule of budget balance, following the example of Germany from those exposed, is expressly regulated in the treaties and primary legislation of the European Union. This legislation at the level of the European Union can be interpreted as acts at the level of the constitutions of the member states of the Union. The domestic legal framework, however, regulates in most states much more flexible procedures for the ratification of international treaties for accession in relation to the procedures for the adoption and revision of national constitutions. The mentioned legal and constitutional procedures are the reason for not revising the constitutions to include the requirement of budget balance in the supreme law of the states. " ... several states have preferred to give normative expression to the institutional constraints resulting from the obligation to rationalize decision-making processes and budgetary procedures. ... the main difficulty encountered". [6, p. 211]

The establishment in the constitutions of the member states of the European Union of the concrete rules regarding the budget balance proceeds more and more in relation to the initial stage in 2011. In the opinion of the author E.S. Tănăsescu "the main difficulty encountered is to transpose evolutionary economic notions, which depend not only by the national and international context, but also by the economic situation".[6]

This finding formed our conclusion, according to which the constitutional regulation of budget balance requirements, from the lack of numerical fiscal rules to the institutional constraints regarding the rationalization of decision-making processes and budgetary procedures within the European Union, varies in different member states. It depends on the economic situation and economic context both nationally and internationally.

The golden rule of budget balance can be equated to the one established in Germany by eight constitutional norms [4], which start with the way of managing the budget within the federation and the states, ending with the limits of loans. Studying the German Constitution, in order to present the increased constitutional attention that has been given to the German budgetary system, we will note this fact only from the titles of the rules: Chapter X Finances; Art. 104a. Distribution of expenses – responsibility of the financial system; Art. 104b. Financial assistance for investments; Art. 105. Distribution of powers regarding fiscal laws; Art. 106. Distribution of fiscal revenues and profit obtained from fiscal monopolies; Art. 106a. Federal allocations for local public transport; Art. 106b. The part that belongs to the Länder from the motor vehicle tax; Art. 107. Distribution of fiscal revenues - financial equalization of the lands - additional allocations; Art. 108. Financial administration of the Federation and the states - financial courts; **Art. 109. Budget management within the Federation and the lands; Art. 109a. Budget emergencies; Art. 110. The federal budget; Art. 111. Management of the temporary budget; Art. 112. Extra-budgetary expenses; Art. 113. Increase in expenses; Art. 114. Presentation and auditing of accounts; Art. 115. Loan limits.** [4]

Comparing the constitutional regulations regarding the budget, studied from the German Constitution, we come to the conclusion that in some member states of the European Union, even the possible national legal framework does not regulate in such detail some aspects regarding the procedure applied to the elaboration, adoption and application of the rules regarding the state budget. Only the study of the Romanian Constitution [10] through: art. 137 – The financial system; Art. 138 – The national public budget; and art. 139 – Taxes, fees and other contributions; proves this fact to us at the constitutional level, although in 2003 the Constitution of Romania was revised to present a constitutional aspect to the process of accession to the European Union, a process that will be carried out in the Republic of Moldova in the near future.

Classic constitutionalism aims at the established limits of political power through the supreme norms of the constitution, it becomes insufficient for establishing legal norms to limit economic excesses. The constitutional norms set additional limits, a fact that sets limits to the budget decision-making process and public spending. The economic requirement of the budget balance is taken over at the constitutional level in the EU member states, it is applied through the internal legal regulation based on the constitutional norms according to the European legislation.

In the perspective of the accession of the Republic of Moldova to the EU, the legislation of the Union cannot be implemented immediately in the national constitutional framework, especially in the budgetary one. The European regulatory package required the member states to form institutions

modeled on the Fiscal Council in Germany, specialized in formulating macroeconomic forecasts and monitoring compliance with the budgetary balance established by the European Union, coordinated by the European Fiscal Council, mandated to independently evaluate the implementation of the Stability Pact and growth.

Comparatively, in the Republic of Moldova the Constituent Assembly adopted in the Constitution only two constitutional norms regulating the budget system: art. 131 National Public Budget and 132 Fiscal System.[5] The rule of budgetary balance at the constitutional level is established in art. 131 of the Constitution, especially in paragraph (4), according to which "Any legislative proposal or amendment that involves the increase or decrease of budget revenues or loans, as well as the increase or decrease of budget expenses may be adopted only after they are accepted by the Government." [5]

### **Conclusion**

As a result of the European integration within the European Union, the budget systems of the member states will require a unification to coordinate the national budget systems with the budget system of the European Union. Member state quality for several states will direct the development of national legislation of some states, which will implement the need to revise the constitution. As part of this revision process, "the texts of the constitutions in force contain many of the ideas and conceptions developed by the history of humanity regarding the rules that must guide the state in establishing the methods of revenue collection and control over the expenditure of state funds."

Studying the constitutional regulatory aspects of the principle of budget balance, we reach a conclusion similar to that of Smith, who "prefigured in a synthetic way the two great modern theories of taxation: taxation according to the "ability-to-pay" and taxation based on the principle "benefit", thus integrating in his analysis both parts of any state budget: public revenues and public expenses." [11] The constitutional analyzes carried out in the present study are relevant especially for the constitutional reforms carried out in post-communist societies over two decades ago. For the Republic of Moldova, the analysis carried out is important in order to correctly coordinate in the future a new constitutional reform necessary in the process of accession to the European Union.

The improvement of the constitutional balance in the Republic of Moldova is necessary to further develop our perspective of joining the European Union. In this aspect, "appreciating its role in economic development, based on the analysis of economic performances, the promoted macroeconomic policy, the highlighting of influencing factors and the determination of public priorities." [12] Economist Paul Leroy Braulieu specified, that "the first step in drawing up a policy budgeting is the drawing up of a list "of forecasting the revenues to be achieved, the expenses to be incurred". [9] In the perspective of the integration of the Republic of Moldova into the European Union, it is necessary to establish as an economic vector that the budgetary policy results from the national public budget. The national public budget is the main means by which public revenues are formed and public expenditures are made.

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## **MILESTONES ON THE IMPORTANCE OF APPLYING THE GENERAL PRINCIPLES GOVERNING PUBLIC PROCUREMENT**

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**Abstract:** At national level, the development of the concept of public procurement involves a transparent path, based on the achievement of specific principles, objectives, methods and procedures. In this respect, the European directives applicable to public procurement involve certain principles absolutely necessary to be followed when performing public procurement contracts themselves. Therefore, we mention the role and importance of the correct application of principles such as: non-discrimination, equal treatment, proportionality, mutual recognition, the principle of transparency, the principle of avoiding unfair competition, accountability, impartiality, confidentiality. The aim of the study is to identify the importance and relevance of these principles governing public procurement from the first to the last stage of their implementation. Therefore, the general consequences of violation of the above-mentioned principles, irregularities, but also fraud in public procurement are conclusive. At the same time, we cannot fail to mention that these principles determine the approaches of public procurement, namely: administrative, managerial, legal, economic, systemic and, of course, ecological. The research methods are: observation, comparative analysis, co-relational analysis, analogy, induction and deduction, prediction, generalization, didactic and practical experience, but also other modern methods of study. Research results: The general principles governing the entire spectrum of public procurement, at national level, are finding more and more application, or the harmonization of legislation in the field of public procurement is an important premise for the continuous development of public-private partnerships. Undoubtedly, the reform in the field of public procurement is one of the major priorities of the Republic of Moldova, which will contribute to ensuring a better functioning of the market economy, combating corruption, strengthening integration efforts in the European Union and achieving optimal capitalization in terms of goods and services purchased by a wide range of public institutions.

**Keywords:** principles, approaches to public procurement, access to legal remedies, harmonization of legislation.

JEL Classification: K34, K39.

### **Introduction**

Public procurement currently accounts for 19% of EU GDP and is part of everyday life, perceived as a general concept of 'activity to obtain goods or services for a contracting authority'. Public administrations purchase goods and services for their citizens, and these purchases must be made in the most efficient way. Public procurement also offers opportunities for businesses, thereby encouraging private investment and contributing concretely to growth and jobs. Public procurement therefore plays an important role in channelling the European Structural and Investment Funds. It is estimated that around 48% of the European Structural and Investment Funds are spent on public procurement.

In this scientific approach, the importance of applying the general principles governing public procurement has been analyzed through several **research methods**, namely: observation, comparative analysis, co-relational analysis, analogy, induction and deduction, prediction, generalization, didactic and practical experience, but also other modern methods of study.

### **Results and discussions**

Public procurement has historically undergone continuous changes and development, in terms of specific institutions, legal instruments and legislation that permanently undergo indispensable changes. From its origin until now, public procurement has taken various forms, the essence, purpose and importance remaining the same – to capitalize on the public interest for the proper functioning of public services (Codreanu, A., 2017, p.45).

With the aim of simplifying procedures and making them more flexible, in 2014 Parliament and the Council adopted a new public procurement package aimed at encouraging SMEs' access to public procurement contracts and ensuring greater attention is paid to social and environmental criteria.

Thus, the current legislative framework includes: *Directive 2014/24/EU of 26 February 2014* on public procurement (repealing Directive 2004/18/EC), *Directive 2014/25/EU of 26 February 2014* on procurement by entities operating in the water, energy, transport and postal services sectors (repealing Directive 2004/17/EC), *Directive 2014/23/EU of 26 February 2014* on the award of concession contracts complement the first two and creates an appropriate legal framework for the award of concessions, ensuring that all economic actors in the EU have effective and non-discriminatory access to the EU market (Dumitru, I., 2019, p.26).

In this context, we align with the opinion of researcher Victor Guțuleac who states that: "The only way in which public law can acquire some freedom of action is the administrative contract, an instrument through which the administration enters into a contractual relationship with private individuals, in order to ensure the functioning of a public service, to highlight public goods, or to purchase products. services and works" (Guțuleac, V., 2013, p.42).

In their studies, Dumitru A.P. Florescu and Lucică Coman reveal that public procurement contracts are awarded by contracting authorities for obtaining goods, works or services, in exchange for equivalent considerations, usually in money. The procedures for awarding public procurement contracts are regulated and are carried out including for consultancy or technical assistance, studies, as well as for conducting information and communication campaigns (Florescu, D.A.P., Coman, L., 2013, p.16).

The importance of knowledge of the principles of public procurement by all those involved results from the fact that, whenever there is a situation or circumstance without express regulation in public procurement legislation, it will be treated in the light of public procurement principles. Therefore, the principles governing public procurement relations are expressly provided for in Art. 7 of the Law on Public Procurement [2, art. 7]: a) efficient use of public money and minimization of risks to contracting authorities; b) transparency of public procurement; c) ensuring competition and combating anticompetitive practices in the field of public procurement; d) environmental protection and promotion of sustainable development through public procurement; e) maintaining public order, morals and public safety, protecting health, protecting human life, flora and fauna; f) liberalization and expansion of international trade; g) free movement of goods, freedom of establishment and

provision of services; h) equal treatment, impartiality, non-discrimination with regard to all bidders and economic operators; i) proportionality; j) mutual recognition; k) assuming responsibility in public procurement procedures.

We will describe below the essence of some principles, in order to underline, once again, the importance of applying the general principles governing public procurement. Therefore, "efficient use of public money" means the application of competitive award procedures and the use of criteria reflecting the economic advantages of tenders in order to obtain the optimal ratio between quality and price (Florescu, 2013, p. 14).

"Non-discrimination" means ensuring the conditions for effective competition so that any economic operator, irrespective of nationality, can participate in the award procedure and have the chance of becoming a contractor. The legal basis for this principle is Article 18 of the Treaty, which prohibits any discrimination on grounds of nationality, plus Article 34 of that Treaty, which prohibits quantitative restrictions and measures having equivalent effect, including both direct and indirect restrictions on the free movement of goods and services.

Requirements imposed by the contracting authority may be regarded as breaches of this principle, such as: *the undertakings concerned by the contract are established in the same Member State or region as the contracting entity; the nationality of the tenderer; inclusion of technical specifications likely to favour domestic undertakings; setting qualification requirements favouring certain participants in the procurement procedure; favouring a tenderer by laying down discriminatory conditions in the tender specifications.*

The principle of "equal treatment" implies that, at any time during the award procedure, identical rules, requirements and criteria are established and applied for all economic operators in order to give them equal opportunities to become contractors. If we take as an example the situation where, in a new award procedure, the contractor who has so far executed the service or work or supplied the product participates, it is obvious that he has more information than other possible competitors regarding strategies, plans of the contracting authority, way of working, financial situation, etc. Some of this information is at least sensitive, if not confidential. However, they can clearly influence the outcome of the new procedure by disadvantaging other competitors. The contracting authority is in a position to ensure that all competitors are treated equally, therefore it has a difficult and delicate task from this point of view, having to ensure that it does not create a competitive advantage (Dumitru, I., 2019, p.33).

"Mutual recognition" - this principle requires that goods legally produced in one Member State are accepted for sale in the other EU Member States. Of course, services legally provided in the territory of one Member State may also be provided in the territory of another. The principle of mutual recognition does not prohibit the existence of national standards, but only the acceptance of similar standards from another Member State.

Researcher Dumitru Ilie, in his works, denotes that in the field of public procurement, the observance of the principle of mutual recognition presupposes the acceptance by the contracting authorities of the following: products, services, works lawfully offered on the European Union market; diplomas, certificates and any documents issued by the competent authorities of other States; technical specifications, equivalent to those required at national level. Therefore, whenever candidates for a procurement procedure are required to submit certificates, diplomas or other written forms of

evidence, then documents issued in other Member States and offering an equivalent level of guarantee must be accepted in accordance with the principle of mutual recognition (Dumitru, I., 2019, p.34).

The principle of "transparency" ensures adequate information for all participants in the award procedure, being important from the perspective of access to legal remedies. Compliance with this principle ensures the elimination of the risk of favoritism and arbitrary behavior by the contracting authority. In order to apply this principle, all information on the procurement procedure needs to be made clearly, precisely, unequivocally in the contract notice/invitation and in the award documentation, giving economic operators an equal position both during the preparation period and during the evaluation by the contracting authority; the visibility of the rules will also have to be ensured, opportunities, processes, records and results related to the public procurement procedure.

The principle of "proportionality" requires that the measures taken by the institutions do not exceed the limits of appropriate and necessary measures to achieve the objectives pursued, it being understood that, where a choice between several appropriate measures is possible, the least restrictive shall be used and the inconveniences caused must not be disproportionate to the aims pursued. This principle requires the contracting authority that, when faced with an ambiguous tender, and a request for clarification on the content of that tender could ensure legal certainty in the same way as the immediate rejection of the tender in question, to request clarifications from the candidate concerned rather than simply opting to reject his tender.

In Romania, in the judicial practice, the following types of violations of the principle of proportionality were found: - conditioning the qualification of an annual turnover in excess of an amount, in relation to the difficulty and the estimated value of the contract; - requesting an excessive number of documents or information regarding the demonstration of technical and/or professional capacity; - request for human resources, machinery or equipment not relevant for the proper performance of the public procurement contract or in an excessive number; - the condition of presentation in original or authenticated form of a large number of documents, although a certified copy would be sufficient; - setting a deadline for the submission of tenders insufficient to draw them up, in relation to the complexity of the object of the contract; - description of technical specifications specific to products that exceed the needs of the contracting authority; - assigning a very high score to an evaluation factor, relative to the importance of the factor in fulfilling the contract; - the request for inadequate guarantees to the risk involved in the award and proper performance of the contract (Dumitru I., 2019, p.38).

The principle of "liability assumption" implies the obligation of those involved in the conduct of public procurement procedures to assume the decisions taken and to be responsible for the consequences of their actions. This principle is not a transposition of the EU Directives, but a creation of the Romanian doctrine. It presupposes a clear determination of the tasks and responsibilities of the persons involved in the public procurement process, ensuring the professionalism, impartiality and independence of the decisions taken during this process. The responsibility lies exclusively with the evaluation committee and the decision-makers in the contracting authority, regardless of the views expressed by ex ante or ex post control bodies in the field of public procurement or the recommendations of the authorities with competences in the field or in other fields.

The administrative perspective of public procurement makes possible the existence and applicability of a fundamental principle, the principle of taking responsibility, with regard to administrative acts issued for the purpose of initiating, conducting and completing public procurement. That principle

thus finds its applicability in the administrative sphere of public procurement, by issuing administrative acts expressing the manifestation of express will of the contracting authority under public power (Dumitrica, C., 2021, p.19).

According to the regulatory framework, the procurement plan of the contracting authority represents the set of needs for goods, works and services for the entire budget year, needs to be met by concluding one or more public procurement contracts, depending on how they are planned. A problem worth mentioning is the non-compliance with the basic conditions and principles applied to public procurement planning, a fact also recorded in the audit reports of the Court of Auditors. Thus, the procurement plan must correspond to the principles of annuality; grounding on real needs; financial coverage; accessibility and transparency. At the same time, when planning public procurement, the working group is obliged to respect the principles of ensuring competition, efficiency, transparency, equal treatment, non-discrimination and non-division.

In this context, the audit revealed that, within the contracting authorities in the system of 6 ministries, the quality level of public procurement planning was low, and the way of developing/publishing the respective public procurement plans was non-compliant (9).

Thus, these entities did not ensure the implementation of public procurement in accordance with the principles set out above and admitted deficiencies and irregularities that totaled 1244.7 million lei. Among them, it is specified:

- non-publication of regular notices of intent on public procurement envisaged within ministries in the amount of 258.8 million lei;
- failure to update and publish annual procurement plans on the website of contracting authorities worth 296.5 million lei, as well as carrying out public procurement procedures with a total value of 198.8 million lei. lei not included in the annual procurement plans;
- lack of exhaustive data on low-value acquisitions (those reported to GPA amounted to 121.3 million lei), as well as the lack of a system for monitoring and informational interaction of these public procurements at all stages of planning, implementation, award and reporting of contracts;
- non-capitalization by some contracting authorities within the system of 3 ministries of financial means for public procurement in the amount of MDL 369.3 million. lei, some of the causes being the allocation at the end of the budget year of financial means mainly for works, as well as the reduced absorption capacities of funds, including from external sources;
- Inadequate planning, by a contracting authority, of the needs of financial means for reimbursed medicines (596.0 million lei), does not provide data on facilitating the coverage of several groups of citizens who require reimbursement of medicines.

In another context, in the same audit report, the Court of Auditors pointed out the non-compliance of the contractual clauses with the technical specifications proposed by the winners. Thus, it was pointed out that the clauses of the contracts concluded with economic operators do not correspond to the technical specifications of the winning tenders, and the contracting authorities within the system of 7 ministries did not receive the goods, works and services according to the conditions of the concluded contracts, deficiencies and irregularities amounting to 403.2 million lei in total being admitted.

The management of public procurement within the system of some ministries was affected by irregularities, with a negative impact on the performance of procurement in economic conditions, the initiation and conduct of public procurement procedures not being ensured in a regular manner. Thus, it was attested the application of the procedure for the procurement and award of the contract for the procurement of equipment for the construction of the radio communication network in TETRA standard with the value of 163.5 million lei by negotiation method without prior publication of a participation notice referring to the "technical reason for creation", which is contrary to Law no. 131/2015, the contracting authority not respecting the principles of legality, transparency, competition, efficiency and economy. At the same time, exaggerated final costs of the radiocommunication network were admitted due to the application on the customs territory of illegitimate trade margins, which at some equipment positions reached the maximum quota of 229% of the initial purchase price, being spent from the state budget by 24.4 million MDL more, as well as being caused budget losses in the amount of 14.5 million MDL (9).

At the same time, the Court of Auditors also found some violations in which payments were made for works in the absence of reports of receipt of works for the construction of the radiocommunication network, documents supporting the quantitative and value standard on the execution of network construction works (30.6 million lei). In the context of the audit, the construction of the radiocommunication network for operational purposes within the Police was not completed, as well as the procurement budget approved according to the Financing Agreement was exceeded by 27.9 million lei.

Therefore, the audit missions carried out by the Court of Auditors on the compliance of public procurement executed during 2019-2020 revealed that contracting authorities with attributions and responsibilities in the field of public finance management did not comply with the regulatory provisions in public procurement procedures for goods, works and services, reducing the transparency of the procurement process, the degree of efficiency in using public money.

In the same vein, in her research, author Kováčiková Hana analyzes several practical situations about the connection of public procurement regulatory principles. In her work, she mentions the Connexion Taxi Services case the Court of Justice dealt with the conflict between principle of proportionality and principles of equal treatment and transparency, which arise when contracting authority hesitate to exclude a tenderer from the procuring procedure due to disproportionality of such act, despite such procedure was noticed in tender conditions. The Court of Justice prioritised the latter with establishing, that Public Procurement Directive read in the light of principle of equal treatment and the obligation of transparency must be interpreted as "precluding a contracting authority from deciding to award a public contract to a tenderer which has been guilty of grave professional misconduct on the ground that the exclusion of that tenderer from the award procedure would be contrary to the principle of proportionality, even though, according to the tender conditions of that contract, a tenderer which has been guilty of grave professional misconduct must necessarily be excluded, without consideration of the proportionality of that sanction" (Kováčiková, H., 2021 p. 398).

The regulation of public procurement involves taking into account two arguments, one economic and the other legal, in order to create an integrated public market at European Union level. Thus, the existence of the principles of transparency, non-discrimination and equal treatment in awarding public procurement contracts implies that the regulatory system of public procurement will ensure: competition in relevant geographic or product markets; penetration of imports of products and

services to the public sector; flexibility of public contracts within the common market with impact on price convergence, as well as on rationalisation and restructuring of the European industrial sector (Mardale, F.E., 2015, p.17).

## **Conclusions**

For the Republic of Moldova, the harmonization of legislation in the field of public procurement is an obligation assumed, in the context of the negotiation process of accession to the European Union. However, Member States have the obligation to transpose European directives on public procurement at national level and to monitor their implementation, in order to avoid legislative violations that may occur when implementing EU-funded projects, in particular, and public funds, in general.

Thus, as a result of what we researched in this study, we believe that it is necessary to rethink the public sector and especially to resize its expenses, starting from the most judicious use of the resources available and up to increasing the quality and efficiency of the services offered. At the same time, I noticed that the way of developing and publishing public procurement plans, at the level of ministries, does not ensure the existence of a clear, complete and transparent vision on how public money is used. Of the 11 principles regulating public procurement relations provided for in the Law on Public Procurement, the most frequently violated principles are the efficient use of public money and the principle of transparency of public procurement.

Therefore, the issue of public procurement is gaining an increasing magnitude and connotation, which is why it is necessary to perceive the importance and relevance of the correct application of the principles governing public procurement, applied from the first to the last stage of procurement. These, taken as a whole, will determine the essence of public procurement approaches: administrative, managerial, legal, economic, systemic and environmental.

The reform in the field of public procurement is one of the major priorities of the Republic of Moldova, which will contribute to ensuring a better functioning of the market economy, fighting corruption and achieving optimal capitalization in terms of goods and services purchased by a wide range of public institutions.

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**ANNUAL INTERNATIONAL SCIENTIFIC CONFERENCE “COMPETITIVENESS AND  
INNOVATION IN THE KNOWLEDGE ECONOMY”  
September 22nd-23th, 2023, Chisinau, Republic of Moldova**

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Analytical synthesis of audit results related to the field of public procurement in the period 2019-2020 (available at: [https://www.ccrm.md/ro/sinteza-analitica-a-rezultatelor-de-audit-aferente-domeniului-achizitii-3539\\_92092.html](https://www.ccrm.md/ro/sinteza-analitica-a-rezultatelor-de-audit-aferente-domeniului-achizitii-3539_92092.html)) [Accessed 10 October 2023].

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**SESSION IX: ECONOMETRICS AND  
ECONOMIC STATISTICS**

## ON RINGS FOR WHICH SOME PRETORSIONS ARE COHEREDITARY

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**Abstract:** A ring  $R$  is characterized by the pretorsions of the category  $R\text{-Mod}$  of left  $R$ -modules:  $R$  is **completely reducible** if and only if  $z(R)=0$  and every pretorsion  $r \geq z$  is cohereditary, where  $z$  is a pretorsion of  $R\text{-Mod}$ , defined by essential left ideals of  $R$ .

**Keywords:** pretorsion, torsion, cohereditary pretorsion

JEL Classification: C02

Let  $R$  be an associative ring with identity and  $z$  be a pretorsion, the filter of which consist from the essentially left ideals of a ring  $R$ .

Description of rings  $R$  over which all pretorsions (or only some of them) possess some properties, presents a considerable interest.

Typical examples:

(1) All pretorsions  $r \geq z$  are torsions if and only if  $R$  is a left strongly semiprime ring ([4], Theorem, p.80).

(2) All pretorsions  $r \geq z$  are superhereditary if and only if  $R$  is essentially artinian ring ([5], Theorem, p.110).

In this paper is proved that ring  $R$  is nonsingular ( $z(R) = 0$ ) and all pretorsions  $r > z$  are cohereditary if and only if  $R$  is *completely reducible*.

First of all, we present some preliminary notions and definitions.

1. A **preradical**  $r$  of  $R\text{-Mod}$  is a subfunctor of the identity functor of  $R\text{-Mod}$  ([1-3]).

Every preradical  $r$  of  $R\text{-Mod}$  defines two class of modules:

$R(r) = \{M \in R\text{-Mod} \mid r(M) = M\}$  and  $P(r) = \{M \in R\text{-Mod} \mid r(M) = 0\}$ .

Modules of the class  $\mathfrak{R}(r)$  are called **r-torsion**, and of the class  $P(r)$  are called r-torsionfree. Preradicals  $o$  and  $\varepsilon$  for which  $P(o) = R - Mod$  and  $R(\varepsilon) = R - Mod$  are called zero and identity respectively.

If  $r$  and  $t$  are preradicals then  $r \leq t$  means  $r(M) \subseteq t(M)$  for every  $M \in R - Mod$ .

2. A preradical  $r$  is called:

- a **pretorsion** (or hereditary) if  $r(N) = N \cap r(M)$  for any submodule  $N$  of an arbitrary module  $M \in R - Mod$ ;
- **torsion**, if  $r$  is a pretorsion and  $r(M|r(M)) = 0$  for every  $M \in R - Mod$ ;
- **superhereditary** if it is hereditary and the class  $\mathfrak{R}(r)$  is closed under direct products;
- **cohereditary** if  $r(M|N) = (N + r(M)|N)$  for every  $M \in R - Mod$  and every submodule  $N$  of  $M$ .

3. (a) For any **pretorsion**  $r$  and every module  $M$  of  $R-Mod$  the following equality is true:

$$r(R) = \sum_{\alpha} \{M_{\alpha} \subseteq M | M_{\alpha} \in R(r)\}$$

(b) For any **torsion**  $r$  and every module  $M \in R - Mod$  the following equality is true:

$$r(M) = \bigcap_{\alpha} \{M_{\alpha} \subseteq M | M|M_{\alpha} \in P(r)\}$$

It follows directly from the Proposition 1.5 [1].

4. The **intersection** of pretorsions  $r_1$  and  $r_2$  is the pretorsion  $r_1 \wedge r_2$  determined by the rule:  
 $(r_1 \wedge r_2)(M) = r_1(M) \cap r_2(M)$  for any  $M \in R - Mod$ .

The **sum** of pretorsion  $r_1$  and  $r_2$  is the preradical  $r_1 + r_2$  defined by the relation:

$$(r_1 + r_2)(M) = r_1(M) + r_2(M) \text{ for any } M \in R - Mod.$$

5. The **Goldie pretorsion**  $z$  is a torsion if and only if  $z(R) = 0$  ([2], Prop. I.10.2).

6. A ring  $R$  is called **strongly semiprime** (SSP), if every essential left ideal  $P$  is cofaithful, i.e.

$$(O:P) = \bigcap_{\alpha=1}^n (O:p_{\alpha}) = 0$$

for some elements  $p_{\alpha} \in P$ .

The following conditions are equivalent:

- (1)  $R$  is a left SSP-ring.
- (2) All pretorsion  $r \geq z$  are torsions.
- (3)  $Z(R)=0$  and the lattice  $[z,\varepsilon]$  is complemented.

Passing to the presentation of the basic material we formulate first of all the criterion of **coheredity** of any pretorsion.

**Proposition 1.** For any pretorsion  $r$  the following statements are equivalent:

- (1)  $r$  is cohereditary;
- (2)  $r(M) = r(R) \cdot M$  for any  $M \in R - Mod$ ;
- (3)  $r$  is a torsion and the class  $P(r)$  is closed under homomorphic images.

**Proof.** Equivalence of statement (1) and (2) follows from Lemma 3.b [1] or from the Proposition 1.2.8 [2].

Implication (1)  $\Rightarrow$ (3) results directly from the definition of the cohereditary pretorsion.

(3)  $\Rightarrow$ (1). Let  $r$  be a torsion and class  $P(r)$  is closed under homomorphic images. We will show that for any module  $M$  and for any its submodule  $N$  the equality  $r(M|N) = [N + r(M)]|N$  is true. Indeed, since  $[N + r(M)]|N$  is an  $r$ -torsion submodule of the module  $M|N$  then by the statement 3(a) we have  $[N + r(M)]|N \subseteq r(M|N)$ . Conversely, since  $r$  is a torsion, then by the definition  $r(M|[N + r(M)])$  for any module  $M \in R - Mod$ . But  $P(r)$  is closed under homomorphic images the module  $M|[N + r(M)]$  is also  $r$ -torsion free. Then from the isomorphism  $[M|N] / ([N + r(M)]|N) \approx M|[N + r(M)]$  we obtain that

$[N + r(M)]|N \subseteq r(M|N) \subseteq [N + r(M)]|N$  imply the equality  $r(M|N) = [N + r(M)]|N$ . Therefore, by the definitions  $r$  is a cohereditary pretorsion.  $\square$

In this work, we will show applications of this result.

**Proposition 2.** For arbitrary pretorsions  $r$  and  $t$ , the following statements are equivalent:

- (1)  $R = r(R) \oplus t(R)$  where  $r$  and  $t$  are choereditary;
- (2)  $M = r(M) \oplus t(M)$  for any module  $M \in R - Mod$ .

*Proof.* (1) $\Rightarrow$ (2). From the relation  $R = r(R) \oplus t(R)$  we obtain that for any module  $M \in R - Mod$  the equality  $M = r(M) \oplus t(M)$  is true. Since pretorsions  $r$  and  $t$  are cohereditary according to the Proposition 1 we have that  $r(R) \cdot M = r(M)$  and  $t(R)M = t(M)$ . Therefore  $M = r(M) \oplus t(M)$ .

(2) $\Rightarrow$ (1). Suppose that for any module  $M \in R - Mod$  the equality  $M = r(M) \oplus t(M)$  is true. Then, particularly,  $R = r(R) \oplus t(R)$ . It remains to prove that pretorsions  $r$  and  $t$  are cohereditary. Indeed, from the equality  $M = r(M) \oplus t(M)$  we obtain  $M|r(M) \approx t(M)$ , so  $r(M|r(M)) = r(t(M)) = t(M) \cap r(M) = 0$ . Therefore, pretorsion  $r$  is a torsion. Identically they show that  $t$  is a torsion.

Continuing let's show that the classes  $P(r)$  and  $P(t)$  are closed under homomorphic images. It is sufficient to verify for the class  $P(r)$ . Let  $M$  be an arbitrary  $r$ -torsionfree module ( $r(M)=0$ ). By the assumption,  $M = r(M) \oplus t(M) = t(M)$ . Then

$r(M|N) = r[t(M)|N] \subseteq t(M)|N \cap r(M|N) \subseteq t(M|N) \cap r(M|N) = 0$  (statement 3(a)).

Therefore, class  $P(r)$  is closed under homomorphic images. By the Proposition 1 the pretorsion  $r$  is cohereditary. Similarly, they show that pretorsion  $t$  is also cohereditary.  $\square$

**Proposition 3.** For the pretorsion  $r \geq z$  the following statements are equivalent:

- (1) The class  $P(r)$  is closed under homomorphic images.
- (2) Any  $r$ -torsionfree module is injective.
- (3) Any  $r$ -torsionfree module in completely reducible.

*Proof.* (1) $\Rightarrow$ (2). Suppose that class  $P(r)$  is closed under homomorphic images and  $M$  is arbitrary  $r$ -torsionfree module. For the injective hull  $\widehat{M}$  of a module  $M$  we have that  $r(\widehat{M}) = 0$  and  $r(\widehat{M}|M) = 0$ .

From the inclusion  $M \subseteq \widehat{M}$  we obtain that  $z(\widehat{M}|M) = \widehat{M}|M$ , while from inequality  $z \leq r$  we obtain  $z(\widehat{M}|M) = 0$ . But equalities  $\widehat{M}|M = z(\widehat{M}|M) = 0$  imply  $M = \widehat{M}$ . Therefore,  $M$  is injective.

(2) $\Rightarrow$ (3) is obvious.

(3) $\Rightarrow$ (1). Suppose that the module  $M$  is  $r$ -torsionfree and completely reducible. Then for any its submodule  $N$  we have  $M = N \oplus C$ . Since  $r(C) = 0$ , therefore the isomorphism  $C \cong M|N$  we obtain that  $r(M|N) = 0$ . Because modules  $M$  and  $N$  were chosen arbitrarily we have that class  $P(r)$  is closed under homomorphic images.  $\square$

**Theorem 4.** The following statements are equivalent:

- (1) All pretorsions  $r \geq z$  are cohereditary.
- (2)  $z(R) = 0$  and all pretorsion  $r > z$  are cohereditary.
- (3)  $R$  is a completely reducible ring.
- (4)  $Z$  is cohereditary.

*Proof.* Implication (1) $\Rightarrow$ (2) is trivial, since  $z$  is torsion if  $z(R) = 0$ . The equivalence of the statement (3) and (4) results directly from Proposition 3 (see Theorem I.10.7 [2]).

(2) $\Rightarrow$ (3). Suppose that  $z(R) = 0$  and all pretorsion  $r > z$  are cohereditary. By the Proposition 1 all pretorsion  $r > z$  are torsion. Since the pretorsion  $z$  is a torsion ( $z(R) = 0$ ) we have that all pretorsions  $r \geq z$  are torsion, whence we obtain that the ring  $R$  is strongly semiprime. By the statement 6 the lattice  $[z, \varepsilon]$  is complemented. Therefore, for any pretorsion  $r > z$  there exists the pretorsion  $t > z$  such that  $z = r \cap t$ . Then  $z(R) = r(R) \cap t(R) = 0$ . Since modules  $R|r(R)$  and  $R|t(R)$  are respectively  $r$ -torsionfree and  $t$ -torsionfree ( $r, t$ -torsions) and  $r$  and  $t$  are cohereditary, by the Proposition 3 modules  $R|r(R)$  and  $R|t(R)$  are completely reducible. The from relation  $R = R|[r(R) \cap t(R)] \subseteq R|r(R) \oplus R|t(R)$  it follows that the ring  $R$  is completely reducible.

(3) $\Rightarrow$ (1). Over any completely reducible ring all pretorsion  $r$  are torsion and class  $P(r)$  is closed under homomorphical images. Bu the Proposition 1 every pretorsion are cohereditary, particularly and all pretorsion  $r \geq z$  too.  $\square$

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## CONSTRUCTION OF TILINGS AND BEHAVIOUR OF GEODESICS

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**Abstract:** On a special interest are tilings in hyperbolic  $n$ -space. In this work the proposed construction could be considered as well as constructive demonstration related to the theorem of existence of non-face-to-face tilings of hyperbolic  $n$ -dimensional space by equal, convex and compact polytopes. The article also studies the upper bound for the number of faces of a  $n$ -dimensional hyperbolic tile.

**Keywords:** non-face-to-face anisohedral tilings, horocyclic strip, horosphere, hyperbolic  $n$ -space

JEL Classification: C60, F60, C22

### Introduction

Let's address now to the anisohedral tilings and to the second question of the eighteenth problem of D.Hilbert (see [3], pp.51): is there a tiling of space by equal polytopes which cannot be transformed into the isohedral by permutation of the polytopes? For the case of Euclidean space (D.Hilbert, probably, thought about this case, although it was not mentioned) the answer to this question was given by Reinhard ). Below, following [1] and [2], we will give examples of similar tilings (both face-to-face, and non-face-to-face) in  $n$ -dimensional hyperbolic space.

### Construction and a proof of the existence of anisohedral and non- face-to-face tilings in high dimensional hyperbolic spaces $\Lambda^n$ ( $n \geq 2$ )

Firstly we prove the assertion:

**Theorem 3.** *In the hyperbolic  $n$ -space  $\Lambda^n$  of dimension  $n \geq 2$ , there exists anisohedral and non-face-to-face tiling composed of congruent convex polyhedral tiles, which can't be transformed into tile-transitive tiling using any permutation of the polyhedral tiles.*

**Proof.** In 1975, K. Böröczky published some ingenious constructions of tilings in the hyperbolic plane  $\Lambda^2$  [1]. Below we show how it is possible to receive a anisohedral not face-to-face tiling from that Böröczky face-to-face decomposition in hyperbolic  $n$ -space by congruent convex and compact polyhedra. Thus, we find another remarkable property of the Böröczky's tiling and, at the same time, we prove the theorem formulated above.

**a) The case  $n = 2$  dimension.** Here we show the construction for two-dimensional hyperbolic plane (case)  $\Lambda^2$  (see Figure 5). An analogous construction works for arbitrary dimension. We start from (one of) Böröczky tiling [1]. It is a non-crystallographic tiling of a hyperbolic plane by equal pentagons. We give an explicit construction of Böröczky’s prototile and describe shortly the situation in the hyperbolic plane  $\Lambda^2$ . Figure 5 illustrates the construction of the Böröczky tiling in the upper half-plane model. Let  $l$  be a line in the two-dimensional hyperbolic plane  $\Lambda^2$ . Let  $\sum_0^1$  be an horocycle with  $l$  as an axis;  $l$  is oriented and directed towards the concave side of the oricycle (Figure 5, see page 17). Let  $O_0$  be the point of orthogonal intersection of the horocycle  $\sum_0^1$  with the axis  $l$ . Draw some horocycle  $\sum_0^1$  orthogonal to  $l$  ( $\sum_0^1$  have a ideal point  $\Omega$  at infinity), for which the selected line  $l$  is its axis. From the point of intersection  $O_0$  (of axis  $l$  with horocycle  $\sum_0^1$ ) we set aside segments equal length on the horocycle. For simplicity, the further construction can be carried out in one of the half-planes (the half-plane model) defined by the straight line, and then the received tiling of a half-plane by reflection in the line  $l$  to move the second half-plane, defined by the straight line  $l$ . Suppose that  $O_0, A_0, B_0, C_0, D_0, \dots$  - the partition points of horocycle. Draw through them the straight line  $l_{A_0}, l_{B_0}, l_{C_0}, l_{D_0}, \dots$ , parallel  $l$  (in the chosen direction). Through the same point draw and equidistantes  $h_{A_0}, h_{B_0}, h_{C_0}, h_{D_0}, \dots$  with base  $l$ . On the line  $l_{B_0}$ , denote the point of intersection  $A_1$  of this axis with equidistant  $h_{A_0}$ . Through the received point  $A_1$  pass a horocycle  $\sum_1^1$ , which has the some  $l$ -axis at tue initial  $\sum_0^1$  horocycle (to say with the same  $l$ -axis and a common ideal point  $\Omega$  at infinity). Let  $O_1$  be the point of intersection of the horocycle  $\sum_1^1$  with the axis  $l$ . Obviously, the length of the horocyclic (horocycal) segment  $O_1 A_1$  is equal to the length of the horocyclic segment  $O_0 A_0$ . The set of division points of horocycle  $\sum_0^1$  determines the regular (infinite), a broken line  $\omega_0$ , inscribed in this horocycle. Obviously, the horocyclic translation  $t$  along line  $l$  by the vector  $\overrightarrow{O_0 O_1}$  moves horocycle  $\sum_0^1$  in horocycle  $\sum_1^1$ , point  $A_0 \in \sum_0^1$  to point  $A_1 \in \sum_1^1$ , the segment  $O_0 A_0$  in segment  $O_1 A_1$ , all partition of horocycle  $\sum_0^1$  moving in partition of horocycle  $\sum_1^1$  (as inscribed in his regular a broken line  $\omega_0$  passes in the regular broken line  $\omega_1$ , inscribed in  $\sum_1^1$ ). Thus over everyone segment of the regular broken line  $\omega_1$ , inscribed in “the lower” horocycle  $\sum_1^1$ , it turns out (according to the construction) two congruent adjacent segments of the regular broken line  $\omega_0$ , inscribed in the “upper” horocycle  $\sum_0^1$  (the bunch of parallels with the centre  $\Omega$  carries out the corresponding projection).

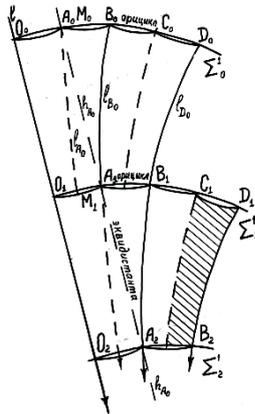


Fig. 5.

Constructing the Böroczy anisohedral not face-to-face tiling in the upper half-plane of the hyperbolic plane  $\Lambda^2$

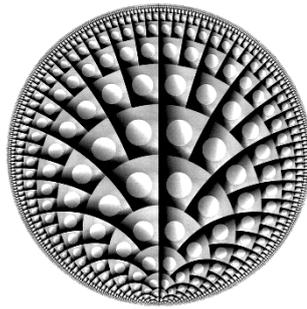


Fig. 6.

Böroczy's tiling in Poincaré's interpretation II

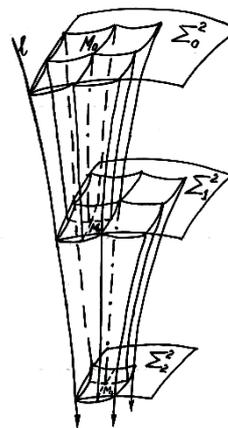


Fig. 7.

Constructing the Böroczy anisohedral

non-face-to-face tiling in the upper half-space model of the hyperbolic 3-space  $\Lambda^3$

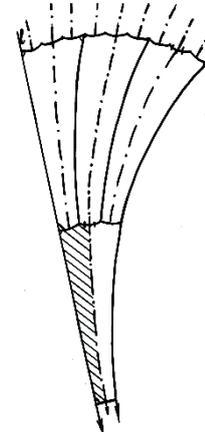


Fig. 8.

Possible variations of tilings

Segments  $O_1 A_1$ ,  $O_0 A_0$  and  $A_0 B_0$  together with axes  $l$  and  $l_{B_0}$  limit some convex pentagon, whose axis  $l_{A_0}$  is the axis of symmetry. She is straight line, projecting a common vertex  $A_0$  of segments  $O_0 A_0$  and  $A_0 B_0$  in the middle  $M_1$  of "basis"  $O_1 A_1$ .

Let a horocyclic turn  $w$  (about the ideal point  $\Omega$ ), defined by axes  $l$  and  $l_{B_0}$ . Then each of the movements by the group  $\Gamma_1 = \langle w \rangle$  will moves "strip region" (a horocyclic strip) between horocycle  $\Sigma_0^1$  and  $\Sigma_1^1$  in itself. The polygon  $O_0 A_0 B_0 A_1 O_1$  which maps ("multiplied") by the group  $\Gamma_1$ , will divide this strip into convex equal irregular pentagons. For brevity further we will say, that we have map (multiplied) a considered polygon (further—a polyhedron) of symmetry group of tiling by horocycle  $\Sigma_1^1$  (hereinafter – the group of tiling corresponding horosphere). Repeating so the divided horocyclic strip between horocycles movements of the group  $\Gamma_2 = \langle t \rangle$ , we obtain the anisohedral and face-to-face tiling of all plane  $\Lambda^2$  on such (convex, equal) pentagons-Böroczy's tiling of the hyperbolic plane  $\Lambda^2$ . Generally speaking, for the purposes of the theory of packing, (for which tiling was under construction) to connect partition points of horocycles by segments (to construct an infinite horocycal regular polygon) absolutely is not necessarily: it is enough to partition plane into the pentagons, limited by horocyclic segments and lengths segments of their axes (thus two segments of the upper base actually are continuations of one another). It is this tiling (conducted in the Poincaré's interpretations) which usually also is showed to the reader (see Fig. 6). On Fig. 6 in each (curvilinear) pentagon it is placed by one circle. It would seem that the packing density of circles is possible to be characterised by the ratio of area of a circle to the area of a curvilinear pentagon. But if we replace a curvilinear pentagon with the rectilinear, for the same reasons as density of the same packing of

circles, it can take the ratio of the area of a circle to the area of rectilinear pentagon. But the latter is less than the area of a curvilinear pentagon on the area of horocycal segment, as it shows the incorrectness of such definition of packing density.

Now (attention!) each of pentagons of this tiling we will cut its axis of symmetry into two congruent quadrangles (for example a pentagon  $O_0 A_0 B_0 A_1 O_1$  by a segment  $A_0 M_1$  will be divided into two quadrangles:  $O_0 A_0 M_1 O_1$  and  $A_0 B_0 A_1 M_1$ ). If we make such cuts in all pentagons of Böröczky's tiling in hyperbolic plane  $\Lambda^2$  we will see that on “upper” “base” of (each) quadrangle, two quadrangles of the “upper” layer have been arranged with their “lower” bases (in Figure 5 one such quadrangle is shaded). Thus we have an not face-to-face tiling of hyperbolic plane  $\Lambda^2$  into equal (convex) quadrangles.

**b) The case  $n = 3$  dimension.**

**Theorem 4.** *In the hyperbolic 3-space  $\Lambda^3$ , there exists a anisohedral not face-to-face tiling composed of congruent convex polyhedral tiles, which can't be transformed into isohedral tiling using any permutation of the polyhedral tiles.*

*Proof* makes use of the so-called Böröczky tiling of the hyperbolic 3-space  $\Lambda^3$  by congruent polyhedra and, for the reader's convience, we start with a short description of this tiling. Figure 7 illustrates the construction of the Böröczky tiling in the upper half-space model. Suppose the hyperbolic 3-space  $\Lambda^3$  has curvature -1 and let  $\Sigma_0^2$  be an horosphere. It is well-known that  $\Sigma_0^2$  is isometric to the Euclidean plane. In three-dimensional hyperbolic space  $\Lambda^3$  the tiling has an analogous construction (see Figure 7). If very briefly the description of the face-to-face Böröczky tiling can be explained as follows.

In plain words, the construction goes as follows. Let us describe it for hyperbolic 3-space  $\Lambda^3$ . Consider a collection of concentric horospheres, where consecutive horospheres have equal distance. Each horosphere is conformal to the Euclidean plane  $R^2$ . So consider a partition of each horosphere into the canonical (referring to the standart unit square - at the heart of the construction) tiling of  $R^2$  by geodesic unit squares. Erect on each geodesic square a prism, such that the top of the prism is made of four geodesic squares of the next layer. This yields a tiling of hyperbolic 3-space  $\Lambda^3$ , where each tile carries four tiles (geodesic squares) on its top. These “polyhedral layers” fit together and produce the Böröczky tiling of the whole hyperbolic three-dimensional space anisohedrally and face-to-face.

A more detailed description looks like. Let  $l$  be an oriented line in 3-space  $\Lambda^3$  through  $O_0$ . Choose a horosphere  $\Sigma_0^2$  orthogonal to  $l$ , intersecting the axis  $l$  at a point  $O_0$ . A horosphere is partitioned by an orthogonal net of horocycles into geodesic squares (edge-to-edge tiling of  $\Sigma_0^2$  with pairwise equal geodesic squares), so that the point  $O_0 = \Sigma_0^2 \cap l$  is a vertex of this partition (with an edge  $O_0 A_0$ ) (Figure 7). Let -2-dimensional cube (square) in  $\Sigma_0^2$ , centered at  $\Sigma_0^2 \cap l$ . So divided horosphere into squares we subject to the translation  $t$  along an axis  $l$  on a vector, whose length is

equal to length (previously constructed) segment  $O_0 O_1$ . It is easy to see that the length of the translation vector  $O_0 O_1$  for  $t$  is identical to that of the analogous translation in the two dimensional case. Let  $\sum_1^2$  be another horosphere, such that  $\sum_1^2$  is concentric with  $\sum_0^2$ . It is obvious enough that in one square of tiling on horosphere  $\sum_1^2 = t(\sum_0^2)$  will project a star of the vertex  $M_0$  of the partition  $\sum_0^2$ , consisting of four squares (see Figure 7,  $O_0 M_0$  – diagonal a horospheric square on  $\sum_0^2$ ). Thus the horosphere axis, passing through the node  $M_0$  of the partition  $\sum_0^2$ , will pass through the center  $M_1$  of a square of partition in of horosphere  $\sum_1^2$ . Taking the convex hull of the vertices considered squares, we obtain a a cell of the Böröczky tiling- polyhedron with 13 vertices. In other words, polyhedron with 9 facets (a 9-face polyhedra), limited by  $2^2 = 4$  “upper” facets (by four Euclidean squares in  $\sum_1^2$ ), one “lower” facet (a Euclidean square in  $\sum_0^1$ ), and 4 aside facets (four pentagons, congruents to pentagons of two – dimensional Böröczky’s tiling of hyperbolic plane  $\Lambda^2$ ). By construction, the Böröczky prototile (polyhedron, a cell) has  $2^{n-1} + 2 * (n-1) + 1 = 2^2 + 2 * 2 + 1 = 9$  facets. One “lower” facet (a Euclidean square in  $\sum_0^1$ ),  $2^2 = 4$  “upper” facets (by four Euclidean squares in  $\sum_1^2$ ), and 4 aside facets. The 4 aside facets are Böröczky prototiles of dimension two. The axis  $M_0 M_1$  is the axis of symmetry of this 9-face polyhedron. Four planes of symmetry of it 9-face polyhedron pass through this axis, two of which ("coordinate") also pass through the edges of the squares (incident to the node  $M_0$  of edges), inscribed in the "upper" horosphere  $\sum_0^2$ . These two planes cut 9-face polyhedron into four equal convex "prismatic" hexahedron. To obtain a Böröczky’s tiling for 3-space  $\Lambda^3$ , it is enough at first to repeat 9-face polyhedron by symmetry group  $\Gamma_1^2$  of partitions horosphere  $\sum_1^2$  (and by that to obtain a "polyhedral layer" of 9-face polytopes, laying between horospheres  $\sum_0^2$  and  $\sum_1^2$ ), then the received layer to multiply by the group  $\Gamma_2 = \langle t \rangle$ . Get a sequence of polyhedra whose 9 "upper" vertices lie on the horosphere  $\sum_0^2$  (and belong to the set of vertices of the tiling  $\sum_0^2$ ) and 4 “bottom” vertices lie on the horosphere  $\sum_1^2$  (and belong to the set of vertices of the tiling  $\sum_1^2$ ). As a result we get a tiling of a "polyhedral layer" with vertices on  $\sum_0^2$  and  $\sum_1^2$ . These "polyhedral layer" fit together and produce the Böröczky tiling of the whole hyperbolic 3-space. Specifically, for  $n \geq 2$ , there exist a Böröczky polyhedron  $P_n$  with  $(n^2 + 5)$  facets, which tiles hyperbolic 3-space  $\Lambda^3$ .

To get the corresponding non-face-to-face tiling of the hyperbolic 3-space  $\Lambda^3$  into convex equal "prismatic" hexahedron it is suffices to cut each 9-face polyhedron of the Böröczky’s tiling into four prismatic polyhedra by the above- mentioned "coordinates" planes of symmetry. The tilings (face-to-face and non-face-to-face) of  $n$ -dimensional hyperbolic space are under construction almost literally in the same way through partition of corresponding  $(n-1)$ -horospheres into geodesic  $(n-1)$ -cube (cubiliaj).

**c) The case  $n = 4$  dimension.**

Let us give the construction of 4-dimensional prototile. Let us describe it for hyperbolic 4-space

$\Lambda^4$ . If in short. Consider a collection of concentric 3-horospheres, where consecutive 3-horospheres have equal distance. Each 3-horosphere is conformal to the Euclidean 3-space  $E^3$ . So consider a partition of each 3-horosphere into the canonical (referring to the standart unit cube - at the heart of the construction) tiling of 3-space  $E^3$  by geodesic unit 3-cubes. Erect on each geodesic 3-cube a prism, such that the top of the prism is made of eight geodesic 3-cubes of the next layer. This yields a tiling of hyperbolic 4-space  $\Lambda^4$ , where each tile carries eight tiles (geodesic 3-cubes) on its top. These “polyhedral layers” fit together and produce the Böröczky tiling of the whole hyperbolic four-dimensional space anisohedrally and face-to-face.

A more detailed description looks like. In  $n = 4$  the similar construction leads to, that the star of cubes in three-dimensional partition of 3-horosphere  $\sum_0^3$  into 3-cubes, with a common vertex  $M_0$ , will be projected in one cube of horosphere  $\sum_1^3 = t(\sum_0^3)$  and thus the axis  $M_0 M_1$  will pass through the centre of symmetry  $M_1$  of the cube of the "lower" base. Taking the convex hull of the vertices of the star in "upper" tiling and corresponding to its cube of the “lower” tiling (“base”), we obtain a polyhedron with nine cubic facets (one in the "base" -“lower” facet (a one Euclidean 3-cube in  $\sum_0^3$ ) and the eight – over it-“upper” facets (by eight Euclidean 3-cube in  $\sum_1^3$ ), and six aside facets, congruent to facets of three-dimensional Böröczky’s tiling of hyperbolic 3-space  $\Lambda^3$ . By construction, the Böröczky prototile (polyhedron) has  $2^{n-1} + 2*(n-1) + 1 = 8 + 6 + 1 = 13$  facets. One “lower” facet (a Euclidean 3-cube in  $\sum_0^3$ , 8 “upper” facets (by eight Euclidean 3-cubes in  $\sum_1^3$ ), and 6 aside facets.

The hyperplanes of symmetry of this polyhedron, defined by the axis  $M_0 M_1$  and incidental of  $M_0$  two-dimensional faces of "upper" cubes ("coordinate" the hyperplanes), cut this four-dimensional polytope into eight "prismatic" polytopes. Acting with symmetry group  $\Gamma_1^3$  on tiling a horosphere  $\sum_1^3$  up into cube, we "fill" a layer between horospheres  $\sum_0^3$  and  $\sum_1^3$ . Acting with the group  $\Gamma_2 = \langle t \rangle$ , we "multiply" the constructed layer and we receive a Böröczky’s tiling for 4-space  $\Lambda^4$ . Cutting each polyhedron of this tiling as indicated above ("coordinate" planes of symmetry) into the "prismatic" polyhedra, we receive not face-to-face tiling of hyperbolic 4-space  $\Lambda^4$  into equal prismatic convex polyhedra: on the cubic "upper" base of the "lower" horospheric layer there are (are arranged) eight "lower" bases of the “upper” horospheric layer of prisms.

**d) In  $n$  dimensions.** The construction in the general ( $n$ -dimensional) case should now be clear. Throughout this section, we will make strong use of the fact that any  $(n-1)$ -dimensional horosphere  $\sum^{n-1}$  in hyperbolic  $n$ -space  $\Lambda^n$  is isometric to the Euclidean space  $E^{n-1}$ , see for instance . Let us give the construction of  $n$ -dimensional prototile. Let us describe it for hyperbolic  $n$ -space  $\Lambda^n$ . If in short. Consider a collection of concentric  $(n-1)$ -dimensional horospheres, where consecutive  $(n-1)$ -horospheres have equal distance. Each  $(n-1)$ -horosphere is conformal to the Euclidean  $(n-1)$ -dimensional space. So consider a partition of each  $(n-1)$ -horosphere into the canonical (referring to the standart unit  $(n-1)$ -cube - at the heart of the construction) tiling of Euclidean  $(n-1)$ -dimensional space by geodesic unit  $(n-1)$ -cubes. Erect on each geodesic  $(n-1)$ -

cube a prism, such that the top of the prism is made of  $2^{n-1}$  geodesic  $(n-1)$ -cubes of the next layer. This yields a tiling of hyperbolic  $n$ -space  $\Lambda^n$ , where each tile carries  $2^{n-1}$  tiles (geodesic  $(n-1)$ -cubes) on its top. These “polyhedral layers” fit together and produce the Böröczky tiling of the whole hyperbolic  $n$ -dimensional space  $\Lambda^n$  anisohedrally and face-to-face.

A more detailed description looks like. Choose an oriented line  $l$  and an  $(n-1)$ -dimensional horosphere  $\sum_0^{n-1}$  orthogonal to it. Partition  $\sum_0^{n-1}$  into geodesic  $(n-1)$ -cubes, corresponding to its translation  $t$  (along the axis  $l$  of horosphere  $\sum_0^{n-1}$ ) partition of a horosphere  $\sum_1^{n-1} = t(\sum_0^{n-1})$  into geodesic  $(n-1)$ -cubes and it is noticed, that the star of node  $M_0$  of cubes on horosphere  $\sum_0^{n-1}$  are projected into one cube of the horosphere  $\sum_1^{n-1}$ . Next, we construct the convex hull of vertices of the "upper" star and the "lower" cube. By construction, the Böröczky prototile (polyhedron) has  $2^{n-1} + 2*(n-1) + 1$  facets. One “lower” facet (a Euclidean  $(n-1)$ -cube in  $\sum_0^{n-1}$ ,  $2^{n-1}$  “upper” facets (by  $2^{n-1}$  Euclidean  $(n-1)$ -cubes in  $\sum_1^{n-1}$ ), and  $2*(n-1)$  aside facets. The received polyhedron "multiplies" by means of symmetry group  $\Gamma_1^{n-1}$  of tiling of horosphere  $\sum_1^{n-1}$  into cubes. So it is formed horospherical layer from such polyhedra between horospheres  $\sum_0^{n-1}$  and  $\sum_1^{n-1}$ . This horospherical layer "multiplies" by group  $\Gamma_2 = \langle t \rangle$ , that leads to the Böröczky's tiling of hyperbolic  $n$ -space  $\Lambda^n$ . Finally, each polytope of this tiling is cut by ("coordinate") hyperplanes of symmetry (spanned on axis  $M_0 M_1$  and incident to the vertex  $M_0$   $(n-2)$ -dimensional faces of the star of the "upper" partition) into the  $2^{n-1}$ - "prismatic" polytopes, which form the desired not face-to-face tiling of hyperbolic  $n$ -space  $\Lambda^n$ : on the "roof" of one prismatic polytope of the "lower" horospherical layer there are arranged  $2^{n-1}$  “bases” of "prismatic polytopes of the "upper" horospherical layer. Using the ideas applied in the study to (face-to-face) Böröczky's tiling in [2], it is easy to see that the constructed not face-to-face tilings of  $n$ -dimensional hyperbolic space by equal, finite and convex polytopes is anisohedral and also cannot be transformed into isohedral (tile-transitive, regular) tilings using polytopes permutation of the tiling as well.

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## HUMAN RIGHTS VERSUS MIGRATION IN THE REPUBLIC OF MOLDOVA: ECONOMIC AND SOCIAL IMPLICATIONS

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**Abstract:** During the next decade, migration is likely to be a cutting-edge issue in international relations, economics and social life in many countries. The article describes the correlation between migration and human rights in the Republic of Moldova. Today migration is considered a great and comprehensive problem for Moldova that is caused by poverty, unemployment, low wages and standards of living. These problems force many Moldovans every year to go abroad, to find not only a well-paid job, but also a safe living environment where their essential rights will be respected. Despite the fact, that in the last two years a lot of changes in government system were made Moldova remains not a place where Moldovans prefer to build their future.

**Keywords:** human rights, migration, the Republic of Moldova, economy, international relations.

JEL Classification: F22, F24, F66.

The migration of the population, as a problem for the world economy, arose simultaneously with the birth of humanity, and the factors that contributed to migration in the past also remain common today, when 358 million people are international migrants, which is about 3% of the world's population, and together they produce more than 9% of world GDP, which is 3 trillion. USD more than if they lived and worked at home [1]. The difference in the level of well-being between states in the context of globalization causes a natural reaction in the form of the movement of people across borders, or in other words, the migration of the population peculiar to each country.

### *Methods of research*

The research methodology is based on a set of economic and statistical methods, as well as political, systemic and comparative methods of knowledge.

### *The degree of elaboration of the problem*

For more than a century, researchers have been studying the issue of population migration. The theoretical basis of the research is the works of Moldovan, Russian and foreign scientists, experts and politicians in the field of migration such as: T. Tabak, N.P. Perchinskaya, V.G. Moshnyaga, K.P. Etsko and G.D. Gorbunova, O.Y. Potemkina, E.G. Ravenstein, O. Panina. These works describe the phenomenon of migration, the migration policy of the Republic of Moldova and the migration policy of the countries to which Moldovan citizens are currently emigrating; they consider normative legal acts, directives and laws regulating migration both in the OECD as a whole and in its individual countries. Moldovan scientists V.Moshnyaga, T.Tabak, K. Etsko, G.Gorbunova, V. Moraru, G. Rusnak and V.Turcan in their works reveal the main directions and volumes of modern international migration of the Moldovan population, pay attention to such effects of labor migration as remittances of migrant workers, material well-being of migrant families, strengthening of the national currency, consolidation the banking system of the country. Also, the authors analyse the impact of labour migration on the labour market, characterize the main approaches to migration regulation, reveal the content and evolution of the main approaches in the field of migration management. Separately, we can single out the works of T. Tabak, who analyses the demographic situation in the Republic of Moldova, describes the main stages of emigration from the country, starting from the post–Soviet period and up to the present day, gives a description of the destination countries of migrants.

### **Results and discussions**

In many cases, migrants have a positive impact on the development of recipient countries, contributing in the formation of skills, strengthening the workforce, investment and cultural diversity. Donor countries are also beneficiaries of migration, as emigrants for them play a decisive role in improving life through the transfer of financial resources and skills, contributing to the achievement of positive development results. Migration also serves as a tool to reduce poverty for migrants and their families. Thanks to the diversified and high incomes that migrants receive abroad, after sending money to their homeland, the financial situation of households also improves. Thus, at the macroeconomic level, in the short term, population migration is a positive process. But do not forget that in the long term, migration is more of a negative factor for both donor and recipient countries. For donor countries, first of all, there is a demographic problem, which entails the leakage of the able-bodied and child-bearing population from the country. For the recipient countries, this is primarily an increase in unemployment among the local population and a decrease in wages for employees in some industries.

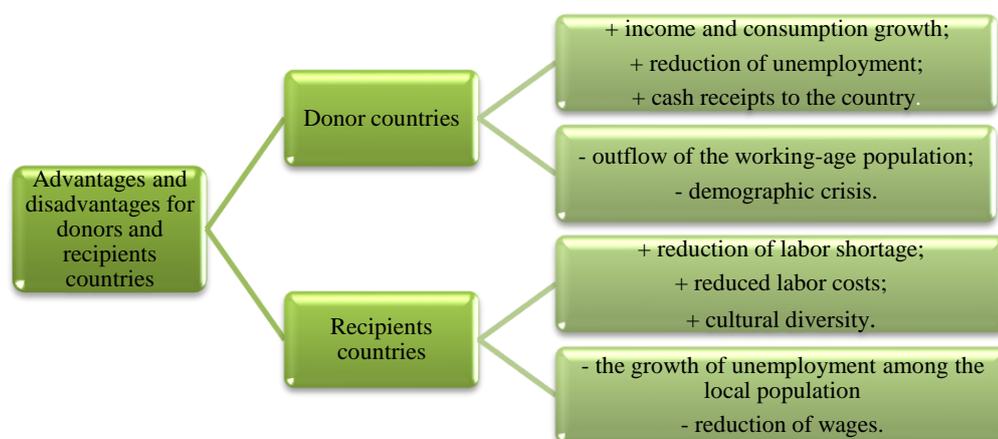


Figure 1. – Advantages and disadvantages of migration for donor and recipient countries  
Source: compiled by the author

Problems in Moldova's economy began in the early 90s, after the collapse of the USSR. The poor reorganization of state structures, the loss of many sales markets, the inability to keep up with technological progress, the destruction of the banking sector after the theft of a billion, the distance from Russia and the weak rapprochement with the OECD countries led to problems that Moldova cannot cope with today.

Citizens of the country, faced primarily with unemployment, high levels of poverty and social stratification, therefore decide to go abroad in search of new opportunities. Thus, Moldova becomes one of the main Eastern European countries-donors of labour migration for the OECD countries.

**Table 1. Main economic indicators of the Republic of Moldova for 2022**

GDP, current US\$ billion	14.5
GDP per capita, current US\$	5,714
Life Expectancy at birth, years	71.4
Employment rate, %	40,5%
Unemployment rate, %	2.28%
Level of poverty, %	31%
Inflation rate, %	30,24%

Source: The National Bureau of statistics [2,3]

The National Bureau of Statistics informs that, according to the results of the research, Labour Force Survey (AFM), in the second quarter of 2023: labour force (active population 15 years and older) constituted 935.1 thousand people, increasing by 3.9% compared to the second quarter of 2022 the employed population of 15 years and over constituted 899.6 thousand people, increasing by 2.4% compared to the second quarter of 2022 the country's unemployment rate was 3.8%, higher than the level of the second quarter of 2022 (2.4%). From the distribution of persons employed by economic activities, 22.2% worked in the agricultural sector<sup>4</sup> and 77.8% in non-agricultural activities. The share of employed persons in the industry was 15.1%, including in the manufacturing industry 12.9% (SDG indicator 9.2.2), and in construction - 7.4%. 55.3% of all employed persons were employed in the service sector [3].

If we analyse the main economic indicators for Moldova we can confirm that One of the most alarming aspects is the increase in absolute poverty to 31% in 2022. Such a significant increase in absolute poverty marks a step backwards for Moldova in its efforts to combat poverty and improve the standard of living of the population. The data presented in the report of the National Bureau of statistics shows that, despite some temporary improvements, the percentage of the population living on less than \$2.15 per day increased to 1.3% in 2022, and the percentage of the population living on less than \$4.3 per day reached 6.1%. The absolute poverty rate increased from 23% in 2018 to 31.1% in 2022, which was the highest since 2014 [4].

In 2022 the the annual inflation registered a record of 30,24%, that was the biggest one for the last years. It slowed further to 8.63% in September 2023, marking the lowest level in two years, from 9.69% in the previous month. However, the rate remained above the central bank's mid-point target of 5.0%. Prices moderated for all main groups: food (8.18% vs 9.61% in August), non-food products (5% vs 5.49%), and services (14.92% vs 16.31%). On a monthly basis, consumer prices rose by 0.46% in September, after decreasing by 0.08% in August [5].

These indicators show that a big part of Moldovan population lives in relatively bad conditions, that makes them to migrate to another country in order to search a better life for them and their relatives.

After the depreciation of the ruble and the conclusion of a visa-free agreement with the European Union, the number of Moldovan migrants leaving the country for work, study or simply in search of a better life for themselves and their relatives is increasing every year. Migrants mainly choose developed countries such as Italy, France, the Czech Republic, Germany, Spain, Portugal, Canada, Israel, Great Britain, Ireland, the USA and Canada. 80% of Moldovan migrants work and live in these countries, as well as a large number of diasporas are concentrated and, importantly, a significant number of money transfers come to Moldova from these countries. In different countries, Moldovan communities are heterogeneous in age, educational and professional qualification structure. At the same time, there is a process of diversification of spheres of activity. This is due to the fact that there are a certain number of people who have been educated in OECD countries and have managed to find a job in accordance with their qualifications. Abroad, Moldovan migrants demonstrate their desire to integrate into the host society, legalize their status, gain additional professional skills, experience and qualifications, thereby striving to become full citizens of their new homeland and do not want to return to Moldova. Visa-free regime with EU countries, the opening of the opportunity to work under an employment contract in Israel and Canada, obtaining a Green Card for the opportunity to leave for the United States, obtaining Romanian citizenship create new opportunities for Moldovan labour migration.

All of the above has contributed to the fact that the Republic of Moldova has demonstrated a high level of population mobility and involvement in labour migration, where almost every second household has one or more family members who have gone abroad. In the future, this number may increase.

Modern Moldova is facing huge problems due to the constantly leaving population. Demographic decline, low birth rate due to the migration of the childbearing population, the decline in the pace of economic development of the country due to the migration of the able-bodied population, the leakage of highly qualified personnel, and with it problems in the education and health sector, the devastation of rural areas has a serious impact on life in the country as a whole. As we see in fig.2 within six years, the population has decreased from 2729,5 million people to 2512,8 million people, which means that 216,7 thousand people have left the country in 6 years [6].

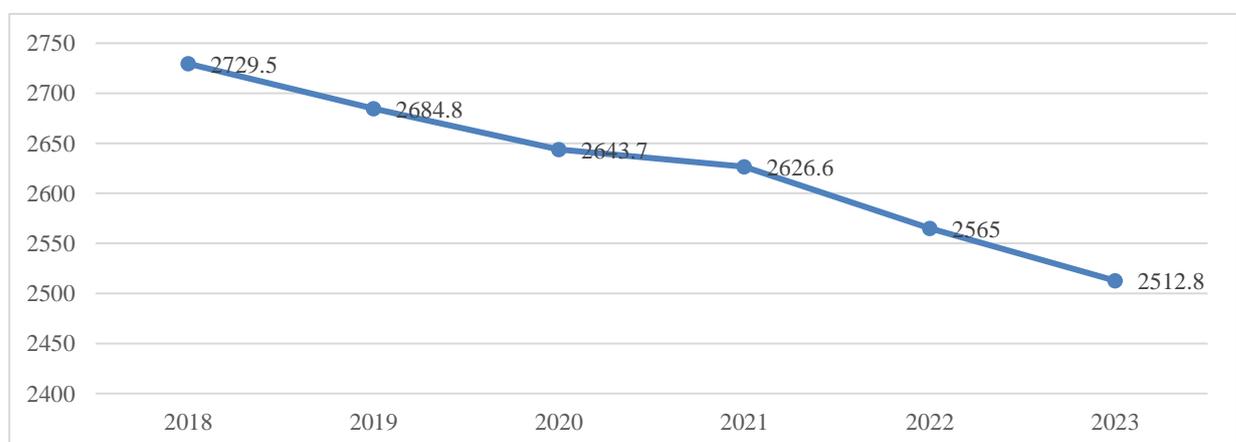


Figure 2. Population with residence in the Republic of Moldova 2018-2023, mill. people  
Source: compiled by the author based on data from the National Bureau of Statistics [6]

Another problem is the growing imbalance and the gap between generations, because young people easily adapt to the environment where they grew up and thanks to these opportunities they have higher needs than the older generation. They see the positive aspects of life in another country, they leave for those countries where the standards for life they strive for are much higher than at home. The emigration of young and educated people from the country is a catalyst for the economy and the development of the state, affects economic growth by reducing the number of skilled labour. The migration of a large number of young people entails a significant loss of capital and a demographic crisis for the country for many years to come. The country is saved only by money transfers that migrants send home and thanks to which Moldova has entered the top 20 most dependent countries in the world on money transfers, where 25% of total household income is accounted for by money transfers [7]. The fact that this money did not affect investments in the country is a special feature for Moldova, since the main factor that determined emigration from the country was socio-economic, where the country's citizens, due to poverty, could not cover their needs and expenses from domestic sources, respectively, remittances compensate for this lack of income on at the local level. Once again, it should be emphasized that according to the International Organization for Migration, more than 237,000 Moldovan families receive money from relatives working abroad, and almost half of them are completely dependent on remittances. Currently, about 1 million citizens of the Republic of Moldova are abroad [8].

Nevertheless, there are a number of reasons why Moldovan migrants return to their homeland, including: the retirement age of migrants, loneliness for many years and the desire to return home, the difficulty of integration in the country where they live or work, health problems and the inability to work at the same pace, the desire to reunite with loved ones, the future of children, the expiration of documents in the country of residence or deportation. Moreover, the Moldovan Government is taking measures and attempts, creating various programs for the voluntary return of migrants to their homeland. First of all, these are bilateral agreements and agreements with OECD countries in the field of migration, and secondly, the conclusion of contracts directly with employment agencies and employers, as is the case with Israel. Work is also underway to protect migrants in foreign countries, as evidenced by the "Law on Labour Migration" adopted in 2008 [9].

## **Conclusion**

However, unfortunately, to date, the measures taken by the authorities of the country are not sufficiently noticeable and are not effective in general, since most Moldovan citizens do not see their future at home. That is why, in order to solve migration problems, Moldova needs not only to negotiate with other organizations and states, but also to try to solve economic, political and employment problems within the country, and not wait for the majority of the able-bodied population to leave Moldova. In this regard, the author proposes measures and recommendations to reduce the number of migration flows from the Republic of Moldova to the OECD countries, including: increasing the growth of gross output per person; attracting investment to the country (not only foreign investment, but also the development of the investment climate in the country and creating conditions for those migrants who are abroad abroad, they want to invest in the country, open a business and return to their homeland); resumption of construction of industrial facilities; the introduction of new technologies, including the development of the most progressive sector of the economy – the IT sector; the creation of a department in the government whose work will focus on the development of labour market infrastructure, mainly on the basis of public-private partnership; strengthening the principles of social justice and reducing the sharp social stratification in society.

Also, it should be noticed that today problems in different sectors of the Moldovan economy still continue to dominate, besides, the problem of energy resources, the special military operation in Ukraine, which aggravated the economic situation of an independent country, stagflation, have also been added to it, and it seems that if the authorities do not take measures to solve these problems, Moldovan citizens will continue to leave their homeland in the hope of finding a better place for life and work for them and their families.

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## STATISTICAL CONFLUENCES AND QUALITATIVE APPROACHES TO THE PRESENCE OF MATHEMATICS IN ASEM CURRICULA

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**Abstract:** Currently the regulation on the organization of admission to higher education for the 2023/2024 academic year (and previous years) does not indicate the profile that candidates who opt for a certain field of professional training must have. It is worth mentioning that both candidates with bachelor's degree in the real profile, as well as those with humanist profile, arts or sports have same access to the general field of study Economic Sciences. Thus, obviously, the background is different for all candidates.

In this paper, we aim to explore the knowledge in mathematics that candidates in the general field of study of economics possess, as in the first semester at all specialties in the field of Economic Sciences, students have the course unit Mathematics for Economists or Linear Algebra and Mathematical Analysis.

Now students are not selected at the beginning of the semester in terms of their knowledge of mathematics, respectively, those with a real profile have an advantage over those with a humanist profile. This paper aims to investigate this problem.

**Keywords:** mathematics for economists, mathematics for business, questioner, survey.

JEL Classification: A2, C8

### Introduction

When the university lecturer prepares the curriculum for a course unit he relies on the fact that the student knows certain compulsory topics that he should know from high school/college. In this article we will address the following topic: Does the applicant for economic studies have sufficient mathematical knowledge to pass the Economic Mathematics (hereafter EM) or Linear Algebra and Mathematical Analysis (hereafter LAMA) exam, course units found in the curriculum for the bachelor programs within the Academy of Economic Studies from Moldova. Question arises because the curriculum for these subjects are drawn up with the idea that the student is a former high school student with a real study profile, either with a humanist profile, but who has the necessary mathematical knowledge.

The idea of researching the subject came after the change of the national curriculum for the discipline of Mathematics (National Curriculum, 2020). Specifically, the exclusion of certain subjects absolutely necessary for the course units stated above.

### **The premises and purpose of the research**

The problem of lack of adequate knowledge in the field of mathematics is an important one that we have been studying for several years. Our first study that detected the existence of this problem was influenced by the forced transition to online education due to the COVID-19 pandemic and how it influenced the economic mathematics course unit (Chicu O., Chicu V., 2021, p.57), followed by the study that aimed to analyse the students' opinion towards distance education, including how this form of education would influence the Economic Mathematics course (Chicu O., Chicu V., 2022, p. 237). The impetus for the current study was the modification of the national curriculum for high school (grades X-XII). But also the fact that the mathematics curriculum in high school does not "explain" to the student that if he follows the humanist profile, he will not have sufficient knowledge to follow a real profile study program at the university. The fact that fundamental topics such as the derivative or the integral have been excluded in the national curriculum for the discipline of mathematics and the fact that after finishing high school they are allowed without restrictions to follow any bachelor program, in our opinion, misleads pupils/students and they are confused when, after the humanist profile, they enter the auditorium at the EM or LAMA course units. For the purpose of a detailed research of the presence of mathematics in the ASEM curriculum, high school mathematics curriculum and the curriculum for the EM and LAMA course units, from the 1<sup>st</sup> semester, for the bachelor programs within the faculties Business and business administration, Finance, Accounting, International economic Relations, General Economics and Law and Information Technologies and Economic Statistics respectively were examined. Also, a survey was conducted in which participated students of the 1<sup>st</sup> year of studies, academic year 2022-2023.

### **Analysis of Mathematics curriculum for high school (grades XI-XII)**

The young man, who chose to train as a specialist in an economic field, comes from a school environment, where he accumulated primary knowledge to be able to understand the content of the university subject, which uses a complex mathematical apparatus in order to exhaustively model economic phenomena.

Curricula in both EM and LAMA course units are aimed at training the skills to rationalize, analyze, logically investigate economic phenomena through the prism of mathematical modelling, to use deduction and induction in the analytical and research component of economic processes.

ME course unit curriculum includes the topics: functions of several variables, differential equation (1<sup>st</sup> and 2<sup>nd</sup> order), systems of linear equations, linear programming, elements of probability, and in

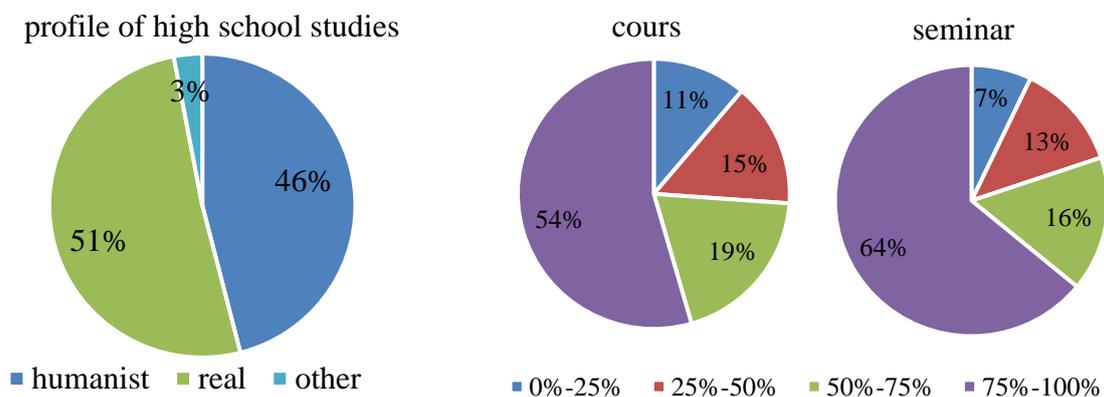
the LAMA curriculum we can find the additional topics: series, vector spaces and operators. Studying these topics is based on good mathematical knowledge.

Analyzing the national curriculum for high school (grades XI-XII), we attest that students who follow the real profile study in depth both quantitatively and qualitatively such topics as limits and derivatives of the function of a variable (grade XI) and integrals (grade XII). But these topics are not found in the curriculum for students following the humanist profile, topics that are so necessary for studying programs with an economic profile, informatics or engineering within university studies. Thus, is created a major discrepancy in content approaches, required mathematical knowledge being practically impossible to recover qualitatively in order to create a good mathematical basis for the understanding and effective use of mathematical tools in the modelling of economic processes.

On the one hand, the curriculum for the humanist profile does not include the subjects absolutely necessary for the formation of the minimum necessary and sufficient mathematical knowledge to be able to apply to an economic, computer science or engineering profile study program; on the other hand, the Ministry of Education, Culture and Research (MECR) university admissions regulation allows any candidate to apply for the respective programs, regardless of his study profile, which creates, at least, confusion.

### Results of the questionnaire

Around 49% of the students who took the LAMA course unit and 38% of the students who took the EM course unit participated in the questionnaires. Students from the Faculty of General Economics and Law have the highest participation rate in the questionnaire (95%), the lowest participation rate was certified by students from the Faculty of Business and business administration (22.4%), for students from the other faculties' participation rate was on average 50%. It should be noted that the survey was mainly attended by students who attended lectures and seminars. Thus, 71% of the respondents indicated that they attended 50%-75% and 75%-100% of the classes (figure 1).



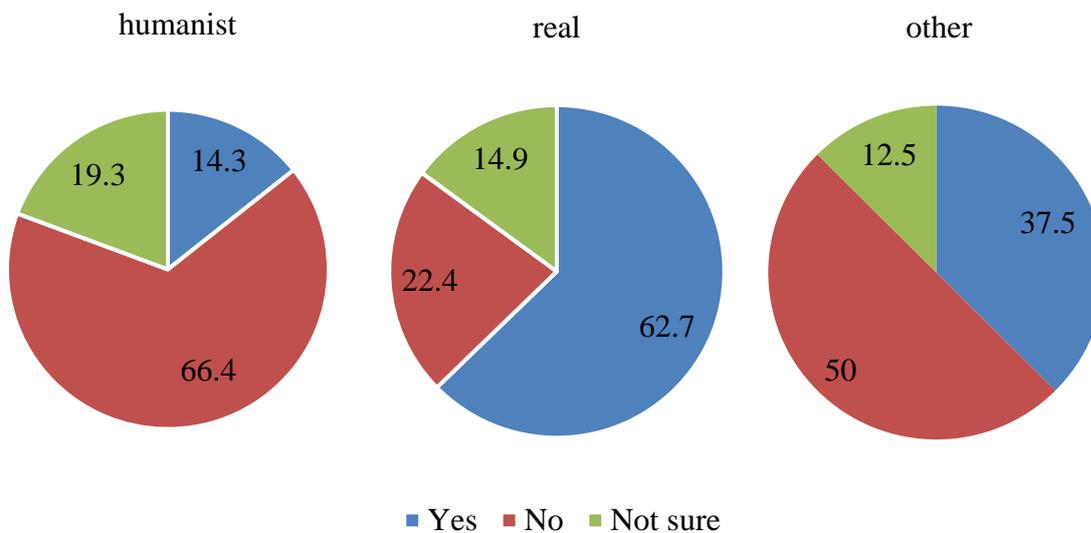
**Figure 1. Attendance at lectures and seminars and the study profile of the respondents**

*Source: Elaborated by the authors based on survey results*

According to the results of the survey, 64.9% of those surveyed passed the BAC exam in mathematics, however 46.8% of the respondents indicated the real profile. Thus, it appears that 18.1 pp of the students chose the mathematics exam as their choice exam at the BAC. According to admission data, among the candidates admitted to study in first year, 57% took the BAC in mathematics.

34.2% of the students indicated that the knowledge acquired during their high school/college studies is sufficient to master the EM and LAMA course units, 47.7% indicated that the knowledge is not sufficient. However, analysing the answers by study profiles, we note that 66.4% of the students with a humanist profile indicated that they have insufficient knowledge in mathematics to acquire the two subjects in the 1<sup>st</sup> year, versus 62.7% of the students with a real profile who indicated that they possess sufficient knowledge (figure 2).

The answer to the question of whether the students understand everything that is explained at the course/seminar in the two unit courses in the first semester is also of interest. Thus, 37.8% of the respondents indicated that they understand everything, 24.3%, despite having a good mathematical knowledge, still do not understand the subjects, and 37.8% do not understand due to the lack of basic knowledge in the field. The same thing analysed according to the criterion of taking the Bacalaureat exam in mathematics shows that 51% of the students who took the BAC in mathematics understand everything that is explained in the respective unit course at the university versus 27% of those who did not take this exam. According to the study, 49% of the students who took the Mathematics at BAC exams and 73% of those who did not take it do not understand what is explained at the course/seminar.



**Figure 2. The knowledge acquired in high school/college is sufficient to master the subject (%)**

*Source: Elaborated by the authors based on survey results*

If we analyse the students' answers to the question of whether they understand everything that is explained at the course together with their answers to the question of whether the knowledge acquired in the field of mathematics during their studies in high school/college is sufficient to master the two unit courses in the 1<sup>st</sup> semester at the university, then 45% of the respondents who indicated that the knowledge from high school is sufficient understand everything explained at the course/seminar because they have a good mathematical knowledge. Also of interest are the 34% of respondents who indicated that they understand also because the teachers explain the subject very well. However, 14% indicated that although they have a good training in mathematics, they still do not understand the subject (table 1). This percentage can be explained by various reasons, one of them could be that first year students have not yet been able to understand what the university learning process is and that it differs from high school/college, and that there are many hours dedicated to studying individually, hours that first-year students often ignore and do not use for self-study.

The curriculum for EM and LAMA subjects are built around certain mandatory knowledge that students should have when they enter the classroom. Analysing some of the topics that students should know, we notice, for example, that only 58.5% know how to solve examples in the topic *Operations with real numbers* and only 24.5% know how to solve examples in *Probabilities*. All the results can be consulted in table 2.

**Table 1. The reasons for understanding/not understanding the subject at the course/seminar**

You understand everything explained in the EM and LAMA course/seminar:	The knowledge acquired in high school/college is sufficient to master the subject at EM and LAMA:		
	Yes	No	Not sure
<i>Yes - because I have a good background in mathematics</i>	45%	0,86%	7,14%
<i>Yes - because the teacher explains very well</i>	34%	9,84%	28,57%
<i>No - I have a good background, but I still don't understand</i>	14%	31,03%	21,43%
<i>No - because I don't have a good background in mathematics</i>	7%	58,62%	42,86%

Source: Elaborated by the authors based on survey results

**Table 2. Basic knowledge (%)**

Topic	Students know how to solve examples							
	Yes		Just some examples		No		Not sure	
	H*	R*	H*	R*	H*	R*	H*	R*
<b>Operations with real numbers</b>	58,5		27,2		4,9		7,9	
	45,5	71,6	32,8	20,9	8,4	2,2	11,8	5,2
<b>Systems of equations</b>	54,3		27,5		5,3		8,7	
	39,5	67,2	36,1	20,9	10,1	1,5	12,6	5,2
<b>Limits</b>	26		29,8		15,8		22,3	
	8,4	41,8	23,5	36,6	29,4	5,2	34,5	10,4
<b>Determinants of 2<sup>nd</sup> and 3<sup>rd</sup> order</b>	27,9		36,2		12,8		17,4	
	12,6	41	27,8	35,8	20,2	7,5	26,9	9
<b>Derivatives</b>	36,6		28,7		11,7		18,9	
	17,6	52,2	29,4	28,4	23,5	2,2	27,7	11,9
<b>Integrals</b>	26,4		30,6		17,7		20,4	
	8,4	42,5	26,1	35,1	33,6	4,5	30,3	11,2
<b>Probability</b>	24,5		30,9		15,1		24,5	
	15,1	31,3	29,4	33,6	26,9	6	26,9	22,4

H\* – humanist profile

R\* – real profile

Source: Elaborated by the authors based on survey results

According to the survey results, 27.9% of respondents indicated that they took private lessons (paid by the student) during 1<sup>st</sup> semester to prepare for seminars and assessments in the EM and LAMA course units.

Indeed, it is necessary to specify that in the educational plans there is the course *Elements of mathematics in economics* which would be very useful for students from the humanist profile or for those with a weaker mathematical knowledge.

But the results of the survey show that 45.9% of the respondents are not informed about the existence of this course in curriculum and, if they had known from the beginning of the year about the existence of this course unit, 35.1% of all respondents would have opted for it. 19.8% would not have opted for it, the others being undecided.

It is worth noting that analysing the results of the final evaluation for students that took part in this study, the passing rate for the Linear Algebra and Mathematical Analysis course unit is 98% (the exam taken on the first attempt). For the Economic Mathematics course unit, the pass rate was 84%. In the existing conditions, when for example only 58.5% of the respondents indicate that they know the topic *Operations with real numbers* (Table 1), its foundations being laid in grades 5-7, this is a very high pass rate. It can be explained by the fact that teachers are quite lenient and often make the examples proposed for tests and exams easier. This aspect deserves to be studied separately.

### **Conclusions and recommendations**

According to the results of the study, 49% of the respondents indicated that they have a different profile than the real one, but analysing the situation as a whole, only 37% of the 1<sup>st</sup> year students, exclusive of the students who do their studies in part-time learning, have the real study profile and 63% are from humanist or another, for the other 14% the study profile is not known. The research of the respective curriculum clearly showed that in the high school program for the profiles other than the real one, the minimum topics required to pass the EM and LAMA course units is not included. Thus, in the existing conditions, a quick method to improve the situation is to promote the optional course *Elements of economic mathematics* among the students of the 1<sup>st</sup> year, right from the moment of applying to the university. Of course, the ideal method would be to organize a test for the minimum necessary mathematical knowledge that an applicant for studies in the field of economics or computer science and engineering must possess (we are referring here to the students of the Faculty of Information Technologies and Economic Statistics). This minimum knowledge is necessary not only for the two course units studied in this article, but also for other course units found in curriculum.

The lack of elementary mathematical knowledge for students who come to real profile study programs is a problem not only within ASEM, but also in general in the Republic of Moldova. Thus, we insist, that the solution would be to organise entrance exams for mathematics. Although universities have autonomy in terms of setting entrance exams, a single institution cannot afford (from a financial point of view) to organize this exam alone. It would be very good if the admission regulations drawn up by the Ministry of Education, Culture and Research would include the obligation of such an admission exam.

We also consider it absolutely important either to introduce the fundamental topics back into the high school curriculum or to limit the access to real profile study programs at the university of candidates who have finished the humanist profile.

This change should be highly publicized, not sudden, and refer to candidates who will apply for university in 3 years, so that 9<sup>th</sup> graders are informed about the admission conditions to the university that will concern them in 3 years' time.

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**SESSION X: CONTEMPORARY  
LIBRARIES: CHALLENGES,  
TRANSFORMATIONS AND PREMISES  
FOR DEVELOPMENT  
IN THE NEW SOCIO-ECONOMIC  
CONTEXT**

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## THE MARKETING MIX AS THE BASIS FOR THE IMPLEMENTATION OF THE LIBRARY'S MARKETING STRATEGY

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**Abstract:** The article proposes the use of the concept of marketing management in a modern library, analyzes the formation of the marketing mix and its use in long-term planning. The features of the use of marketing mix tools in the library's marketing strategy, based on seven elements of the mix, are highlighted. The library's main marketing goal is to ensure the quality of its documentary potential and the availability of resources and services to users. What is important is not just the creation of a new demand, but the development and the most complete satisfaction of the existing one, using all the available means of the library.

The concept of the marketing mix allows you to clearly structure and analyze the activities of the organization, identify new development opportunities and implement specific measures for its prosperity. The use of the marketing mix in practice is useful in analyzing the implementation of an organization's strategy, as well as when introducing a new product or service to the market.

The non-commercial marketing tools in the work of the library make it possible to achieve its competitiveness through the constant study of the target audience, the creation of new information products, the study of market conditions, the provision of loyal users, and the effective promotion of the organization's products and services.

The activity of modern libraries is becoming more intelligent and complex, therefore there is a growing interest in marketing techniques, such as the marketing mix, which ensures effective planning in the organization and contributes to the maximum adaptation of the library and information services system to the needs of users. Marketing helps organizations, including libraries, taking into account the needs and requirements of users, as much as possible correspond to the time, the market, and fully satisfy their needs.

**Keywords:** marketing mix, marketing strategy, library services, information users, information needs, planning

JEL Classification: M31; I23; I29

### Introduction

Rapid market changes, new trends in consumer behavior, saturation of markets, new realities of the technological and information order force organizations to monitor these changes, adapting to them in order to function successfully.

Marketing helps organizations and libraries, including, taking into account the requirements and needs of users, to meet the time and market as much as possible, fully satisfying their requests.

Marketing activity of libraries is a creative management activity, the task of which is to develop the market of library services through the assessment of information needs of users, finding ways to meet them, conducting practical activities to educate users and meet their needs. With the help of this activity, the possibilities of creating library services are coordinated, as well as steps to promote information services to the end user are determined.

The concepts of marketing activity and library have been used in economic literature since the 70s of the last century. Back in 1976, Peter Drucker noted the importance of marketing actions for libraries, positively assessing the reorientation of the activities of library institutions. He argued that ‘there are two areas where it is not enough to be smart. The first is personnel decision-making, the second is marketing. To find out what a particular audience wants or expects from a library, it is not enough only mental efforts, intuitive ones should also be used’ (Drucker, 1976).

In 1980, Alan Andreasen wrote in the *Journal of Library Administration*: “Being fully convinced that they know what consumers need, librarians who believe in marketing strategies start planning special events, find inventive ways of advertising and try to convince the public” (Ястребова, 1990).

The library's marketing activities cover:

- information market areas;
- types of library services;
- various segments of consumers;
- servicing market segments;
- promotion of libraries and library services in the information market.

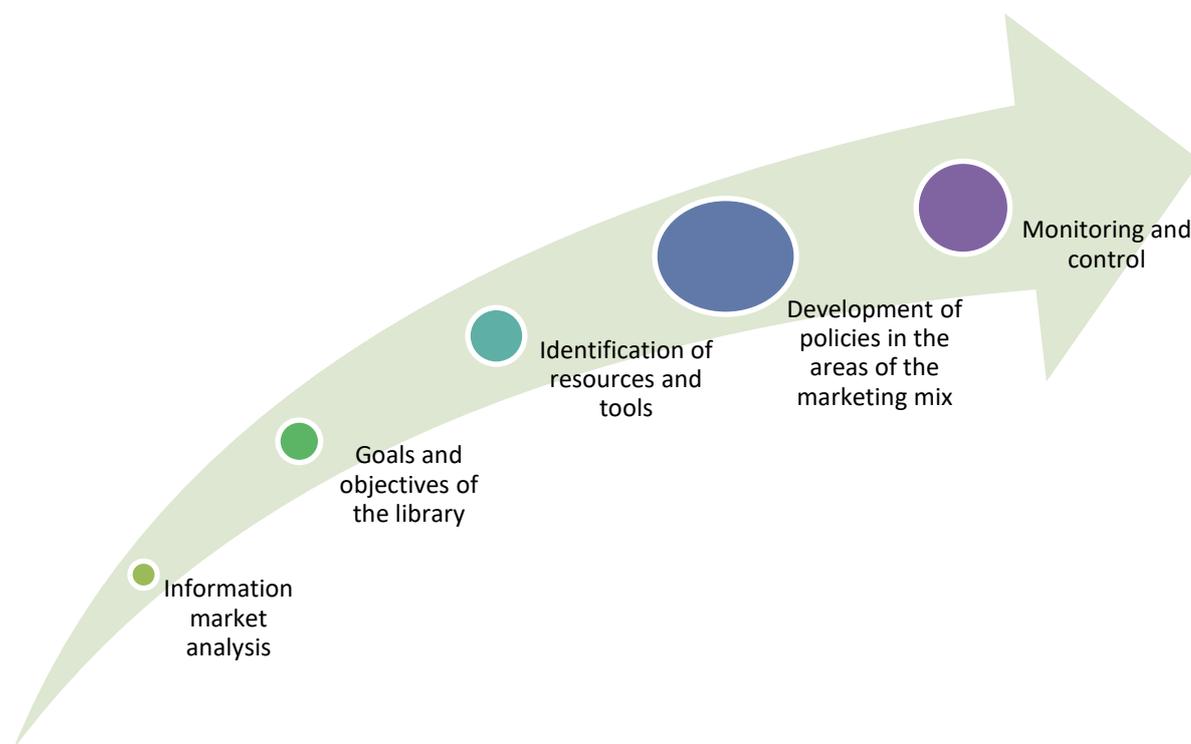
### **The Library's marketing strategy model**

At the present stage, most scientific and public libraries in Moldova have development strategies, an important component of which is a marketing strategy.

A well-thought-out marketing strategy is based on the implementation of a number of mandatory sequential actions combined into stages of its development.

Thus, the development of a marketing strategy includes the following stages (Савчук and Райлян, 2015):

- Information market analysis;
- Goals and objectives of the library;
- Identification of resources and tools for the implementation of the strategy;
- Development of policies in the areas of the marketing mix;
- Monitoring and control over the implementation of the strategy (Fig.1.).



**Figure 1. The Library's marketing strategy model**

**Source:** elaborated by authors

A thorough analysis of the information market: suppliers, users, competitors, features of supply and demand, becomes the foundation for the next stages of the marketing strategy.

Based on the market situation, the place of the library in the information market, goals and objectives are set that the organization seeks to implement over a certain period. Goals should be achievable and specific.

To achieve these goals, it becomes necessary to choose suitable marketing tools and resources, which in general can be called a marketing strategy.

### **The development of the library's policies**

The next stage is a more detailed development of the library's policies in various areas of its activities. The logic of modern library management is based on the principles of marketing and corresponds to traditional marketing concepts.

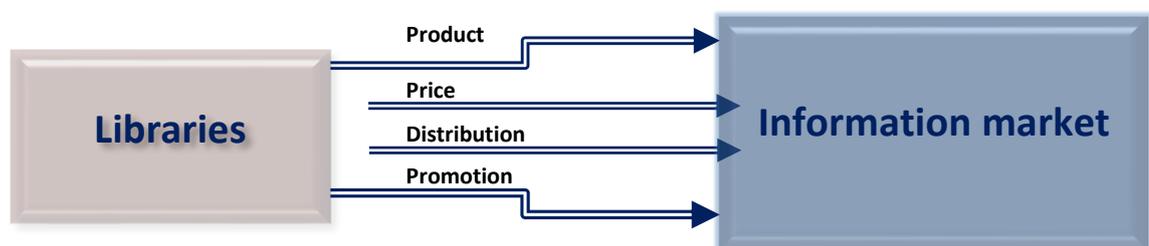
The concept of a marketing mix, proposed in 1964 by Nel Borden, and systematized later by Jerome McCarthy, is more popular. It allows you to more effectively manage the marketing of an organization based on such 4 elements as product, price, distribution and promotion (Fig.2).



**Figure 2. Marketing mix**

Elements of the marketing mix actively influence the user, closely intertwining and interacting with each other (Kumbar *et al.*, 2014).

Two important components of the market: organizations and consumers interact closely through four main flows: product, price, distribution and promotion (Fig.3).



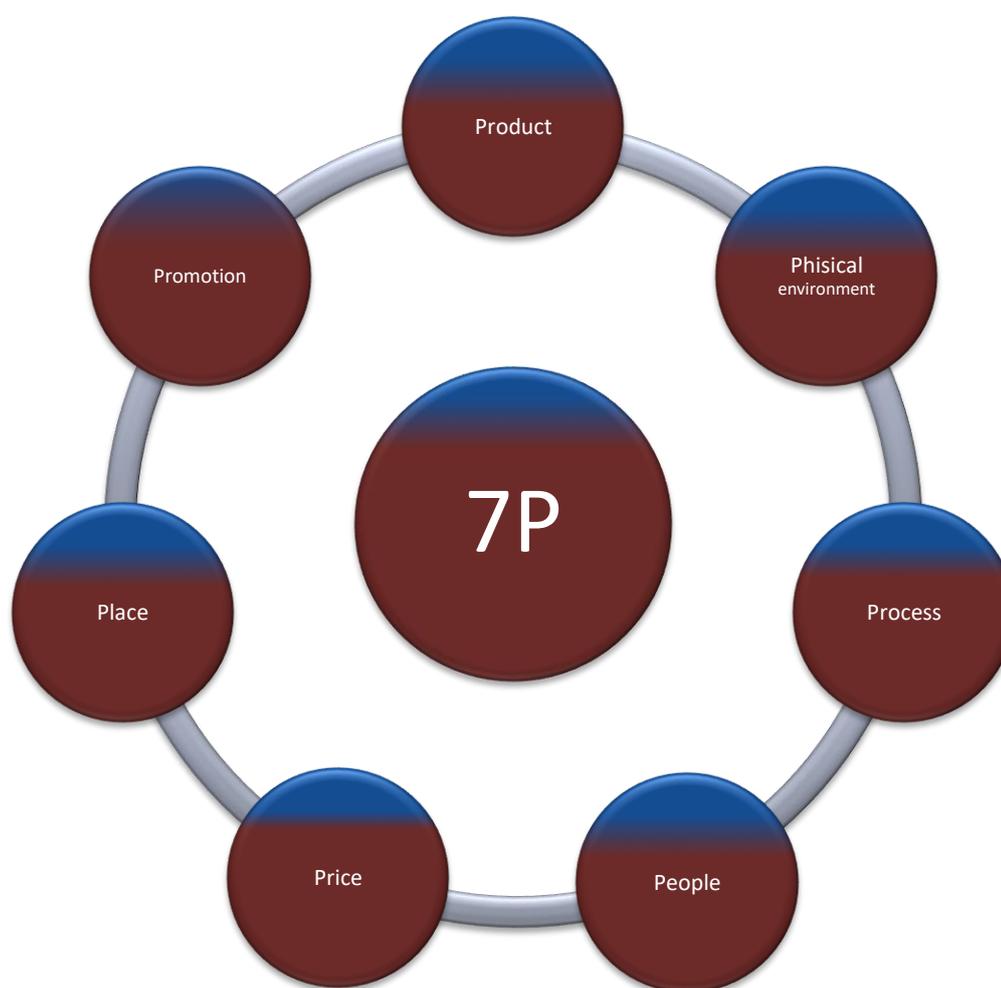
**Figure 3. Channels of interaction between the library and the user**

Source: elaborated by authors

The success of the marketing mix is explained in particular by the fact that it combined four types of marketing strategies under names starting with the letter – P: product, price, place promotion. This

easy-to-understand mnemonic rule made it possible to clearly identify and classify four groups of marketing functions related to the formation of a product portfolio, its price, delivery methods and promotion.

This model has found wide application in marketing practice and has been further developed through the addition of elements of the marketing mix. In the scientific literature, various scientific schools offer to expand the marketing mix, so you can find ideas of a complex of 5, 7 or even 12 elements. For example, the concept of a marketing mix is widely used in library activities, as a rule, this is the concept of 7P (Fig.4).



**Figure 4. Complex of marketing services**

Additional three elements: people, process and environment play an important role in the effective operation of the organization providing services (Палий, 2012).

Libraries track changes in the marketing environment and develop marketing policies based on elements of the marketing mix.

The library management needs to pay attention to all seven elements of the marketing mix.

Of paramount importance is a product or service, in relation to a library, these are: library collections, access to databases and various additional library services. They are traditionally given a lot of attention by the managers of the organization (Суслова, 2000).

The ways in which library services are provided are reflected in an element such as location, distribution or marketing. We often say the marketing policy of the organization.

To ensure maximum satisfaction of the information needs of users, the library strives to use various formats of library services: library visits, online consultations, electronic access to licensed scientific resources, etc. For example, during the coronavirus pandemic, the library mainly served users through the network.

Libraries at the present stage are fully developing such an element of the marketing mix as promotion. Libraries actively use all the tools of promotion: traditional advertising, public relations, personal sales, direct marketing. Libraries also try to use sales promotion tools, offering contests and sweepstakes to their users.

### **The marketing mix concept adapted to the activities of libraries**

The pricing policy of libraries is implemented through the provision of certain types of paid services. However, this element of the marketing mix in the activities of libraries does not play a primary role, since the mission of libraries is to provide free and comprehensive access to information. In turn, it should be noted that the price regulations approved by the Ministry of Culture require updating and revision due to the rapidly changing economic situation in the country.

People are of great importance in the marketing of services: the provision of all types of services is based on the knowledge and competencies, experience of staff and intermediaries. It is almost impossible to separate the service from the person representing it. Therefore, working with staff, their constant training and retraining are at the heart of the effective provision of services.

The last element in the marketing of services is the physical environment. Since the service that the consumer consumes or plans to purchase is intangible, the user is exposed to more risks when purchasing it. Just the office of the organization, the diplomas of the staff on its walls, the uniform of the staff is the starting point that allows us to draw a conclusion about the organization, reduce risks and convince a potential user to apply here for the necessary services.

Understanding the synergistic impact on the effective operation of the library of all seven elements of the marketing mix allows you to comprehensively pay attention to all areas in the management of the organization.

The main objective of the marketing complex is to increase the significance and value of the product and service to ensure the long-term development of the organization.

The use of a marketing mix in practice is useful when analyzing the implementation of an organization's strategy, as well as when introducing a new product or service to the market. This analysis assumes detailed answers to the following questions:

By product

- What product or service should I offer the user? What is the value of this service?
- How to position a library service correctly?

- How competitive is this service?

By distribution

- How and in what format do users purchase the library service?
- How to choose the optimal distribution channels?

By price

- What is the cost of the library service?
- Is there a segment of users willing to pay for some exclusive library services?
- What should be the cost of such services?

By promotion

- How to promote library services?
- Which promotion channels to use?
- How to measure the effectiveness of the promotion of library services?
- How to choose the optimal time to promote the library and its services?

By people

- Who are our users and what are their information needs?
- To what extent does our staff have the necessary competencies to meet the information needs of users?
- How to improve the professional competence of employees?
- How to interact more effectively with the library's contact audiences?

By process

- How optimal is the process of providing library services?
- Is the procedure for servicing library users well thought out?
- Are we able to save users' time resources?

By physical environment

- How convenient and attractive is the physical space of the library for the user?
- What techniques and methods are used to create a favourable environment that attracts the user?
- What prevents the user of our library from feeling comfortable and spending more time in it?

Thus, having answered the above questions, we are working through the mix of library marketing for each of its elements.

When developing a marketing mix, it is necessary to use measurable indicators for ease of their adjustment and control, which is the last stage in the development of a library strategy (Fig.1).

It is necessary to monitor and evaluate the real state of the library service at a certain point in time for all seven elements of the marketing complex from three angles: own opinion, opinion of experts and users.

The information obtained as a result of monitoring forms the basis of a plan for correcting the library's activities and its strategy, if necessary. Competent prioritization, phased implementation of corrective measures will allow you to build a well-thought-out tactics and will definitely increase the efficiency of the library. Changes in the external environment require constant monitoring and correction of the organization's activities, which minimizes painful adaptation to them.

## **Conclusions**

Thus, a marketing strategy based on a mix of marketing is a useful and practically easily applicable tool for effective functioning in the market.

The concept of a marketing mix allows you to clearly structure and analyze the activities of an organization, identify new development opportunities and implement specific measures for its prosperity. Thus, the use of both traditional and non-commercial marketing is justified, however, with the priority of the latter. Obviously, the main marketing goal of the library is to ensure the quality of the documentary potential and the availability of resources and services for users. It is important not just to create a new demand, but to develop and fully satisfy the existing one, using all available library tools. Successful marketing activities provide new ideas and strategies, helping library staff to successfully solve problems, both in the short and long term.

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**SESSION XI: EUROPEAN AND  
MOLDOVAN PROCEDURES ON  
CIRCULAR ECONOMY APPROPRIATE  
FOR CONSUMERS**

## CONCEPTUAL AND PRACTICAL APPROACHES REGARDING THE SECESSION OF STATES RELATED TO POSITIVE INTERNATIONAL LAW

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**Abstract:** Nowadays, secession, seen as a peaceful or violent process by which a part of the territory of an existing state breaks away from that state, seems to be a tendency of a global nature. The legal discussion regarding Kosovo's declaration of independence, as well as the act of "integration" of the Crimean peninsula into the Russian Federation, raises a whole series of questions, starting from the issue of the legality of secession, the process of state formation, the role international recognition and the extent to which the international community can intervene in such a process, the effectiveness of the present UN system. This article will be limited to the examination of some theoretical and practical aspects of secession, by reference to positive international law.

**Keywords:** secession, state, national minority, self-determination, territorial integrity, international recognition.

JEL Classification: K10, K33

### Introduction

Looking back, it is clear that the reunification of Germany in 1990 went against the tide of modern history, marking a kind of "swan song" for the old model of the unitary nation-state of the 19th century. Since the fall of the Berlin Wall and the subsequent disintegration of the USSR two years later, things have been unraveling everywhere. Agitated minority movements demanding recognition, autonomous rights, or absolute independence, given that the end of the Cold War weakened the global geostrategic "straightjacket" have become commonplace worldwide.

Today, secession, viewed as the action of a group peacefully or violently separating from the rest of the community to establish another group or to unite with another state (Dima, E., [...], 2007, p. 1764), appears to be a global trend: separatists, secessionists, and independentists can be identified from Taiwan, Xinjiang, and Somalia to Sri Lanka, Georgia, and the West Country.

The year 2008, through the declaration of independence of Kosovo, divided the international community's vision on the issue of secession. There are no clear-cut camps of those ready to approve Kosovo's declaration and those reluctant or opposed to it. Countries like the USA, the UK, France, and Germany - which were closely involved in the failed diplomacy that led to the NATO attack on Yugoslavia and the subsequent UN administration of Kosovo - were among the most eager to see the final status of Kosovo resolved. They argued in favor of supporting the principle of self-determination for the sake of stability in the Balkans.

On the contrary, Serbia's support came from countries in a similar situation. Venezuela and Iran often take positions opposing those of the USA. Cyprus, Romania, Spain, and China are on the same side of personal interest - the concern that a precedent could be set for separatist regions in their own backyard if the green light is given to self-determination. Thus, they argued in favor of a country's right to protect its territorial integrity and oppose separatist regions that unilaterally threaten their borders.

Russia, one of Serbia's most loyal supporters, found itself in a delicate position. Russia is not eager to see the precedent set by Kosovo applied to areas within its own borders, such as Chechnya. However, the precedent helped justify Moscow's hasty recognition of South Ossetia and Abkhazia after they separated from Georgia, as well as the "incorporation" of Crimea into its territory through the laws of March 21, 2014.

A legal discussion regarding Kosovo's declaration of independence and the "integration" of the Crimean Peninsula into the Russian Federation raises a whole series of questions, starting with the legality of secession, the state formation process, the role of international recognition, and the extent to which the international community can intervene in such a process and the effectiveness of the current UN system. The article below will focus on examining theoretical and practical aspects of secession in relation to the principles of self-determination and territorial integrity.

### **The Concept of Secession**

Both the doctrine and the normative part of public international law (*Convention on Succession of States in Respect of Treaties*, Art. 2(1)(a)) consider secession to be the transfer of a territory from one state to another, whether to an existing state or to a newly formed state.

In general, international law has remained neutral regarding the right to unilaterally declare the independence of a territory. In other words, international law neither prohibits a population from organizing a referendum nor recognizes any unilateral right to secession and annexation to another state. What international law clearly prohibits is the promotion of secession under conditions contrary to *jus cogens*, such as the illegal use of force (*ICJ Advisory Opinion No. 2010/25*, Para 81).

The UN International Law Commission has established that if a declaration of independence is issued in violation of *jus cogens*, the declared independence is considered illegal, and the international community has an obligation to refrain from recognizing the political act of independence. Similarly, the Vienna Convention on the Law of Treaties declares treaties concluded as a result of the use of force or threats of force, in contradiction to the principles of international law in the UN Charter, to be void (*Convention on the Law of Treaties*, Art. 52).

International political case law and relevant jurisprudence (*ICJ Advisory Opinion No. 2010/25*) confirm the geopolitical reality of declarations of independence and acts of unilateral secession exercised under the principle of self-determination and/or in contradiction to domestic and international law but ultimately do not affect the de facto situation, namely the secession of states.

In such situations, the issue of statehood becomes relevant, specifically, which of the two major conceptions prevails in the international community's approach: the constitutive theory, which argues that recognition by the international community is the essential criterion of statehood, or the declarative theory, which maintains that statehood is a legal status independent of recognition, based

on the Montevideo Convention on the Rights and Duties of States of 1933, which establishes the criteria defining statehood: a permanent population, a defined territory, a government, and the capacity to enter into relations with other states.

Modern international law and practice converge in not allowing the removal of the principle of the self-determination of peoples from the historical context of colonialism in which it was recognized and its transposition into arguments justifying a right to unilateral secession in the case of independent nation-states.

Furthermore, international law identifies the beneficiary of the right to self-determination. According to relevant documents (*Declaration on Principles of International Law; Charter of the United Nations*), the right to self-determination is a right of peoples. None of the provisions of positive law regarding self-determination negates this initial position. All documents containing regulations on self-determination refer to "peoples" as its beneficiaries.

No regulation regards national minorities as possessors of the right to self-determination. In all cases, issues related to national minorities are regulated separately, with a series of individual rights guaranteed to them.

Even if one were to accept the opinion that modern international law tends to grant collective rights to minorities, it cannot be argued that self-determination is among these rights. Nor can it be argued, vis-à-vis the theory of internal self-determination, that minorities enjoy such a distinct right apart from the rest of the population of the respective state. The right to internal self-determination belongs to the entire population of the state, reflecting the principle of representative democracy, even though it may lead to specific rights for individuals belonging to national minorities.

In this sense, self-determination serves only to guarantee human rights, and based on it, each individual can choose to belong to any ethnic, religious, or linguistic community. Therefore, the rights "affiliated" with individuals belonging to national minorities are based on the right to self-determination as a general right, and it cannot be claimed that minority rights include a right to self-determination.

International law "distinguishes" human groups to identify those entitled to self-determination (peoples) from those who do not have such a right (national minorities).

The first legal definition of the concept of a minority - and the only one to date with such authority - was provided by the Permanent Court of International Justice, an institution created under the League of Nations, in the case of the Greco-Bulgarian Communities in 1930 (Iancu, Gh., 2002, p. 32). Therefore, a minority was defined as "a group of persons living in a country or a distinct region, having their own race, religion, language, and traditions, maintaining their own ways of practicing their faith, ensuring the education and upbringing of their children according to the spirit and traditions of their race, and supporting each other" (Barth, W. K., 2008, p. 37). Thus, such a community is characterized by attributes of race, religion, language, and tradition and possesses a sense of solidarity aimed at preserving these attributes of the group. However, these elements can easily be found in a possible definition of a people.

Several aspects differentiate national minorities from peoples, the unique beneficiaries of self-determination: Territorial factor: an essential element in the process of constituting peoples. On the

other hand, although national minorities are often concentrated in a certain region, they are often dispersed. Even in the case of territorial concentration, the sense of belonging to that territory is not essential to defining ethnic identity, as it is in the case of peoples. The degree of political organization is much lower in the case of minorities, even though they also establish a series of representative structures. The dynamics of the group are distinct. If in the case of a people, the aspiration for individual existence is essential for defining and becoming one, in the case of minorities, the primary goal is to maintain cultural, linguistic, and religious identity within the existing political organization or by optimizing it (Diaconu, I., 2009, p. 17-19).

### **The precedent of Kosovo**

In the case of Serbia, the Albanian population, from a numerical point of view, represented a minority population compared to the Serbian one. Relations between the Serbian and Albanian populations in Kosovo have always been marked by mistrust and a lack of desire for mutual coexistence and tolerance. These relations represented an ongoing relationship of "status reversal": whenever the Serbs administered Kosovo, as happened in the interwar period and from the end of World War II until the late 1960s, the Kosovo Albanians were discriminated economically, socially and culturally and were forced to leave. On the other hand, when the Albanians were in a dominant position, usually with the support of external forces - Ottoman, Austro-Hungarian, Italian, German, Bulgarian and NATO - the Serbs were the ones discriminated against and forced to leave Kosovo (Nița, I., 2008).

The mutual resentments made that, although they shared the same territory, the Serbs and the Albanians of Kosovo lived in two parallel societies, reminiscent of "apartheid", without a real desire to build a democratic and sustainable multi-ethnic society. Moreover, after the revocation of Kosovo's autonomy in 1989, all Albanian institutions in Kosovo continued to exist in secret and for almost a decade there were two parallel states - the official one, on the surface, controlled by Serbia, and the Albanian one with political institutions separate, education and health systems, even with unemployment benefits, financed by Albanian emigrants or Albanians working abroad. After 1999, the separate development of the society in Kosovo could continue freely, in the absence of any control from Belgrade, and currently we are witnessing the opposite phenomenon - the Serbs in the north of Kosovo are establishing their own parallel institutions (Nița, I., 2008).

In this way, the degree of definition of the Albanian community long ago exceeded that of a simple minority, the level of cohesion between members, of antagonism towards others, in this case - the Serbian population, of the development of national consciousness, entitling them, perhaps, to consider themselves as a nation.

Moreover, however paradoxical it may seem, from an anthropological point of view it can be stated that the Kosovar Albanians are a distinct people from the population of Albania. The ethnic and linguistic element is overcome in reality by a different history, by a distinct national feeling, originating, in the case of the Kosovar Albanians, from the antithesis with the Serbian population that had a different cultural and religious evolution determined by the historical context.

Even if we accept that the Albanian population can identify itself as a true beneficiary of the right to self-determination, the solution to independence is not obvious. Between two competing rights that of the "Albanian-Kosovar people" to self-determination and that of Serbia to respect its territorial integrity, international law has always given privilege to the latter.

The secessionist movements always base their independence claims on the right to self-determination. However, in the practice of states, courts and international bodies, the refusal to put the sign of equality between self-determination and secession or to admit that the right to self-determination can imply a right to secession has been maintained for almost a century.

In this sense, the Commission of Jurists of the League of Nations pronounced in 1920 in the opinion regarding the status of the Aaland Islands, according to which "positive international law does not recognize the right of national groups as such to separate from the state of which they are a part by simply expressing their will in this sense", as well as, 66 years later, the International Court of Justice, which, in the Decision regarding the border dispute between Burkina Faso and Mali, gives victory to territorial integrity (Prisecariu, R., 2010, p. 87).

The advisory opinion of the Supreme Court of Justice of Canada regarding the secession of Quebec (*Reference re Quebec Secession, 1998*) provides a judicial analysis in the matter, examining the question of self-determination, mainly in relation to the issue of secession, the latter viewed as external self-determination, but also touching on aspects regarding the relationship with representative democracy, the relevance of respect for human rights, the subjects of self-determination.

The Canadian court concludes that "the right to self-determination in international law can, at most, lead to the right to external self-determination only in the situation of former colonies, in the one where a people is oppressed, as in the case of foreign military occupation, or in the situation in which a distinct group is denied effective access to governance in order to achieve its political, economic, social and cultural development. In all these three situations, the respective persons have the right to external self-determination because they are denied the opportunity to exercise their right to self-determination at the internal level. It is obvious that these exceptional circumstances are not applicable in the case of Quebec under the current conditions. Therefore, neither the population of the province of Quebec, whether defined as "a people" or "peoples," nor its representative institutions have the right under international law to unilaterally secede from Canada." (*Reference re Quebec Secession, 1998*)

Previously, the Constitutional Court of the Russian Federation reached the same conclusion regarding secession, in the case regarding the situation in Chechnya. According to the Russian court, "the constitutional provision regarding the maintenance of the integrity of the Russian state is in accordance with the universally recognized principles of the right of nations to self-determination" and, considering the provisions of the clause relating to territorial integrity ("safeguard clause") of the Declaration on friendly relations from the year 1970, the right to self-determination does not "allow or support acts that lead to the dismemberment or complete decomposition of the territorial integrity or political unity of independent and sovereign states that respect the principle of equal rights and self-determination of peoples" (Nița, I., 2008, p. 7).

However, the decision is criticized in the doctrine because, unlike the opinion of the Canadian Supreme Court, it does not take the argument to the end, failing to check the criteria related to the representative and non-discriminatory character of the government stated in the final part of the "safety clause" of the 1970 Declaration (UN General Assembly A/RES/2625(XXV)).

Although the conclusions of domestic jurisprudence do not have direct relevance in international law, their importance cannot be neglected, as they contribute, on the one hand, to the understanding of

such a "flexible" concept as self-determination, and, on the other hand, to the pursuit of the eventual establishment of an *opinio juris* regarding secession.

In the context of legal opposition to the phenomenon of secession, it is at least paradoxical that, in the last century, we have witnessed in reality a continuous process of geopolitical fragmentation, from 46 states, as many as existed in 1945, reaching, in 1965, in the midst of the decolonization process, more than double, so that today the UN has a total of 193 members. This fragmentation is, however, the result of genuine secessionist processes.

Analyzing the cases of decolonization, we find that the vast majority of them do not represent secessionist situations, but are the result of the consensus between the former colonies and the colonial power, in this sense various agreements have even been concluded between the metropolis and the local leaders.

Attempts to separate from the territory of the newly created state were condemned by the UN General Assembly, which constantly proclaimed the maintenance of the territorial integrity of the new states and took into account the will of the entire population of their territories, considered as unique peoples, despite ethnic heterogeneity.

It cannot be affirmed that positive international law equates or incorporates into the content of the right to self-determination a right to secession. Compared to the existing practice, it cannot be argued that secession is seen more and more as a possible new distinct "right" of self-determination. On the contrary, if we were to witness the establishment of an *opinio juris* regarding secession, it would be in the sense that such a right is not recognized.

As in the colonial context, states and international bodies are extremely reserved in accepting the secession of territories from independent states. Although the initial impression is that in recent decades we have witnessed dozens of cases of secession (former USSR, former Yugoslavia, former Czechoslovakia, Eritrea, etc.), in reality, the international community has been extremely cautious in its choice of language and, above all, the legal basis for the recognition of the new states.

Thus, new states such as Senegal (1960), Singapore (1965), Eritrea (1993), the Czech Republic and Slovakia (1993) were created based on the agreement, obtained more or less peacefully, between the interested parties. Therefore, in no case can we speak of secession as a unilateral act in these situations.

A possible different case is that of Bangladesh, often considered in the specialized literature as the only genuine case of secession admitted outside the colonial context, qualified, at the same time, as a special case of "reparative secession". In reality, even in this case things are not so obvious: the initial unilateral act of declaration of independence was not recognized before Pakistan's agreement. Thus, Bangladesh (East Bengal) declared its independence from Pakistan on March 26, 1971, following the refusal of the Pakistani political leadership at that time to recognize the result of the 1970 elections, won by a party from East Bengal. After a short-lived conflict, in which India intervened in favor of East Bengal, the Pakistani armed forces withdrew in December 1971, leaving de facto control to the separatists. On February 2, 1974, Pakistan recognized the new state of Bangladesh and only later, on September 17, 1974, Bangladesh was admitted as a member of the UN. (Nița, I., 2008, p. 9)

The opposite example, which contradicts the theory of "remedial secession" circulated in connection with the independence of Bangladesh, is that of the Kurds. The discrimination, the systematic violations of human rights to which they were and still are subjected, in countries such as Iraq and Turkey, are notorious, undisputed by the international community. However, the efforts to establish an independent Kurdistan did not enjoy support, which proves that fundamental rights violations, in themselves, are not enough for the success of secessionist efforts. (Nița, I., 2008, p. 9)

The dissolution of the Soviet Union at the end of 1991 was also the result of the consensus of the parties involved. The agreement constituting the Commonwealth of Independent States, signed on December 8, 1991 by Belarus, the Russian Federation and Ukraine, to which 11 other republics joined on December 21 of the same year, through the Alma Ata Protocol, stated that "the Union of Soviet Socialist Republics ceased to exist as a subject of international law and geopolitical reality".

In the case of the USSR, the creation of the successor states of the former Yugoslavia is not seen as a case of secession, but as one of dissolution of a federation. With the exception of Serbia, all the other constituent republics of the Federation considered that the disappearance of Yugoslavia was not the result of secession, but of disintegration following the will expressed in this sense by the majority of the constituent republics. The international community was still concerned not to create the appearance of recognizing unilateral acts, none of the former republics being admitted to the UN prior to the adoption by Yugoslavia (Serbia-Montenegro) of a new Constitution, thus implicitly recognizing that they accept the existing factual situation. (Nița, I., 2008, p.11)

Although the Declaration of Independence of February 17, 2008 considers Kosovo as "a special case resulting from the non-consensual breakup of Yugoslavia", the above reasoning regarding the disintegration of the Yugoslav Federation, as opposed to a secessionist process, cannot be applied in favor of Kosovo, which did not constitute a republic within the Federation, but only benefited from a degree of autonomy within the Republic of Serbia. Even if, in fact, Kosovo enjoyed rights equal to those of the republics under the 1974 Constitution, this does not change the formal status of that entity, which has never constituted a federated entity. (Nița, I., 2008, p. 11)

Referring to what was previously exposed to positive international law, we find that the independence of Kosovo has no legal support. It cannot be based on the principle of self-determination, as it does not operate in favor of national minorities as such. Even accepting that the Albanian population of Kosovo has exceeded the limits of the definition of national minorities, being able to claim to represent a distinct people, in the self-determination-territorial integrity relationship, international law gives preeminence to the latter.

However, despite the major lack of legality, the international community is faced with the unilateral declaration of independence by Kosovo and the recognition of this act by a constantly growing number of states.

In the same vein, but in a different context, the legal arguments used by Russia in order to justify the process of secession and integration of Crimea from the perspective of international law, as well as the argument of the similarity between the secession of Crimea and the case of Kosovo independence, are not substantiated.

First of all, in its advisory opinion in the Kosovo case, the ICJ did not confirm the legality of Kosovo's statehood, but only held that the declaration of independence does not contravene international law.

Then the premises of Kosovo's declaration of independence were quite different, that region being under international administration at that time, the motivation being ethnic pressures to which the Kosovar population was subjected, which does not seem to have been the case for the Russian-speaking population of Crimea. In addition, in the case of Crimea there are indications that the secession took place in the context of the presence of military forces other than those of the Ukrainian state, thus under the threat of force. And, last but not least, the acts issued by Russia for the purpose of integrating/annexing the Crimea region had a purpose and produced effects contrary to international law, in particular, in relation to the bilateral treaties between Ukraine and Russia. (Pachiu, L., Dudău, R., 2014, p. 3-4)

*In fact*, the situation in Crimea is much more similar to the case of Cyprus. After the Turkish population in the north of the island of Cyprus declared its independence in 1983, supported by the Turkish military presence on the territory of the island, and proceeded to create the state called the Turkish Republic of Northern Cyprus, the only state that recognized the statehood of the new entity was Turkey. An important role in directing the attitude of the international community towards the situation in Cyprus was represented by the resolutions of the UN Security Council by which the Turkish Cypriot declaration of independence was declared illegal, and the international community was urged not to recognize the new state entity. As for the southern region of the island, populated by ethnic Greeks, it has acquired full international recognition, except for recognition by Turkey, being a member state of the EU and the UN.

## Conclusion

Generalizing, we will mention that the formation of states represents factual situations later recognized in law, without the act of recognition being a condition for the existence of the state. The state is a collectivity composed of a territory and a population subject to an organized political power. The legal act of recognition is regardless of the definition of the state. In other words, "the state is a historical, social and political phenomenon taken into account by law".

More than the issue of the viability of Kosovo as a state, however, the viability of the solution itself is worrying. Based on such formulas, the game of delimitation based on ethnic criteria could continue indefinitely, in a "chain reaction" type sequence: the continuous detachment of smaller and better ethnically delimited entities. This cannot be a sustainable solution from the point of view of regional security and even less so in a global society, where geographical, political, ethnic and cultural borders are increasingly permeable.

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## CONSEQUENCES OF NON-PERFORMANCE OF COMMERCIAL CONTRACTS

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**Abstract:** Non-performance of contractual obligations represents a fundamental aspect of civil law and contractual relationships, with significant implications in the legal and economic spheres. This issue raises essential questions regarding the legal consequences of failing to fulfill obligations assumed in a contract and how it affects the relationships between parties. The legal nature of non-performance of contractual obligations can be analyzed from various perspectives, including theories of civil liability, contractual consequences, and principles of contract law. The analysis of this concept is essential for understanding the functioning of contractual relationships and legal systems in general. In essence, the paper aims to provide a comprehensive understanding of the impact of non-performance of contracts in different contexts and to propose solutions and strategies for managing these situations, contributing to the development of knowledge in the field of contract law and business.

The aim of the paper is to analyse and discuss the legal, commercial, and social impact and implications of non-performance of obligations specified in a contract, including in the context of climate change, circular economy and sustainable development.

The non-performance of contracts in business is a current issue with significant implications in the legal and business world. It is essential for contracting parties to understand the consequences and to develop appropriate strategies to prevent and efficiently manage such situations. The study of non-performance of contractual obligations aims not only to understand its consequences but also to contribute to the improvement of the process of contract formation and management, thereby safeguarding the interests of the parties involved in commercial relationships.

**Key-words:** Legal consequences, Rights and contractual obligations, Force majeure, Contractual disputes, Economic impact, Circular economy, Contract clauses.

JEL Classification: K15, K20.

### Introduction

In the business world, commercial contracts are a fundamental pillar of economic relations. These legal agreements between commercial parties establish clear obligations and rights, providing an essential framework for the efficient functioning of the market. However, contract enforcement is a key element, making the difference between prosperity and disappointment in a business.

Commercial contracts cover a wide range of agreements, from sale and purchase agreements to complex partnerships. They reflect trust and mutual commitment between parties and are the structures that underpin the smooth functioning of the global economy. In this context, the proper enforcement of contracts becomes essential for maintaining a balance in trade relations. Fair contract enforcement is not just a procedural issue; it is the backbone of trust between the parties. When contracts are enforced, they provide predictability and stability, providing an environment in which business can thrive. Without proper enforcement of contracts, trust erodes, the risk of litigation increases and the negative impact can be felt throughout the economy.

Non-enforcement of commercial contracts is a problem with significant consequences. From late deliveries to outright refusal to meet contractual obligations, such non-performance can trigger chains of events that damage businesses, their employees and their partners. Therefore, a thorough understanding of the causes, consequences and ways to prevent contract non-performance is essential to ensure stability and continued development of the business environment (Bénabent, 2020).

This article takes a detailed look at the consequences of non-performance of commercial contracts, both from a legal, economic and social perspective. It also provides strategies and solutions to prevent and manage this problem. The aim of this article is to assess and describe the consequences of non-performance of commercial contracts. The article aims to analyse the impact that the non-performance of a commercial contract has on the contracting parties and on the economic environment as a whole.

### **Analysis of the institution of non-performance of contractual obligations**

Obligation is one of the most important concepts of civil law, being defined as the legal relationship between two persons, one of whom, called the creditor, has the right to require the other, called the debtor, to perform a service, i.e. to do, not do or give something. The performance of contractual obligations is one of the most important duties of the debtor, who is obliged to perform his obligations properly, according to the terms and conditions laid down in the contract. In the event of non-performance of contractual obligations, the creditor has the right to require the debtor to perform the obligation in kind, to perform by equivalent or to terminate or rescind the contract. (Băieșu A., 2011)

The exception of non-performance of the contract consists in the possibility for each contracting party to refuse performance of its obligation as long as the other party has not performed its own obligation. In the doctrine, it is perceived as a defence or a sanction available to a party who, by simply invoking the plea of non-performance, can block a legal claim by the other party (who has not performed his own obligation) to order the party invoking the plea to perform his obligation. As between the contracting parties, the main effect of this legal operation is to suspend the creditor's own obligations as a result of the plea of non-performance. The contracting party thus seeks, on the one hand, to protect himself against the very unfavourable situation he would be in if he unilaterally performed his obligation and, on the other, to compel the other party to perform his obligation. (Băieșu A., 2019)

The exception of non-performance, also known as *exceptio non adimpleti contractus* in Latin terminology, is a legal concept that refers to the situation in which one of the parties to a contract invokes the fact that the other contracting party has not fulfilled its contractual obligations, as a defence against demands or actions set in motion by the opposing party.

As regards the origin of the exception, we have pointed out that, although it was used in Roman law by the seller who could not be compelled to hand over the goods without having received payment of the price, its origin lies in canon law, originally intended as a moral sanction. Subsequently, during the 14th-15th centuries, the development of the theory of signatory relations based on the content of the contract led to the adoption of a distinction between onerous, signatory contracts on the one hand and unilateral, gratuitous contracts on the other. (Cuznetsov A., 2016) The moral consideration that led to the admission of the exception of non-performance of the contract was the application of the principle "non servanti fidem non est fides servanda", i.e. the one who claimed performance of a contract was not entitled to it, as long as he himself did not keep his word.

Then, the development of trade in the 16th century allowed for the evolution and practical recognition of the exception of non-execution. The French authors point out that the term *exceptio non adimpleti contractus* was used for the first time in 1560, and that the general application of the exception of non-execution in the contract of sale in particular already left room for an effective distinction between the suspensive role of the exception of non-execution and termination. During this period, uncertainties were invoked regarding the procedure for applying the exception and, in particular, the burden of proof (Plotnic O., Praporšćic V., 2020).

The express recognition of the exception of non-execution during the 16th-17th centuries was due to the principle of consensualis and the acceptance of unnamed contracts. Thus, economic progress created new needs, such as the need to provide a guarantee for the performance of obligations. The diversity of studies devoted to the exception of non-execution gave rise to a multitude of legal foundations, but no common element of these theories was found, so that the legal nature and foundation of the exception of non-execution were still undefined. On the other hand, legal doctrine is unanimous on the effects of the exception of non-execution, given its practical applications, pointing out that it has a temporary effect and is a means of defence for the party invoking the exception, as a proportionate response to the "attack" of the other party. (Goldstein P., 2001)

In modern law, the exception of non-performance is universally recognised but controversy remains as to its basis. Thus, in continental law, the rule of reciprocity and interdependence of the parties' obligations in synallagmatic contracts is invoked as a basis, whereas in common law, the exception of non-performance is analysed alongside the termination of the contract, but does not change the causal basis of the exception of non-performance, which is linked to the same interdependence. (Căzănel M., 2013)

Non-performance of contractual obligations is a fundamental aspect of civil law and contractual relations, with significant implications in the legal and economic sphere. This issue raises key questions about the legal consequences of non-performance of obligations assumed in a contract and how this affects the relationship between the parties. The legal nature of non-performance of contractual obligations can be analysed from several perspectives, including theories of civil liability, contractual consequences and principles of contract law (Cuznetsov A., 2002).

One of the major approaches to understanding the legal nature of non-performance of contractual obligations is the civil liability perspective. According to this theory, non-performance of contractual obligations creates a basis for a civil liability claim. A party who fails to perform its obligations can be held liable for damages caused to the other party, in accordance with the principles of contractual liability. Failure to perform contractual obligations can also have significant consequences for the contractual relationship itself. This may pave the way for termination or rescission of the contract by

the aggrieved party. According to this perspective, non-performance of contractual obligations can create a situation where the contract loses its purpose or value for one of the parties, rendering it ineffective or unusable. (Augenblick, M., Rousseau, M., 2012)

The legal nature of non-performance of contractual obligations is closely linked to fundamental principles of contract law, such as the principle *pacta sunt servanda* (contracts must be respected) and the principle of equity. These principles can influence the way courts and case law deal with cases of non-performance of contractual obligations. For example, in many jurisdictions, the aggrieved party may have the right to refuse performance of its own obligations if the other party has failed to perform its corresponding obligations.

Taking a comparative approach, the legal nature of non-performance of contractual obligations may vary depending on the jurisdiction and the applicable legal system (Chibac G., Băieșu A., 2010). Some legal systems place emphasis on compensation for damages, while others place greater emphasis on compliance with the contract itself. Also, legal regulations and practices may vary in terms of how to deal with non-performance of contractual obligations.

In conclusion, the legal nature of non-performance of contractual obligations is complex and can be approached from several interlinked perspectives. It affects the balance between the contracting parties, with implications for civil liability, contractual consequences and fundamental principles of contract law. Analysis of this concept is essential for understanding the functioning of contractual relationships and legal systems in general.

### **Conditions and effects of the exception of non-execution**

According to the Civil Code of the Republic of Moldova of 2019, the exception of non-performance (*exceptio non adimpleti contractus*) is regulated in Article 912 et seq. The exception of non-execution allows the debtor to refuse the execution of his obligation if the creditor has not fulfilled his own corresponding obligations. Below are the conditions for exercising the exception of non-performance in the Republic of Moldova (Civil Code, 2002):

- Valid contract: The exception of non-execution can be invoked only if there is a valid contract concluded between the parties.
- Existence of an improper obligation: The debtor may invoke the exception of non-execution only if the creditor has failed to perform its obligations properly or has not performed them adequately. This means that the debtor can invoke this exception only when it is obvious that the creditor is in breach of the terms or conditions of the contract.
- Coexistence of mutual obligations: The exception of non-performance applies in cases where the obligations of the parties are mutual, i.e. each party has an obligation to the other party. It cannot be invoked in the case of unilateral obligations.
- Causation: the non-performance of the obligation by the creditor must be the direct cause of the non-performance of the obligation by the debtor. The debtor must be able to show that the non-performance or improper performance of the creditor's obligation resulted in his inability to perform his own obligation.
- Prior notice: Before invoking the defence of non-performance, the debtor must notify the creditor of the breach of the creditor's obligations and give the creditor a reasonable time for performance.

- No objective or subjective impossibility: The defence of non-execution cannot be invoked if performance of the creditor's obligations is impossible for objective or subjective reasons which cannot be controlled or prevented by the creditor.
- Non-performance or improper performance: In order to invoke this exception, you must show that the other party has failed to perform or has performed improperly. This may involve delay, defective performance or no performance at all.

The exception of non-performance of contractual obligations (*exceptio non adimpleti contractus*) is a legal principle whereby a party to a contract may refuse to perform its own obligation when the other party has failed to perform the corresponding obligation. It aims to maintain a balance between the parties in situations where one of them fails to fulfill its contractual commitments. The effects of this exception can be varied and can influence the way the contract is performed or terminated.

In the legislation of the Republic of Moldova, the exception of non-performance of contractual obligations is regulated in the Civil Code of 2019, in Chapter V entitled "Non-performance of contractual obligations". This regulation provides a legal framework for situations in which a party to the contract may invoke non-performance of the corresponding obligation by the other party. The following is an analysis of the effects of the exception of non-performance of contractual obligations under Moldovan law: (Law on Consumer Protection, 2007)

- Suspension of Performance of Obligations: the party who has invoked the exception of non-performance is entitled to temporarily suspend the performance of its own obligation until the other party performs its corresponding obligation. This helps maintain a balance in the contractual relationship and ensures that neither party benefits unilaterally.
- Duty to Give Notice and Time: The party intending to invoke the non-performance exception must notify the other party of the non-performance of its obligation. It must also allow a reasonable time for it to perform its obligation. This gives the party at fault the opportunity to correct the situation.
- Right to Enforce Performance or Rescission: If the other party fails to perform its obligation within the time allowed, the aggrieved party may choose to seek either enforced performance or rescission of the contract. Termination leads to the dissolution of the contract and can be requested if the non-performance is significant and substantially affects the contract.
- Right to damages: The aggrieved party is entitled to claim damages for loss suffered as a result of non-performance of the obligation. Such damages may cover direct and foreseeable losses caused by non-performance.
- Exemption from Liability in Certain Cases: In certain exceptional circumstances, which could be qualified as a justifiable impediment (*force majeure*), the party who is unable to perform may be exempted from liability for non-performance (Regulation (EU) No. 524/2013).

The conclusion is that non-performance of contractual obligations is a complex issue that can have significant consequences for the parties involved in a contract. The effects of non-performance may vary depending on jurisdiction, law and the specific terms of the contract. However, in general, non-performance can lead to legal liability, suspension of obligations, damages, or even termination of the contract. In general, avoiding non-performance is preferable by respecting the contract and the commitments made. However, if non-performance occurs, the right approach and compliance with the law can help minimise risks and negative consequences.

### **The justifying impediment**

In the field of contract law, the concept of 'non-performance of contract' is a situation where one of the parties fails to perform its obligations under a contract. This can be triggered by a variety of reasons, ranging from delays in performance to improper performance or even total refusal to perform obligations.

In the context of non-performance of the contract, another important concept arises, namely 'justifying impediment' or 'force majeure'. This is a special category of circumstances which may exceptionally affect the performance of the contract. A justifying impediment consists of unforeseeable and extraordinary circumstances which are beyond the control of the contractual parties and which make the performance of contractual obligations impossible or extremely difficult. (Augenblick, M., Rousseau, M. (2012))

It is important to take into account the contractual provisions and legal regulations on non-performance and justifiable impediments in each jurisdiction. In some cases, justifying impediment may exonerate the party from liability for non-performance of the contract, while in other situations, it may lead to temporary suspension of contractual obligations. Detailed analysis of the circumstances of each case is essential to understand how these concepts interact and how they may affect the rights and obligations of the contractual parties.

A justifiable impediment (or force majeure) is an exceptional and unforeseeable situation which makes the performance of a contract impossible or extremely difficult. Such circumstances are beyond the control of the contractual parties and could not be prevented or avoided by reasonable measures. The justifying impediment may include events such as wars, natural disasters, major strikes, terrorist actions, fundamental legislative changes and other extraordinary situations (Amarița A., 2006).

In order to successfully invoke the justifying impediment in a contract, certain conditions should be met:

The party seeking to invoke the justifying impediment should notify the other party as soon as possible, providing details of the event and its impact on the contract. Usually, it is also required to provide evidence of the event.

In the law of the Republic of Moldova, the term "justifying impediment" is equivalent to the concept of "force majeure" which is used in many other jurisdictions. Although the terminology may vary, the underlying concept remains the same: reference to exceptional and unforeseeable circumstances affecting the performance of a contract and exempting the parties from liability for non-performance of their obligations in such circumstances. (Civil Code, 2002)

In the Republic of Moldova, civil codes, in particular the Civil Code from 2019, regulate non-performance of contractual obligations and force majeure (justifying impediment) in several articles. Some differences may exist in terminology or in the way the concepts are formulated, but the basic principles are similar. (Băieșu S., Cebotari V., 2005)

An important distinction between justifying impediment and non-performance of obligations as mentioned in the Civil Code of the Republic of Moldova, where clear distinctions are made between

ordinary non-performance of contract and justifying impediment. While non-performance refers to the situation where one of the parties fails to perform its contractual obligations without justified reasons, justifiable impediment applies to extraordinary and unforeseeable events affecting the performance of the contract.

In the case of justifiable impediment (force majeure), the parties may be temporarily relieved of the performance of their contractual obligations or may be exonerated from liability for non-performance of the contract. This depends on the seriousness of the circumstances and how they affect the possibility of fulfilling the obligations. (Barbu V., Genoiu C., 2012)

### **Legal valences of Non-Performance of Contractual Obligations with a focus on Legal, Commercial, and Social Consequences in the Era of Climate Change, Circular Economy, and Sustainable Development**

In today's world, contracts serve as the fundamental building blocks of economic and social relationships. However, as the global community grapples with challenges like climate change and strives for sustainable development through circular economy principles, the consequences of non-performance of contractual obligations take on added significance. This paper explores the various dimensions of this issue.

In an era defined by unprecedented challenges and transformative aspirations, the role of contracts has evolved beyond mere legal agreements. They have become the threads that weave the fabric of modern society, connecting individuals, businesses, and nations in a global tapestry of interconnected interests. Yet, the contemporary landscape in which these contractual relationships unfold is markedly different from that of previous generations. It is a landscape where the existential threats of climate change loom, the principles of circular economy beckon, and the vision of sustainable development serves as both a guiding light and a stark reminder of our collective responsibilities.

In this ever-evolving context, the consequences of failing to uphold contractual obligations take on new layers of complexity and significance. Our scientific expedition embarks upon an exploration of this complexity, aiming to dissect the multifaceted aspects of contractual commitments and their non-performance. We venture into uncharted territory, where the traditional boundaries of contract law blur into broader legal, commercial, and social realms.

#### **The Legal Labyrinth of Climate Change Obligations**

Our journey begins with the legal dimension. Climate change, a defining challenge of our times, has brought forth a new breed of contracts. These are agreements forged in the crucible of climate action, environmental stewardship, and global cooperation. They include international treaties, emissions reduction pacts, and corporate sustainability commitments. Within these agreements, the fine print of contractual obligations has profound implications. Non-performance can have cascading legal consequences, from treaty violations to corporate liability.

Consider, for instance, the Paris Agreement, (Paris Agreement, 2015) where nations pledge to limit global temperature rise. When a country falters in meeting its commitments, it isn't merely a breach of contract; it's a breach of global trust, carrying diplomatic, economic, and legal repercussions.

As we navigate further, we encounter the intricate commercial landscape. Here, business and markets are entwined with sustainability ambitions. Circular economy principles, aimed at reducing waste and maximizing resource efficiency, have given rise to a new class of contractual agreements within supply chains, product life cycles, and waste management systems. The repercussions of contractual non-performance in this arena transcend mere balance sheets. They ripple through economies and consumer choices, impacting industries and employment.

Imagine a contract within a circular supply chain, where a company commits to reusing materials and reducing waste. When these commitments go unfulfilled, the circularity is disrupted, affecting not only the contracting parties but the very ideals of a sustainable economy. (Plotnic, O., Popescu L., 2022)

### **The Circular Economy and Human Impact**

In the depths of our exploration, we reach the heart of the matter—the societal dimension. Beyond the legalese and financial transactions, contracts profoundly affect human lives and the well-being of communities. They are the lifeblood of infrastructure development, community engagement, and environmental protection. (Vilela, N. B., Plotnic, O., 2023) Consider a scenario where a sustainable development project promises to provide economic uplift to a marginalized community. If this promise is not kept, it's not just a contractual breach; it's a disruption of livelihoods and a blow to social well-being.

And then there are the environmental implications. In the age of climate change, contracts are increasingly intertwined with environmental stewardship. Failing to honor environmental commitments can unleash ecological havoc, affecting fragile ecosystems, biodiversity, and the planet itself.

What makes our journey truly intriguing is the interplay of these dimensions. Legal consequences may lead to economic ramifications, and both can reverberate through society. Likewise, societal pressures can catalyze legal changes. As we delve deeper, we unravel the complexity of the interconnected web of legal, commercial, and social implications.

In this tapestry of complexity, we find threads of innovation, sustainability, and responsibility with the aim of exploring the legal mechanisms to foster e-democracy. (Voican M., 2023) We uncover opportunities to better align contracts with global sustainability goals, promote legal frameworks that catalyze positive change and cultivate a renewed sense of responsibility in our interconnected world.

### **Conclusions**

We conclude that the justifying impediment provides the parties with a way of dealing with exceptional and unforeseeable events that could affect the performance of the contract. It recognizes the need for flexibility and adaptability in contractual relationships, it also helps to maintain a balance between the parties in situations where neither party is able to perform its obligations due to uncontrollable external causes. This concept protects the parties from unfair liability if unforeseeable events prevent them from fulfilling their contractual obligations. It is important to note that although it allows for the temporary suspension or discharge of obligations, the justifying impediment is not a universal "shield". Cases must meet certain criteria to be considered as a justifying impediment (Plotnic O., Praporšćic V., 2023).

This paper concludes with a summary of the key findings, emphasizing the complex and interrelated nature of the legal, commercial, and social implications of contractual non-performance. It underlines the importance of aligning contracts with sustainability goals and urges stakeholders to recognize the significance of their commitments in the broader context of climate change, circular economy, and sustainable development.

As recommendations, it is necessary to take into consideration the following:

- Encourage legal systems to adapt to the changing needs of the sustainability era.
- Advocate for responsible and sustainable business practices.
- Promote community and stakeholder involvement in contract design and execution.
- Emphasize the need for a holistic approach to contractual obligations that considers their long-term societal impact.

Ultimately, the justifying impediment is a balance between the need to fulfill contractual obligations and the recognition of the reality that there are exceptional circumstances that may affect this process. With proper legal advice and an understanding of the relevant law, parties can address situations of justifying impediments in a fair and efficient way. (Pop L., 1996)

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## THE TRANSITION TOWARDS A GREEN AND CIRCULAR ECONOMY IN ORDER TO CREATE OPPORTUNITIES FOR THE SUSTAINABLE DEVELOPMENT OF THE REPUBLIC OF MOLDOVA

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**Abstract:** The aim of the article is to set priorities for further, very ambitious for Moldova's legal approximation and implementation of EU Acquis and common actions under the Paris Agreement on climate change (the 'Paris Agreement') commitments in Moldova, taking into consideration of "a renewed discussions" of the ongoing debate on the European Green Deal and how far the states could join possible join to the European Green Deal it. In relation to the enhance capacity to reach net-zero targets set up in updated nationally determined contribution (NDC). Moldova seeks to establish of legal framework of regulation of circular economy, which ensures the achievement of the objectives for energy and the long-term greenhouse gas emissions commitments, in particular for the first period, from 2025 to 2030, the RM's 2030 targets for long-term objectives. In order to facilitate energy market integration and cost-efficient climate action policies and measures set up in the integrated national energy and climate plans (NECPs), the Republic of Moldova shall ensure multilevel dialog in cooperation and consultation among the Contracting Parties, and identify opportunities for further regional cooperation in efficient guidance. The article shall serve as a basis for further in-depth deliberations on the establishment and implementation of a governance mechanism that will ensure the planning, monitoring and reporting on the achievement of the 2030 climate and circular targets and long-term objectives and targets in line with the 2015 Paris Agreement, while limiting administrative complexity and give consumers, including households and businesses, secure, sustainable, to foster research and innovation by means of attracting investment, which requires a fundamental transformation toward the green economy.

**Key words:** climate actions, consumers; green deal; green economy; circular; greenhouse gas emissions, governance mechanism

JEL Classification: K32, K33, Q52, Q54

### Introduction

The Paris Agreement sets an ambitious collective target on climate change, allowing for individual countries to develop individual climate objectives through nationally determined contributions (NDCs) in line with their “state individual responsibilities to common response”.

A strong transition to a green economy is essential for containing the risks of dangerous climate change effects. Limiting global warming to 1.5°-2°C, the central goal of the 2015 Paris Agreement, will require climate policy and legislative packages that drive transformative changes within their harmonization with the EU standards.

Moldova ranks among the most climate vulnerable countries in Europe and Central Asia based on a range of social and economic indicators and faces a number of adaptation challenges in conformity with the Global Adaptation Index.

In accordance with the third Biennial Update Report of the Republic of Moldova, over the last 132 years, the Republic of Moldova has experienced changes in average values of temperature and precipitation. The country had become warmer, with an average temperature increase of more than 1.2°C, while increase in precipitation was only 51.3 mm. [1]

Moldova is yet to fully implement the commitments ensuring from the EU - RM Association Agreement, which although being a political priority, it still polarizes Moldovan society.

Also, there is still insufficient political will to prioritize the mechanisms of the circular economy at national level. For the past 10 years, environment and climate change legislation has not been on the government agenda's priority list.

Moldova's waste sector, distinguished by the most one of important contribution to GHG emissions in the Republic of Moldova (11.2%, 2019), will significantly contribute to meeting the country's commitments to reduce GHG emissions. [1]

Alignment with new Circular Economy Action Plan is to set priorities for further, ambitious legal approximation and implementation of provisions of the Green Deal in Moldova, taking into consideration the recent EU candidacy admission of the Republic of Moldova.

### **Data and Methodology**

The present article aiming to provide an overview on how selected elements of the EU acquis are expected to be updated in the course of the new Association Agreement on climate, circular economy and environment related legislation, proposals taking in consideration the current capacity level of institutional and legislative.

Achieving more ambitious NDC targets will be possible through:

- i. Advanced alignment with EGD related acquis and in the context of Energy Community Treaty on climate, environmental and circular economy matters;
- ii. Approximation of Moldovan legislation with the EU standards based on the framework for achieving climate neutrality of the European Climate Law;
- iii. Establishment of concrete guidelines for the implementation of the extended producer principle and Circular Economy Roadmap taking in consideration the ongoing debate on the EGD and the recent EU candidacy admission of the Republic of Moldova.

The methodology of the article is based on desk research, gathering of official information by means of submission of information requests to respective state authorities, constant actualization of data, legislative framework, legal assessment, comparative analysis and compliance review.

In preparing the article we followed main approaches:

- elaboration of the gap analysis between the regulation and legislation framework on setting clear of European Green Deal targets and legislative framework of the Republic of Moldova;

- description of the most relevant provisions as well as an explanation how these relate to the existing rules of law in Moldova;

-write the conclusions and recommendations for efficient implementation the European Green Deal regulation and legislation framework taking in consideration the current capacity level of institutional and legislative.

### **Literature review**

The present assessment contributes to the identification of legal gaps in national climate, environmental and circular economy legislation in Moldova, which has been undergoing substantial revision since the Association Agreement was signed.

The national environmental legislation has been continuously developing based on the most important international climate and environmental legal frameworks ratified by the Republic of Moldova.

The Republic of Moldova has committed in 2020 in its updated NDC the intention to achieve more ambitious reduction targets than those included in the INDC from 2015. The updated unconditional target provides for a reduction of GHG emissions by up to 70% by 2030 compared to the level of the reference year 1990, instead of 64-67% undertaken in the INDC. Regarding the conditional target, instead of the 78% undertaken in the INDC, the reduction commitment expressed above could be increased to 88% as compared to the 1990 level, provided that external support is obtained, including in form of low-cost financial resources, technology transfer, and technical cooperation, etc. [2].

In achieving more ambitious the NDC targets, it will be possible through advanced regional cooperation. In this regard, the Republic of Moldova should transpose and implement all commitments in conformity with the Association Agreement between the Republic of Moldova, of the one part, and the European Union and the European Atomic Energy Community, and their Member States (2014), and with the Treaty establishing the Energy Community (2010).

The commitment to implement the European standards on climate change mitigation in the Republic of Moldova-EU AA (Annex XII) is set in following acts: i) Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading; ii) Regulation (EC) no. 842/2006 on certain fluorinated greenhouse gases, replaced by Regulation (EU) no. 517/2014; iii) Regulation (EC) no. 1005/2009 on ozone-depleting substances; iv) Directive no. 98/70/EC on the quality of petrol and diesel.

Only one of the four EU acquis provided for in the Moldova-EU AA is transposed into the national legislation. Directive 98/70/EC on quality of petrol and diesel oil is fully integrated in the GD no. 1116/2002, amended in 2019. Rest of EU acquis regulations, for which the transposition deadline has already expired (in 2018-2019), are partially transposed into the national legislation with the exception of Directive no. 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading (until 2022).

Regarding climate change, Energy Community recommended for implementation following two EU provisions: i) Recommendation 2016/02/MC-EnC on preparing for the implementation of Regulation (EU) 525/2013 on the mechanism for monitoring and reporting greenhouse gas emissions; ii) Recommendation 2018/01/MC-EnC on preparing for the development of integrated national energy and climate plans. Only the Recommendation 2016/02/MC-EnC has been transposed into national legislation.

The main political strategy in the area, is the Low Emission Development Strategy of the Republic of Moldova until 2030 (LEDS) and the Action Plan for its implementation, approved in 2016.

In 2020, after expressing more ambitious targets for reducing GHG emissions in the updated NDC, it was developed, and approved the Low Emission Development Program of the Republic of Moldova until 2030 (LEDP) and the Action Plan for its implementation, which is to replace the former LEDS 2030 and to serve as guidance and officially approved document for achieving the targets included in the updated NDC.

The Climate Change Adaptation Strategy of the Republic of Moldova and its implementation Action Plan covers the timeframe 2014- 2020 and approved prior to signing of the Republic of Moldova of the Paris Agreement and the country’s NDC declaration.

The new National Climate Change Adaptation Strategy in conformity with the updated NDC objectives was elaborated with the support of the Project "Advancing Moldova’s National Climate Change Adaptation Planning", has been approved recently.

The sub-chapter "Waste management and resources" of the Republic of Moldova-EU AA provides for the transposition of Directive 2008/98/EC on waste, within the term of 4 years from the entry into force of the agreement. In particular, the implementation of the Art.14 on "establishing the full cost recovery mechanism in accordance with the polluter pays principle and with the extended responsibility principle the producer" is implemented starting from 2018.

The new of the National Program for waste management for the years 2023-2027 and the Action Plan for its implementation in conformity with the updated NDC objectives was elaborated with the support of the Project "EU4Environment", has not been approved yet.

The Adjustment of sectorial adaptation strategies to climate change by including gender equality is established in the National Strategy on Ensuring Equality between women and men (2017-2021) in the Republic of Moldova and the Action Plan for its implementation, approved by the GD no. 259/2017, which aims at greater reduction of gender gaps due to the social, economic and environmental vulnerabilities exacerbated by climate change. The gender policy is regulated by the Law no. 5/2006 on ensuring equal opportunities between women and men, which stipulates that in the Republic of Moldova, women and men have equal rights and freedoms and are guaranteed equal opportunities for their work.

The Program for promoting “green” economy in the Republic of Moldova for the years 2018-2020 covers the timeframe prior to signing of the Republic of Moldova of the Paris Agreement and the country’s NDC declaration.

Secondary legislation.

The Waste Management Strategy for the Republic of Moldova for 2013-2027, approved by the GD no. 248/2013, enhances the measures in application EU and national standards: extending the current system of primary collection and storage from urban to rural waste, improving the water supply and sanitation infrastructure.

Law on waste No. 209 of 29.07.2016 establishes the legal framework and the necessary measures for protection of the environment and the health of the population by preventing or reducing the effects of waste generation and management and set up the regulations based on the extended responsibility principle the producer.

Law no. 1540/1998 on payment for pollution of the environment establishes a system of economic activity in which it becomes inappropriate to cause any damage to the environment; incentivizing construction and operation of pollutant capture and neutralization systems; establishment of ecological funds for financing the activity oriented towards improving the quality of the environment.

#### Secondary legislation

Government Decision no. 444/2020 on establishment of the mechanism for coordinating activities in the field of climate change, establishes organization and operation of: the National Commission on Climate Change through the intersectoral coordination mechanism for coordinating nationally appropriate mitigation action.

GD no. 1277/2018 on establishment and operation of the National Monitoring and Reporting System for Greenhouse Gas Emissions and Other Information Relevant to Climate Change regulates monitoring the methane emissions.

GD no. 561 of 31.07.2020 on approval of Regulation on packaging and packaging waste lays down priority measures to prevent production of packaging waste and principles of reducing final disposal of packaging waste through reuse, recycling and recovery.

In order for the facilitate application of the Law no. 209/2016 on waste several legislative acts were adopted the GD no. 501/2018 on the Instruction on keeping records and transmitting data on waste and its management, GD no. 682/2018 on the approval of the Concept of the Automated Waste Management Information System, through which the reporting system [www.siamd.gov.md](http://www.siamd.gov.md) was developed.

GD no.212/2018 on approval of the Regulation on waste electrical and electronic equipment, GD no.586/2020 on approval of the Regulation on batteries and accumulators and waste batteries and accumulators sets out waste stream related rules, concern the management of various type products once they became waste based on the Extended Producer Responsibility (EPR) approach.

Actually, existing laws and secondary laws represent a good starting point that shall be kept in process of development of the climate legislation.

There are no provisions on Extended Producer Responsibility (EPR) in the context of climate change mitigation and adaptation measures in primary legislation and no legal basis which creates concrete impediments in the law-making process and in the implementation of new administrative procedures, in strengthening clear institution obligations in the data management and low data accessibility.

## European union green deal related acquis relevant for the Republic of Moldova

The aim of the assessment of the European Green Deal (EGD) related acquis relevant for the Republic of Moldova is to sets priorities for further, very ambitious for Moldova legal approximation and implementation of EU acquis and actions in Moldova, taking in consideration of new candidate status of the RM.

The European Green Deal (hereinafter – EGD) is the new growth strategy for an EU economy that aims to be sustainable, cleaner, safer and healthier by turning climate and environmental challenges into opportunities across all areas of policy in a way that is fair and inclusive. EGD sets out a plan of action for ensuring:

- an economy with net-zero greenhouse gas emissions by 2050;
- boost the efficient use of resources by moving to a clean, circular economy;
- restore biodiversity and cut pollution.

The EGD contains proposals for action which cover a number of policy areas:

(i) The **Climate Action Initiatives** under the EGD include:

- the **Roadmap - Key actions** [3] in above mentioned policy areas;

- the **European Climate Law** [4], which includes a legal objective for the Union to reach the goals set out in the EGD. *The Regulation (EU) 2021/1119 ('European Climate Law')* will help to meet the European Green Deal objectives while taking fairness, solidarity and cost-effectiveness;

- as part of the EGD, the Commission through **European Climate Pact** encourages people, communities and organizations to connect and sharing knowledge, learning about climate change and development solutions to fight climate change;

- **2030 Climate Target Plan** [5] Commission has proposed to increase the EU's ambition to cut greenhouse gas emissions by at least 55% by 2030 sets Europe on a responsible path to becoming net-zero greenhouse gas emissions by 2050. The package contains legislative proposals under the **“Fit for 55”** to revise the entire EU 2030 climate and energy framework, including the legislation on effort sharing, land use and forestry, renewable energy, energy efficiency, emission standards for new cars and vans, and the Energy Taxation Directive;

- **EU Strategy on Adaptation to Climate Change** [6] aims to realize the 2050 vision of a climate-resilient Union by making adaptation smarter, more systemic, swifter, and by stepping up international action. This would mean adaptation awareness and planning spread to every single local authority, company and household; adaptation implementation well underway for those most affected; and global leadership in areas such as climate services, climate proofing, or nature-based solutions.

(ii) **Taxation of GHG emissions and Emissions Trading System.** The taxation of energy products and electricity plays an important role in the area of climate and energy policy. The proposal for recasting framework for the taxation of energy products and electricity is part of the EGD and of the **“Fit for 55”** legislative package focuses on environmental and climate issues to achieve the EU's domestic greenhouse gas emissions reductions objectives and air pollution reduction. Reducing man-made GHG emissions can help to limit global warming. The **EU Emissions Trading System** is a basic pillar of the EU's policy to combat climate change and its key tool for reducing greenhouse gas emissions cost-effectively. It is the world's first major carbon market and remains the biggest one. Companies that are regulated by the EU ETS include stationary installations (such as power plants, industrial plants and other large energy users) and airlines. The sectors of the economy not covered

by the EU ETS must reduce emissions by 30% by 2030 compared to 2005 as their contribution to the overall target through the **Effort Sharing Regulation** (Regulation (EU) 2018/842) translates this commitment into binding annual greenhouse gas emission targets for each Member State for the period 2021–2030, based on the principles of fairness, cost-effectiveness and environmental integrity. Finally, the ESR, its relevance as a regulatory instrument and its scope will be subject to review for the development of the climate and energy framework post-2030, taking into account the interactions between the various instruments, in particular the extension of emission trading to new sectors and the regulation of an agriculture land use and forestry pillar. The proposal [7] determines to reduce GHG emissions by ensuring parallel coverage of ESR and ETS in case of an extension of the ETS, to buildings and road transport.

(iii) **Carbon Border Adjustment** determines reduce GHG emissions by ensuring the fairness through dampening any negative competitiveness effects. The Carbon Border Adjustment Mechanism (CBAM) is intended to complement the **Emissions Trading System** and level the playing field between EU and non-EU businesses, ensuring that production of carbon-intensive goods does not shift from within the EU to third countries in order to take advantage of less stringent climate policies. It is due to take effect in a transitional form from 1 January 2023 and be fully operational from 1 January 2026.

➤ Proposal for a Regulation of the EU Parliament and of the Council establishing a carbon border adjustment mechanism (CBAM) 2021/0214 from 14.7.2021[8] The CBAM seeks to replace the existing mechanisms (free allocation of EU ETS allowances and financial measures to compensate for indirect emission costs incurred from GHG emission costs (Directive 2003/87/EC)) by addressing the risk of carbon leakage in a different way, namely by ensuring equivalent carbon pricing for imports and domestic products.

(iv) **Transition to greener mobility.**

**Sustainable and Smart Mobility Strategy** [9] sets out actions to transform the transport sector into a truly multimodal system of sustainable and smart mobility services. As the first pillar, uptake of low- and zero-emission vehicles as well as renewable and low-carbon fuels for road, waterborne, air and rail transport. Support research and innovation on competitive, sustainable and circular products and services, ensure that the right vehicles and fuels are supplied by the industry, put in place the necessary infrastructure, and incentivize demand by end-users.

➤ The CO<sub>2</sub> emissions performance requirements for new passenger cars and for new light commercial vehicles are set out by the *Regulation (EU) 2019/631 setting CO<sub>2</sub> emission performance standards for new passenger cars and for new light commercial vehicles*. In the context of “Fit for 55” legislative package, the Commission introducing amendments to Regulation (EU) 2019/631[10] as regards the CO<sub>2</sub> emission performance standards for new passenger cars and new light commercial vehicles.

The **Zero Pollution Action Plan** [11] further supports the shift toward zero-emission vehicles. Emission standards for passenger cars and light commercial vehicles were seen as key drivers for reducing CO<sub>2</sub> emissions in the sector throughout. This draft law aims to accelerate the transition by requiring average emissions of new cars to come down by 55% from 2030 and 100% from 2035 compared to 2021 levels. All new cars registered as of 2035 should be zero-emission.

In order to achieve the broadest possible use of alternative fuels for transport, while ensuring technological neutrality, and to promote sustainable electric mobility throughout the Union, must take suitable measures for the implementation of the strategy set out in the Communication entitled ‘**Clean Power for Transport: A European alternative fuels strategy**’[12]. For this purpose the Commission propose the new Regulation for the deployment of alternative fuels infrastructure, which will repeal *Directive 2014/94/EU on the deployment of alternative fuels infrastructure*. This initiative seeks to

ensure the availability and usability of a dense, widespread network of alternative fuels infrastructure throughout the EU.

(v) **Industrial policy package.** The *update the 2020 New Industrial Strategy: Building a stronger Single Market for Europe’s recovery* [13] is a targeted update, which focuses on a tailored assessment of the needs of each industrial ecosystem and how all market players can best work together. And it identifies a set of strategic dependencies and capacities and proposes measures to address and reduce them.

(vi) **Biodiversity and ecosystems.** *EU Biodiversity Strategy for 2030* [14] is a main pillar of the European Green Deal and comprehensive, systemic, ambitious long-term plan for protecting nature and reversing the degradation of ecosystems. It addresses the five main drivers of biodiversity loss—changes of inland and sea use, overexploitation, climate change, pollution, and invasive alien species and it sets out an enhanced governance framework to fill remaining gaps, ensures the full implementation of EU legislation, and pulls together all existing efforts. The main regulatory instruments are the Birds and Habitats Directives, will focus on completing the Natura 2000 network, the effective management of all sites, species-protection provisions with strict protection for areas of very high biodiversity and climate value.

(vii) *A Clean Air Programme for Europe* [15] proposes legislation to reduce harmful emissions in the longer term which contribute to poor air quality and promote measures which mitigate atmospheric warming and climate change. The objectives for the emission reductions are fully consistent with the *EGD* and *EU Action Plan: Towards Zero Pollution for Air, Water and Soil*.

(viii) **Circular economy.** *The 8th Environment Action Programme* [16] aims to achieve that by 2050 the prosperity within the planet’s ecological limits that healthy environment stem from an innovative, circular economy where nothing is wasted and where natural resources are managed sustainably, and biodiversity is conserved, valued and restored in ways that enhance resilience to climate change. *The new Circular Economy Action Plan* presents a set of initiatives to establish climate-neutral, resource-efficient and competitive economy. *Bioeconomy Strategy* based on sustainability and circularity will drive the renewal industries, the modernization of primary production systems, the protection of the environment and will enhance biodiversity and will provide ‘no emissions’ economy, in line with the *EGD*.

(ix) **Renewable energy targets.** The common system to promote energy from renewable sources across the different sectors has established by the *Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources*. The key points of the Directive are part of the package of measures needed to reduce greenhouse gas emissions by at least 40% below 1990 levels by 2030 comply with the *EGD* and the *EU climate and energy policies in the period from 2020 to 2030*. It establishes a common set of rules for the use of renewables in electricity, heating and cooling, and transport in the EU.

*Clean Energy For All Europeans* [17] is the legislative proposal cover energy efficiency, renewable energy, the design of the electricity market, security of supply and governance rules for the Energy Union. This initiative sets out a range of specific measures to improve the regulatory, economic and investment environment for innovation in clean-energy technologies and systems.

**Energy efficient buildings.** The strategy to start a *Renovation Wave for Europe* proposed by the Commission Communication enhance the energy and resource-efficient renovation, supporting fresh

investment over a sustained period starting from public and less efficient buildings, spurring digitalization and creating employment and growth opportunities across the renovation supply.

**Energy system integration.** *Powering a climate-neutral economy: An EU Strategy for Energy System Integration* [18] proposes policy and legislative measures at EU level to gradually shape a new integrated energy system, while respecting the differing starting points of Member States in achieving the target to climate neutral economy at the least cost across sectors, while strengthening energy security, protecting health and the environment.

### **Conclusions and recommendations**

Climate change adaptation and mitigation in the Republic of Moldova is considered essential for the protection of well-being and the achievement of continuous progress in circular economy development, priorities that were reflected in the draft of the National Development Strategy “European Moldova 2030”.

The objectives to ensure functioning circular economy for achieving climate change adaptation and mitigation goals in context are:

- developing strategies at the national level and implement technologies that could reduce threats to global climate change over time;
- developing a legislative framework, which provides the institutional, legal and procedural framework, for establishing the efficient mechanisms implementing adaptation and mitigation policies on climate change;
- identifying lessons learned from implementation experience at the national level and initiate the enhancement and amending the secondary legislative application;
- developing IT tools for ensuring data accessibility and strengthening the data management;
- adopting an efficient enforcement mechanism (including sanctions).

The main barriers and constraints related to aligning the national legislation with the EU are the lack of institutional, technical and financial capacities.

Despite the fact, that the approximation of European Green Deal (EGD) related acquis means that the Republic of Moldova as a candidate state must align their national laws, rules, and procedures in order to give effect to the entire body of EU legislative framework.

There are some technical impediments on transposition of the climate change Acquis EU due to the law-making procedure:

- all legislative drafts should be based on primary legislative justification, but we underline that there are no provisions on climate change mitigation and adaptation in primary legislation, which creates some impediments in promoting new administrative procedures, like a GHG permits etc.;

- the administrative procedure incorporated in the secondary legislation, without clear imperative norms in primary legislation, creates an inefficient and low application, for, ex. low data accessibility in implementation of the GD no.1277/2018 on establishment and operation of the National Monitoring and Reporting System for Greenhouse Gas Emissions and Other Information Relevant to Climate Change;
- the implementation mechanism of transposed in legislation the EU standards are no efficient due to lack of new secondary legislation elaborated in time;
- the implementation mechanism of transposed in national legislation the EU standards are no efficient due to lack of new sanctions incorporated in time in the Contravention Code No. 218/2008 and Criminal Code 985-XV/2002.

We underline the necessity of elaboration the new Law on Climate Actions (LCA), which will consolidate of adopted legal framework on: i) mitigating and adaptation policy actions; ii) inter-institutional coordination; iii) National Monitoring Reporting System and National Inventory System and will create the legal framework in enhancing the management of greenhouse gas emissions (inclusive the ETS MRV system); iv) set up basics for enhancing carbon pricing revenues for renewal industries, the modernization of primary production systems.

The Law on Climate Actions could include regional cooperation to facilitate better coordination of national policies and measures and implementation of relevant policies and measures of the circular economy, joint approaches to renewable development, support to cross-border projects and cooperation between subnational actors.

In order to facilitate the regional cooperation should be promoting market integration, cost-efficient policies, effective cooperation, partnerships and consultations, identify further opportunities for regional cooperation covering basics dimensions of the Energy Union in accordance with the European Green Deal (EGD) related acquis, with a long-term vision and based on existing market conditions.

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